# Strategic Finance and Corporate Restructuring

## Block

# 3

## MERGERS AND ACQUISITIONS

**Editorial Team**

Prof. K. Seethapathi
IFHE (Deemed-to-be-University), Hyderabad

Dr. Ranajee
IFHE (Deemed-to-be-University), Hyderabad

Prof. A. Suresh Babu
IFHE (Deemed-to-be-University), Hyderabad

Prof. U. L. Sunitha
IFHE (Deemed-to-be-University), Hyderabad

**Content Development Team**

Prof. S. V. Subramanyam
IFHE (Deemed-to-be-University), Hyderabad
Hyderabad

Dr. M. R. Senapathy
IFHE(Deemed-to-be-University),

Prof. U. L. Sunitha
IFHE (Deemed-to-be-University), Hyderabad
Hyderabad

Dr. K. Veena
IFHE(Deemed-to-be-University),

Prof. M. Aparna
Academic Associate, ISB

**Proofreading, Language Editing and Layout Team**

Ms. M. Manorama
IFHE (Deemed-to-be-University), Hyderabad
Hyderabad

Ms. C. Sridevi
IFHE(Deemed-to-be-University),

Mr. Chandra Sekhar Rao
IFHE (Deemed-to-be-University), Hyderabad



**Ref. No. SFCR SLM 092022B3**

For any clarification regarding this book, the students may please write to The ICFAI Foundation for Higher Education (IFHE), Hyderabad specifying the unit and page number.

While every possible care has been taken in type-setting and printing this book, The ICFAI Foundation for Higher Education (IFHE), Hyderabad welcomes suggestions from students for improvement in future editions.

*Our E-mail id: cwfeedback@icfaiuniversity.in*

**Centre for Distance and Online Education (CDOE)**
**The ICFAI Foundation for Higher Education**
(Deemed-to-be-University Under Section 3 of UGC Act, 1956)
Donthanapally, Shankarapalli Road, Hyderabad- 501203.

# BLOCK 3 MERGERS AND ACQUISITIONS

This is the introductory block for Corporate Restructuring section. This block introduces the basic concepts of corporate restructuring like forms of mergers and acquisitions, methods of valuation of firms etc. This block also discusses theories of mergers. This block consists of four units.

Unit 10 outlines the basic introduction to Corporate Restructuring. In a rapidly changing world, companies are facing unprecedented turmoil in global markets. In response to these pressures, an increasing number of companies around the world are dramatically restructuring themselves. The unit discusses topics like Forms of Corporate Restructuring - Mergers and Acquisitions, Tender Offers, Joint Ventures, Sell-Offs, Spin offs, Split offs, Split ups, Divestitures, Equity Carve-outs, etc.

Unit 11 enumerates different forms of Mergers and Acquisitions. In this unit the various types of mergers and the process undergone by firms to accomplish a merger or an acquisition successfully has been discussed. It also discusses other aspects of Mergers and Acquisitions such as participants in the merger and acquisition process, post-merger integration, reasons for failure of mergers and acquisitions, etc.

Unit 12 deals with theories of mergers. Whatever be the fundamental reason, one thing that all merger and acquisition strategies have in common is the desire to strengthen the existing business and help its growth. The unit talks about topics like efficiency theories, information and signaling, tax considerations, agency problems and managerialism, hubris hypothesis etc.

Unit 13 discusses different methods of valuation of firms. To realize the financial benefit of an investment, the owner must be able to obtain its return either through ownership or exchange. The unit discusses various approaches to valuation and role of valuation.

# Unit 10

# Mergers and Acquisitions: An Overview

## Structure



*"Economic globalization creates wealth, but only for the elite who benefit from the surge of consolidations, mergers, global scale technology, and financial activity."*

- Anita Roddick

## 10.1 Introduction

Which class of people gets benefit from the increased activity of mergers and consolidations? In a rapidly changing world, companies are facing unprecedented turmoil in global markets. Severe competition, rapid technological change, and rising stock market volatility have increased the burden on managers to deliver superior performance and value for their shareholders.

In response to these pressures, an increasing number of companies around the world are dramatically restructuring their assets, operations, and contractual relationships with shareholders, creditors, and other financial stakeholders. Corporate restructuring has facilitated thousands of organizations to re-establish their competitive advantage and respond more quickly and effectively to new opportunities and unexpected challenges. Corporate restructuring has had an equally profound impact on the many more thousands of suppliers, customers, and competitors that do business with restructured firms.

The most remarkable examples of growth and often the largest increases in stock prices are a result of mergers and acquisitions. M&As offer tremendous opportunities for companies to grow and add value to shareholders' wealth. M&As is a strategy for growth and expansion. M&As are expected to increase value and efficiency and thereby increase shareholders' value. M&As is a generic term used to represent different types of corporate restructuring exercises.

## 10.2 Objectives

After going through the unit, you should be able to:

- Identify Forms of Corporate Restructuring
- Discuss Restructuring – Underlying Issues
- Explain Merger Waves
- Describe Mergers and Acquisitions in India
- Assess the Growing Need for Corporate Restructuring

## 10.3 Forms of Corporate Restructuring

Business firms in their pursuit of growth, engage in a broad range of restructuring activities. Actions taken to expand or contract a firm's basic operations or fundamentally change its asset or financial structure are referred to as corporate restructuring activities. Corporate restructuring is a broad umbrella that covers many things. One of them is the merger or takeover. From the viewpoint of the buyer, M&A represent expansion and from the perspective of the seller it represents a change in ownership that may or may not be voluntary. In addition to mergers, takeovers, and contests for corporate control; there are other types of corporate restructuring like divestitures, rearrangements, and ownership reformulation.

These corporate restructuring activities can be divided into two broad categories – operational and functional. Operational restructuring refers to outright or partial purchase or sale of companies or product lines or downsizing by closing unprofitable and non-strategic facilities. Financial restructuring refers to the actions taken by the firm to change its total debt and equity structure.

**Table 10.1: Forms of Restructuring Business Firms**

| | |
|---|---|
| **Expansion** | **Assets sale Corporate Control** |
| • Mergers and Acquisitions | • Takeover defenses |
| • Tender offers | • Share repurchases |
| • Asset acquisition | • Exchange offers |
| • Joint ventures | • Proxy contests |
| **Contraction** | **Changes in Ownership Structures** |
| • Spin offs | • Leveraged buyout |
| • Split offs | • Junk bonds |
| • Divestitures | • Going private |
| • Equity carve-outs | • ESOPs and MLPs |

An overview of all these restructuring activities is shown in a summarized form in Table 10.1. The grouping is a bit random but indicates the direction of the emphasis in these various practices.

Each type of activity mentioned in the above Table is briefly explained below:

**Expansion**

Expansion is a form of restructuring, which results in an increase in the size of the firm. It can take place in the form of a merger, acquisition, tender offer, asset acquisition or a joint venture.

**Merger**

Merger is defined as a combination of two or more companies into a single company. A merger can take place either as an amalgamation or absorption.

**Example: Merger of HDFC into HDFC Bank**

Announcing the creation of a financial giant, HDFC Bank on 4th April, 2022 said its board approved the amalgamation of HDFC Investments and HDFC Holdings with HDFC and that of HDFC into HDFC Bank. As part of the merger between HDFC and HDFC Bank, 42 shares of HDFC Bank would be given for every 25 shares of HDFC.

Post the above, HDFC Bank will be 100 per cent owned by public shareholders and existing shareholders of HDFC will own 41 per cent of HDFC Bank.

The HDFC-HDFC Bank merger was expected to be completed by the second or third quarter of FY24.

*Sources:(i) https://economictimes.indiatimes.com/markets/stocks/news/hdfc-to-be-merged-with-hdfc-bank/articleshow/90632949.cms?utm_source=contentofinterest&utm_ medium= text&utm_ campaign=cppst, dated 4th April, 2022. Accessed on 11th July, 2022*

*(ii) https://www.moneycontrol.com/news/business/exclusive-hdfc-bank-top-brass-batted-for-merger-with-hdfc-as-early-as-november-8475361.html*

**Amalgamation**

This type of merger involves fusion of two or more companies. After the amalgamation, the two companies lose their individual identity and a new company comes into existence. A new firm that is hitherto, not in existence comes into being. This form is generally applied to combinations of firms of equal size.

**Example: Amalgamation of L&T Infotech with Mindtree**

Larsen & Toubro Infotech (LTI) board on 6th May, 2022 approved a scheme of amalgamation with Mindtree, creating a $3.5 billion IT services provider. The two companies are subsidiaries of Larsen & Toubro.

The deal, which was expected to close in 9-12 months, involved no cash consideration. Larsen & Toubro Infotech said it would issue and allot 73 fully paid up equity shares of face value Re 1 each of the company.

Debashis Chatterjee will be heading the combined entity, which will be known as LTIMindtree. L&T Infotech's MD, Sanjay Jalona, resigned citing personal reasons.

*Source: https://economictimes.indiatimes.com/markets/stocks/news/lt-infotech-announces-merger-with-mindtree/articleshow/91373633.cms?utm_source=contentofinterest&utm_medium =text&utm_campaign=cppst, dated 6th May, 2022. Accessed on 11th July, 2022*

### Absorption

This type of merger involves fusion of a small company with a large company. After the merger the smaller company ceases to exist.

### Tender Offer

Tender offer involves making a public offer for acquiring the shares of the target company with a view to acquire management control in that company.

**Example: L&T's Tender Offer to Acquire Mindtree**

Larsen and Toubro Ltd (L&T) gained a controlling interest in Mindtree Ltd, raising its stake to 60% in the Bengaluru-based company on 27th June, 2019 and successfully concluding India's first hostile takeover of a software developer.

The purchase of additional shares through an open offer by L&T after acquiring a 20.4% stake in Mindtree from coffee baron V.G. Siddhartha and affiliate firms marked the culmination of a year-long effort by the Mumbai-based engineering giant to gain control of Mindtree through a hostile bid. Such takeovers are uncommon in services businesses as people are their key assets.

Despite opposition from Mindtree's promoters, L&T managed to get enough public shareholders of the software company to tender their shares at ₹980 apiece and complete the open offer two days before its closing date of 28th June.

Post the takeover, L&T was most likely to change the top management of Mindtree. Some of the top officials, who were hired by the erstwhile promoters, could be replaced.

*Source: With 60% Stake, L&T Completes Its Hostile Takeover of Mindtree | Mint (livemint.com), dated 27th June, 2019. Accessed on 11th July, 2022.*

### Asset Acquisition

Asset acquisitions involve buying the assets of another company. These assets may be tangible assets like a manufacturing unit or intangible assets like brands. In such acquisitions, the acquirer company can limit its acquisitions to those parts of the firm that coincide with the acquirer's needs.

### Joint Venture

In a Joint Venture two companies enter into an agreement to provide certain resources towards the achievement of a particular common business goal. It involves intersection of only a small fraction of the activities of the companies involved and usually for a limited duration. The venture partners according to the pre-arranged formula, share the returns obtained from the venture. Usually the multinational companies use this strategy to enter into foreign market.

**Example: Paytm Forms General Insurance JV To Invest ₹ 950 cr in 10 Years**

Paytm set up a joint venture firm Paytm General Insurance Limited and the same was approved by the board on 20th May, 2022. One97 Communications which operated under Paytm brand said that it committed to invest ₹ 950 crores in 10 years. The board approved setting up of a joint General Insurance Ltd.

*Source: Paytm forms general insurance JV; to invest ₹ 950 cr in 10 years | Business Standard News (business-standard.com), dated 21st May, 2022. Accessed on 11th July, 2022*

**Contraction**

Contraction is a form of restructuring, which results in a reduction in the size of the firm. It can take place in the form of a spin-off, split-off, divestiture or an equity carve-out.

**Spin-offs**

A spin-off is a transaction in which a company distributes on a *pro rata* basis all of the shares it owns in a subsidiary to its own shareholders. Hence, the stockholders proportional ownership of shares is the same in the new legal subsidiary as well as the parent firm. The new entity has its own management and is run independently from the parent company. A spin-off does not result in an infusion of cash to the parent company.

**Split-offs**

In a split-off, a new company is created to takeover the operations of an existing division or unit. A portion of the existing shareholders receives stock in a subsidiary (new company) in exchange for parent company stock. The logic of split-off is that the equity base of the parent company is reduced reflecting the downsizing of the firm. Hence the shareholding of the new entity does not reflect the shareholding of the parent firm. A split-off does not result in any cash inflow to the parent company.

**Split-ups**

In a split-up the entire firm is broken up in series of spin-offs, so that the parent company no longer exists and only the new offsprings survive. A split-up involves the creation of a new class of stock for each of the parent's operating subsidiaries, paying current shareholders a dividend of each new class of stock, and then dissolving the parent company. Stockholders in the new companies may be different as shareholders in the parent company may exchange their stock for stock in one or more of the spin-offs.

**Divestiture**

A divestiture is a sale of a portion of the firm to an outside party, generally resulting in an infusion of cash to the parent. A firm may choose to sell an undervalued operation that it determines to be non-strategic or unrelated to the

core business and to use the proceeds of the sale to fund investments in potentially higher return opportunities. It is a form of expansion on the part of the buying company.

**Equity Carve-out**

An equity carve-out involves the sale of a portion of the firm through an equity offering to outsiders. New shares of equity are sold to outsiders who give them ownership of a portion of the previously existing firm. A new legal entity is created. The equity holders in the new entity need not be the same as the equity holders in the original seller.

**Assets sale**

It involves the sale of tangible or intangible assets of a company to generate cash. When a corporation sells off all its assets to another company, it becomes a corporate shell with cash and/or securities as its sole assets. The firm may then distribute the cash to its stockholders as a liquidating dividend and go out of existence. The firm may also choose to continue to do business and use its liquid assets to purchase other assets or companies.

**Corporate Control**

Firms can also restructure without necessarily acquiring new firms or divesting existing corporations. Corporate control refers to the third group of corporate restructuring activities, which involves obtaining control over the management of firm. Control is the process by which managers influence other members of an organization to implement the organizational strategies. The various techniques of obtainer's corporate control are explained below.

**Takeover Defenses**

With the high level of hostile takeover activity in recent years, takeover defense, both pre-bid and post-bid have been resorted to by the companies. Pre-bid defenses also called preventive defenses are employed to prevent a sudden, unexpected hostile bid from gaining control of the company. When preventive takeover defenses are not successful in fending off an unwanted bid, the target implements post-bid or active defenses. These takeover defenses intend to change the corporate control position of the promoters.

**Share Repurchases**

This involves the company buying its own shares back from the markets. This leads to reduction in the equity capital of the company. This in turn strengthens the promoter's controlling position by increasing his stake in the equity of the company. It is used as a takeover defense to reduce the number of shares that could be purchased by the potential acquirer.

**Exchange offers**

It provides one or more classes of securities, the right or option to exchange part or all of their holdings for a different class of securities of the firm. The terms of

exchange offered necessarily involve new securities of greater market value than the pre exchange offer announcement market value. Exchange offer involves exchanging debt for common stock, which increases leverage, or conversely, exchanging common stock for debt, which decreases leverage. They help a company to change its capital structure while holding the investment policy unchanged.

**Proxy Contests**

A proxy contest is an attempt by a single shareholder or a group of shareholders to take control or bring about other changes in a company through the use of the proxy mechanism of corporate voting. In a proxy fight, a bidder may attempt to use his or her voting rights and garner the support from other shareholders to expel the incumbent board or management.

**Changes in Ownership Structure**

Changes in the ownership structure represent the fourth group of restructuring activities which results in a change in the restructure of ownership in the firm. A firm's ownership structure affects, and is affected by other variables, and these variables also influence market value. These variables include the levels of principal-agent conflicts and information asymmetry and their effects on other variables such as the firm's operating strategy, dividend policy and capital structure. The various techniques of changing the ownership structure are explained below.

**Leverage Buyout**

Leveraged buyout is a financing technique where debt is used in the acquisition of a company. The term is often applied to a firm-borrowing fund to buy-back its stock to convert from a publicly owned to a privately owned company. A management buyout is a LBO in which managers of the firm to be taken private are also equity investors.

**Going Private**

It refers to the transformation of a public corporation into a privately held firm. It involves purchase of the entire equity interest in a previously public corporation by a small group of investors.

**ESOP**

An employee stock option plan is a mechanism whereby a corporation can make tax deductible contributions of cash or stock into a trust. The assets are allocated to the employees and are not taxed until withdrawn by them. ESOPs are involved in mergers and LBOs in two ways: as a financing vehicle for the acquisition of companies, including through LBOs and as an anti takeover defense.

**Master Limited Partnerships (MLPs)**

A master limited partnership is a type of limited partnership whose shares are publicly traded. The limited partnership interests are divided into units which

trade as shares of common stock. In addition to tradability it has the advantage of limited liability for the limited partners.

This kind of structure is however not prevalent in our country, though there was a move some time back to design necessary regulatory framework for floating such organizations particularly in the contest of divergent needs of IT sector.

## 10.4 Restructuring – Underlying Issues

Corporate restructuring which includes many forms of business and financial activities as seen above raises several questions like –

- Are they good or bad for the economic health of the nation?
- Do they divert the energies of managers from bona fide economic activity to financial manipulation?
- Do they use up financial resources which otherwise would be employed in real investment activities.
- Why has such heightened merger activity been a phenomenon of the last 20 years?

To answer these questions we need to look at the theory or theories explaining these restructuring activities. We will try to explain this gradually as we progress into the subsequent units.

**Example: Underlying Issues in L&T Takeover of Mindtree**

By 2019, L&T had more than $2 billion cash reserves and another $1.5 billion added in the year 2020. The excess cash needed to be invested; otherwise it is a drag on the return on equity. The company wanted to use the cash reserves for buyback purposes. However, buyback plan had been foiled by the regulator as the debt to equity ratio would cross 2:1 which was against the norms laid down by SEBI.

Next best option was distributing the cash reserves in the form of dividends. However, raising dividends sets expectations for the future.

Return on equity of L&T had fallen from 24% to 9% in the past decade before getting stabilised at 15% by 2019. Therefore, L&T was forced to dispose non-core assets and deploy the funds in high margin business and IT services (Mindtree) provided a suitable platform for investment.

*Source: The Story Behind the L&T- Mindtree Takeover Bid (managementstudyguide.com), Report of February 2019. Accessed on 11th July 2022*

Let's begin with the major merger movements that have taken place in the United States since the 1890s.

## 10.5 Merger Waves

The United States of America has witnessed five periods of merger activity, often referred to as merger waves, each wave having been dominated by a particular type of merger. These periods were characterized by high level of cyclic activity, that is, high levels of mergers followed by periods of relatively fewer mergers. All the merger movements occurred when the economy experienced the sustained high growth rates and coincided with particular developments in business environments, because firms are motivated to make large investment outlays only when the business prospects are favorable. When such favorable business prospects are joined with changes in competitive conditions directly motivating a new business strategy, M&A activity will be stimulated.

**The First Wave – 1897-1904**

The mergers of the first wave consisted mainly of horizontal mergers, which resulted in a near monopolistic market structure. This merger period is known for its role in creating the large monopolies. The first billion-dollar mega merger deal between US Steel and Carnegie Steel took place during this period. The resulting steel giant merged 785 separate firms. At one time, US Steel accounted for as much as 75% of the steelmaking capacity of the United States.

Some of today's industrial giants originated in the first merger wave. These include General Electric, Navistar International (formerly International Harvester), Du-Pont Inc., Standard Oil, Eastman Kodak and American Tobacco Inc. Some of these companies like American Tobacco (enjoyed 90% market share) and Standard Oil (enjoyed 85% market share) were truly dominant firms by the end of the first merger wave. During this wave there were 300 major combinations covering many industrial areas and controlling 40% of the nation's manufacturing capital. More than 3,000 companies disappeared during this period as a result of mergers.

Another feature of this wave is the formation of trusts, where the investors invested funds in a firm and entrusted their stock certificates with directors who ensured that they received the dividends for their trust certificates. These trusts were formed by dominant business leaders, such as J P Morgan of the House of Morgan and John D Rockefeller of Standard Oil and National City Bank, as a response to the poor performance of many of the nation's businesses as they struggled with the weak economic climate. They used their voting powers to force multiple mergers in certain industries in an effort to reduce the level of competition allowing the surviving companies to enjoy certain economies of scale. Liberalization of corporate laws was also one of the reasons behind the resounding success of this merger wave.

This merger movement accompanied major changes in economic infrastructure and production technologies. It followed the completion of transcontinental

railroad system, the advent of electricity, and the increased use of coal. The completed rail system resulted in the development of a national economic market and thus the merger activity represented to a certain extent the transformation of regional firms into national firms.

As firms expanded they exploited economies of scale in production and distribution. In pursuit of economies of scale, an expansion process took place in many manufacturing industries in the US economy. The expansion of the scale of business also required greater managerial skills and lead to specialization in management.

Financial factors led to the end of the first merger wave. The era of easy availability of finance, one of the basic ingredients of takeovers, ended resulting in the halting of the first wave. Further, the application of anti-trust legislations, which was earlier lenient, became very stringent.

**The Second Wave – 1916-1929**

Like the first wave, the second merger movement also began with an upturn in business activity. Several industries were consolidated during the second merger wave. The result was an oligopolistic industry structure rather than monopolies. The consolidation pattern which was established in the first merger wave, continued in the second merger wave also. The combinations in this period occurred outside the previously consolidated heavy manufacturing industries. The most active were the banking and the public utilities industries. A large number of mergers occurred in industries like primary metals, petroleum products, food products, chemicals and transportation equipment.

A large portion of the mergers in the 1920s represented product extension mergers like IBM and General Foods, market extension mergers like in food retailing, departmental stores, and vertical mergers in the mining and metal industries.

The second merger period witnessed the formation of many prominent corporations that still operate today. These include General Motors, IBM, Union Carbide Corporation and John Deere.

Between 1926 and 1930 a total of 4,600 mergers took place and between 1919 and 1930 12,000 manufacturing, mining, public utility, and banking firms disappeared. The development of a nationwide rail transportation system combined with the growth of motor vehicle transportation, continued to transform local markets into national markets. The proliferation of radios in homes as a major source of entertainment enhanced the competition among firms. Marketers took advantage of this new advertising medium to start national brand advertising. This led to the beginning of the era of mass merchandising.

Mergers in this wave were facilitated by the limited enforcement of anti-trust laws and the federal government's encouragement for the formation of business

cooperatives to enhance the nation's productivity as part of the war effect. The firms were urged to work together, rather than compete with each other during wartime. The government maintained these policies even after the war ended.

The second merger wave came to an end when the stock market crashed on October 29, 1929. The crash resulted in a dramatic drop in the business and investment confidence. Business and consumer spending was curtailed, thereby worsening the depression. After the crash, the number of corporate mergers declined dramatically.

Investment bankers played a key role in the first two phases of mergers. They exercised considerable influence among the business leaders. A small number of investment bankers controlled the majority of capital available for financing mergers and acquisitions. The investment banking industry was more concentrated in those years than it is today.

**The 1940s**

The Second World War and the early post-war years were accompanied by growth of the economy and an increase in merger activity. However, the merger movement was much smaller than the earlier ones.

Economists pointed out that government regulations and tax policies are the motivating factors behind mergers. During this period, larger firms acquired smaller privately held companies for motives of tax relief. Due to the high estate taxes, transfer of businesses within families was very expensive and hence these businesses were sold to other firms. These mergers did not result in increased concentration because they involved smaller companies, which did not represent a significant portion of the total industry's assets.

As this period did not feature any major technological changes or dramatic developments in the nation's infrastructure, the merger movement was smaller compared to the earlier ones.

**The Third Wave – 1965-1969**

The merger activity reached its then historically highest level during this period. This was due to the booming economy of this period. This period is known as a conglomerate merger period, as small or medium-sized firms adopted a diversification strategy into business activities outside their traditional areas of interest. During this period, relatively smaller firms targeted larger firms for acquisition. 80% of the mergers that took place were conglomerate mergers that were more than just diversified in their product lines. For example, ITT acquired such diversified businesses like car rental firms, bakeries, consumer credit agencies, luxury hotels, airport parking firms, construction firms, etc.

The conglomerate movement was due to the tougher anti-trust enforcement. Armed with tougher laws, the federal government adopted a stronger anti-trust

stance, coming down heavily on both horizontal and vertical mergers. Firms with financial resources, which sought to expand, found that the only available alternative was to form conglomerates.

The rapid growth in management science accelerated the conglomerate movement. With the wide acceptance of management principles, graduates believed that they possessed the broad based skills necessary to manage a wide variety of organizational structures. Hence such managers believed that they could manage the corporate organization that spanned various industry categories. The belief that conglomerate mergers could be manageable became a reality.

Around 6,000 mergers took place in the US economy during this period and lead to the disappearance of around 25,000 firms. Because most of these mergers were conglomerates, they did not result in increased industrial concentration.

Investment bankers did not finance most of the mergers in this period. The booming stock market prices provided equity financing to many of the conglomerate takeovers. As the mergers financed through stock transactions were not taxable, they had an advantage over cash transactions, which were subject to taxation.

Many of the acquisitions that took place during this period were followed by poor financial performance. Many of the mergers failed as managers of the diverse enterprises often had little knowledge of the specific industries that were under their control. For example, Revlon, a firm that has an established track record of success in the cosmetic industry, saw its core cosmetic industry suffer when it diversified into unrelated areas such as health care.

**The Fourth Wave – 1981-1989**

Following the recession in 1974-1975 the US economy entered a long period of expansion during which the merger and acquisition trend went upward. Hostile mergers played a significant role in the fourth wave. Takeovers are considered healthy or hostile by the reaction of the target company's board of directors. If the board accepts the takeover it is considered friendly and if it opposes, it is deemed to be hostile.

Although the number of hostile deals is not very high, the figure is significant in terms of value of mergers and acquisitions. The size and prominence of the merger and acquisition targets distinguishes the fourth merger period from the other three waves. The fourth wave was a period of mega mergers. Some of the largest firms in the world (Fortune 500 firms) became the target of acquirers.

There was a great degree of concentration within the oil industry, as it experienced a high level of merger activity. The oil and gas industry accounted for 21.6% of the total dollar value of mergers and acquisitions between 1981 and

1985. Another industry, which experienced high level of merger activity, is the drugs and medical equipment industry. Deregulation in some of the industries was the main reason behind the disproportionate number of mergers and acquisitions. For example, deregulation of the airline industry led to numerous acquisitions and consolidations in this industry.

The fourth wave also witnessed the emergence of corporate raider. The raider's income came from the takeover attempts. The raiders earned handsome profits without taking control over the management of the target company. They attempted to takeover a target and later sell the target shares at a price higher than that which was paid originally.

The fourth wave featured several other unique and interesting characteristics, which differentiate it from the other waves. Investment bankers played an aggressive role. M&A advisory services became a lucrative source of income for investment banks. The merger specialists at investment banks and law firms developed many techniques to facilitate and prevent takeovers.

Another important feature is the increased use of debt to finance acquisitions. The yield on junk bonds was significantly higher than that of investment grade bonds. Hence the ready availability of finance helped even small firms to acquire large well-established firms. The phenomenon of leveraged buyout emerged. This merger wave also featured innovations in acquisition techniques and investment vehicles.

**Fifth Wave – 1992**

The current merger activity can be described as the fifth wave. There was once again increased activity of mergers in 1992. Mega mergers, as in the fourth wave began to take place in the fifth wave also. The number of hostile deals was less than strategic mergers.

With the recovery of the economy in 1992, companies sought to expand and mergers were seen as a quick and efficient way to do so. Unlike the deals of 1980's the transactions, of the '90s emphasized on strategy more than quick financial gains. Most of the deals were financed through the increased use of equity.

Deregulation and technological changes led to high level of merger activity in the fifth wave. Banking, telecommunications, entertainment, and media industries were some of the leading consolidating industries. There was a dramatic growth in the banking sector in the 1990s as the banks grew larger than the central banks. Banks looked to take advantage of the economies of scale in this industry by expanding into new markets and found mergers and acquisitions to be the fastest way to do so.

There was a movement towards the oligopolistic market structure due to the volume of consolidating mega mergers that occurred in many industries. As companies acquired or merged with other companies, the number of competitors declined. The resulting companies were large and only a few competitors commanded a relatively high market share.

The phenomenon of globalization led to the breaking up of geographical barriers for entry into another country. The growth in the merger activity was no longer confined to the US companies. US firms aggressively purchased foreign firms. Later, by 1995 foreign firms made major purchases of the US firms. The fifth wave spread to Europe in the late 1990s.

**Activity 10.1**

a. Write a short note on joint venture.

……

……

b. Discuss leveraged buyout.

……

……

## Check Your Progress

1. Which of the following theories explain why mergers may happen even if the current market value of the target firm reflects its true economic value?

   (a) Free Cash Flow Hypothesis
   (b) Managerialism
   (c) Hubris Hypothesis
   (d) Market Power
   (e) Agency Problem

2. A divestment decision due to change in corporate goals comes under which category?

   (a) Economic
   (b) Psychology
   (c) Operational
   (d) Strategic
   (e) Governmental.

3. Which of the following statements is true with respect to different merger waves?

   (a) The formation of trusts is the feature of second wave
   (b) First merger wave witnessed the formation of many prominent corporations such as General Motors, IBM etc.,
   (c) During the third wave, small or medium sized firms adopted a diversification strategy into business activities outside their traditional areas of interest

(d) In fourth wave, the number of hostile deals was less than strategic mergers
(e) In fifth wave, hostile mergers played a significant role.

4. Which of the following statements is/are not true?

I. A split off is a transaction in which a company distributes on a pro rata basis all of the shares it owns in a subsidiary to its own shareholders.

II. In a spin off, a new company is created to take over the operations of an existing division or unit.

III. The logic of split-off is that the equity base of the parent company is reduced reflecting the downsizing of the firm.

(a) Only (I) above
(b) Only (III) above
(c) Both (I) and (II) above
(d) Both (I) and (III) above
(e) Both (II) and (III) above.

5. In which of the following merger waves, the rapid growth in management science accelerated the conglomerate movement?

(a) First Wave
(b) Second Wave
(c) Third Wave
(d) Fourth Wave
(e) Fifth Wave.

## 10.6 Summary

- Business firms in pursuit of their growth objectives, engage themselves in a wide range of activities like expansion, shrinkage, restructuring of assets and ownership structures.
- Expansion can be carried out by way of Mergers and Acquisitions, Tender Offers and Joint Ventures. The merger activity has expanded and includes various additional activities of corporate restructuring and control. The usage of tender offers and joint ventures has also increased along with merger activities.
- The recent years have also seen the usage of divestitures in the merger activities. Other major changes taking place in the ownership structure in the recent years include: usage of exchange offers and share repurchases altering the ownership share in the firm; greater use of leverage and increased use of lower-rated bonds for expansion; public corporations moving back to private ownership representing management buyouts and leveraged buyouts, etc. Companies which are troubled by control issues are taking anti-takeover measures in an attempt to discourage takeovers.

- Restructuring of businesses to bring-in better focus has become necessary. The Indian enterprise is currently restructuring itself broadly on these lines. There are open offers, buy-backs, sale of plants or brands, change in equity, mergers, reverse mergers, etc. But for the fluid state of competition laws etc., there could have been much more action.

## 10.7 Glossary

**Acquisition:** Buying of a firm by another firm.

**Buy-Back:** Nothing but a share re-purchase where a public corporation buys back its own shares by a tender offer in the open market or in a negotiated buy back from a large block holder.

**Conglomerate Merger:** A merger between firms operating in unrelated industries. Any combination which is not horizontal or vertical.

**Demergers or Corporate Split:** This takes place when part of a company's undertaking is transferred to a newly formed or an existing company. Some or a specified part of the shares of the first company are also transferred to the new company. The reminder of the first company's undertaking continues to be vested in it and the shareholders of the main company gets reduced to that extent.

**Diversification:** Holding assets whose returns are not perfectly correlated with each other.

**Employee Stock Ownership Plan (ESOP):** Defined contribution pension plan (stock bonus and/or money purchase) designed to invest primarily in the stock of the employer.

**Equity Carve Out:** It is a type of divestiture and is different to spin off. It resembles the IPO of some portion of equity stock of a wholly owned subsidiary by the parent company. Some of the subsidiary's shares are offered for sale to general public for increasing cash inflow without losing control. This is also called split off IPO.

**Exchange Offer:** A transaction which provides one class (or more) of securities with the right or option to exchange part or all of their holdings for a different class of the firm's capital structure with no change in investment.

**Merger:** Merger is the fusion of two or more companies (OR) Merger is a combination of two or more companies into a single company where, it survives and others lose the corporate identity. The survivor acquires the assets and liabilities of the rest.

**Mezzanine Financing:** Subordinated debt issued in connection with leveraged buy-outs.

## 10.8 Suggested Readings / Reference Material


1. Richard Brealey and Stewart Myers and Franklin Allen and Alex Edmans (2023). Principles of Corporate Finance. 14th Edition, McGraw Hill India
2. Hubbard & Obrien (2022). Money, Banking and Financial System. 4th edition, Pearson Education
3. Sheeba Kapil (2021). Financial Valuation and Modelling. Wiley
4. Prasanna Chandra (2020). Strategic Financial Management: Managing for value creation. 2nd edition, McGraw Hill
5. Rick Mann & David Tarrant (2020). Strategic Finance for Strategic Leaders: The First Five Tools. Clarion strategy publishing
6. Kalyani Karna (2019). Strategic Financial Management. 1st edition. Corporate Plus Publications Private Limited
7. Edward I Altman (2019). Corporate Financial Distress, Restructuring and Bankruptcy. 4th edition, Wiley
8. Stephen A. Ross, Randolph Westerfield (Author), & Jordon (2018). Fundamentals of Corporate Finance. 12th edition, McGraw Hill College


## 10.9 Answers to Check Your Progress Questions

**1. (c) Hubris Hypothesis**

Hubris Hypothesis explains why mergers may happen even if the current market value of the target firm reflects its true economic value.

**2. (d) Strategic**

A divestment decision due to change in corporate goals comes under Strategic category.

**3. (e) In fifth wave, hostile mergers played a significant role.**

Option e is true with respect to different merger waves i.e. in fifth wave, hostile mergers played a significant role.

**4. (a) Only (I) above**

This statement is incorrect as in a split off, a company is created.

**5. (c) Third Wave**

The rapid growth in management science accelerated the conglomerate movement in the third wave.

# Unit 11

# Mergers and Acquisitions: Different Forms

**Structure**



*"We get talent and scale from mergers."*

- Angela Braly

## 11.1 Introduction

Companies undertake mergers for various reasons. One such reason is to get the best talent from the merged entity and the other is the increased scale of operations. The business world has changed drastically. The economic environment has shifted dramatically and in order to prosper or even to survive in such an environment, the strategy formulation has become very important. The pursuit of growth and the need to access new markets are driving companies all over the world to undertake mergers and acquisitions. This phenomenon is becoming part of the strategic planning of many corporate bodies seeking not only to exploit existing core competencies but also to build new ones for the future. While the motives or influences leading to mergers are multiple, varied and complex, the potential for concentration of economic power is inherent in the phenomenon of mergers.

When two businesses combine their activities, the combination may take the form of acquisition (takeover) or a merger (amalgamation). The distinction between a merger and an acquisition is not very clear. The methods used for mergers are often the same as the methods used to make takeovers. However, theoretically there can be a subtle difference between the two, as can be interpreted from the following definitions:

**Acquisition or Takeover:** The purchase of a controlling interest by a company in the voting share capital of another company, usually by buying the majority of the voting shares is called an acquisition or a takeover.

**Merger:** A business combination that results in the creation of a new reporting entity formed from the combining parties, in which the shareholders of the combining entities come together in a partnership for the mutual sharing of the risks and the benefits of the combined entity, and in which no party to the combination obtains control over the other.

The main reason for any business organization to combine is to increase the shareholder wealth. This increase usually comes from the effects of synergy. In this chapter we shall discuss in detail the various types of mergers and the process undergone by firms to accomplish a merger or an acquisition.

## 11.2 Objectives

After going through the unit, you should be able to:

- Identify Types of Mergers
- Explain Merger and Acquisition Process and the participants in the Merger and Acquisition Process
- Discuss Post-closing Integration and due Diligence
- Describe the Merger Integration Work Streams Model
- Identify the Reasons for Failure of Mergers and Acquisitions

## 11.3 Types of Mergers

Merger or acquisition depends upon the purpose for which the target company is acquired. A company will seek to acquire the other company only when it has arrived at its own developmental plan to expand its operations after a thorough analysis of its own internal strength. It has to aim at a suitable combination where it could have opportunities to supplement its funds; secure additional financial facilities, eliminate competition and strengthen its market position. Based on the reason why firms combine, mergers can be divided into three categories: (i) Horizontal mergers, (ii) Vertical mergers, and (iii) Conglomerate mergers.

**Horizontal Merger**

A horizontal merger involves a merger between two firms operating and competing in the same kind of business activity. The main purpose of such mergers is to obtain economies of scale of production. The economies of scale is obtained by the elimination of duplication of facilities and operations and broadening the product line, reduction in investment in working capital, elimination of competition in a product, reduction in advertising costs, increase in market share, exercise of better control on market, etc.

Horizontal mergers result in decrease in the number of firms in an industry and hence such type of mergers make it easier for the industry members to join together for monopoly profits. Horizontal mergers also have a potential to create monopoly power on the part of the combined firm enabling it to engage in anti-competitive practices. Hence, in many countries, restrictive business practices legislation, enforce strict regulations on the integration of competitors. Horizontal mergers of even small enterprises may create conditions triggering concentration of economic power and oligopoly.

**Example: RIL Acquires Future Group of Stores**

Reliance retail, a group company of Reliance Industries Ltd., acquired Future group of stores which had over 1700 stores which included Big Bazaar, fbb, and Central all over the country and will be re-branded as Reliance stores. To begin with, 200 stores of Future Group were rebranded as Reliance stores. This is an example of merger or business consolidation that occurs between firms that operate in the same industry.

*Source: https://www.business-standard.com/article/companies/reliance-takes-over-operations-of-200-future-group-s-stores-122022601091_1.html dated 26th February, 2022. Accessed on 30th May, 2022*

## Vertical Mergers

A vertical merger involves merger between firms that are in different stages of production or value chain. They are combination of companies that usually have buyer-seller relationships. A company involved in a vertical merger usually seeks to merge with another company or would like to take over another company mainly to expand its operations by backward or forward integration. The acquiring company through merger of another unit attempts to reduce inventories of raw material and finished goods, implements its production plans as per objectives and economizes on working capital investments. In other words, in vertical combination, the merging company would be either a supplier or a buyer using its product as an intermediary material for final production.

Firms integrate vertically between various stages due to reasons like technological economies, elimination of transaction costs, improved planning for inventory and production, reconciliation of divergent interests of parties to a transaction, etc. Anti-competitive effects have also been observed as both the motivation and the result of these mergers.

**Example: Baxter Acquires Hillrom**

Medical-products company Baxter International acquired Hillrom, an IT company which developed technologies for connected care and clinical collaboration for $15 billion. The goal of Baxter to acquire Hillrom was, to support Baxter's offerings beyond hospital settings, and provide a broader

*Contd. .....*

array of services to clinicians and patients, which implied that Hillrom will help to promote Baxter products, a classic case of merger of two or more companies that provide different supply chain functions for a common good or service.

*Sources: (i) https://www.healthcareitnews.com/news/most-significant-mergers-and-acquisitions-2021 dated 31st December, 2021. Accessed on 30th May, 2022*

*(ii) https://www.baxter.com/baxter-newsroom/baxter-completes-acquisition-hillrom-creating-15-billion-global-medtech-leader, 2022. Accessed on 30th May, 2022*

**Conglomerate Mergers**

Conglomerate mergers involve merger between firms engaged in unrelated types of business activity. The basic purpose of such combination is utilization of financial resources. Such type of merger enhances the overall stability of the acquirer company and creates balance in the company's total portfolio of diverse products and production processes and thereby reduces the risk of instability in the firm's cash flows.

Conglomerate mergers can be distinguished into three types: (i) product extension mergers, (ii) geographic market extension mergers and (iii) pure conglomerate mergers.

i. **Product extension mergers** are mergers between firms in related business activities and may also be called concentric mergers. These mergers broaden the product lines of the firms.

ii. **Geographic market extension mergers** involve a merger between two firms operating in two different geographic areas.

iii. **Pure conglomerate mergers** involve merger between two firms with unrelated business activities. They do not come under product extension or market extension mergers.

Within the broader category of conglomerate mergers two types of conglomerate firms can be distinguished:

a. **Financial Conglomerates:** Financial conglomerates provide a flow of funds to each segment of their operations, exercise control and are the final financial risk takers. They undertake strategic planning but do not participate in operating decisions.

b. **Managerial Conglomerates:** Managerial conglomerates transmit the attributes of financial conglomerates still further. They not only assume financial responsibility and control, but also play a role in operating decisions and provide staff expertise and staff services to the operating entities. By providing managerial guidance and interactions on decisions, managerial conglomerates increase the potential for improving performance.

**Example: Tata Buys Majority Stake in India's Online Grocer Big Basket**

Tata Digital, a wholly-owned subsidiary of Tata Sons, acquired a majority stake to the extent of 54.3% in Indian online grocery seller Big Basket at $1.31 bn (₹ 95 bn). Big Basket, the largest online grocery supplier, had presence in more than 25 cities with largest assortments of over 50,000 SKUs, a farm-to-fork supply chain with more than 12,000 farmers and a top line of over $1 bn in annual revenues in 2021-22, a typical case of merger between firms engaged in unrelated types of business activity.

*Source: https://www.retail-insight-network.com/news/tata-bigbasket-india-stake/ dated 31st May, 2021. Accessed on 30th May, 2022.*

## 11.4 The Merger and Acquisition Process

The acquisition process can be divided into a planning stage and an implementation stage. The planning stage consists of the development of the business and the acquisition plans. The implementation stage consists of the search, screening, contacting the target, negotiation, integration and the evaluation activities. In short, the process of acquisition can be summarized in the following steps:

i. Develop a strategic plan for the business (Business plan).

ii. Develop an acquisition plan related to the strategic plan (Acquisition plan).

iii. Search companies for acquisitions (Search).

iv. Screen and prioritize potential companies (Screen).

v. Initiate contact with the target (First contact).

vi. Refine valuation, structure the deal, perform due diligence, and develop financing plan (Negotiation).

vii. Develop plan for integrating the acquired business (Integration plan).

viii. Obtain all the necessary approvals, resolve post-closing issues and implement closing (Closing).

ix. Implement post-closing integration (Integration).

x. Conduct the post-closing evaluation of acquisition (Evaluation).

**Example: Consolidation of HDFC Group**

Planning and implementation were two important stages in merger between two companies as we will analyse the merger of two financial institutions namely HDFC Ltd and HDFC Bank with an objective to increase the size of the balance sheet, increase the net worth of the company and accelerate the pace of credit growth in the Indian economy. The board of HDFC Bank on 4th April, 2022 approved the merger of HDFC into HDFC Bank. As part of the

*Contd. ....*

merger between HDFC and HDFC Bank and for every 42 shares of HDFC Bank, the shareholder will be given 25 shares of HDFC. HDFC and HDFC Bank have written to RBI to transfer the stake of the subsidiaries from the housing finance company to the bank. It is win-win situation for shareholders of both the organisations, including the shareholders, employees and customers.

The time frame for execution of the merger will be as follows:

1. 4 months for regulatory filings and approvals from SEBI, RBI, IRDAI and CCI.
2. 12 to 14 months for NCLT filings and approval, creditors approval and other approvals.
3. 1 month for ROC filing and approval.

The entire process of merger was expected to be completed by Q-3 of 2024.

We can observe that the above case pertains to consolidation of multiple business entities and assets through a series of financial transactions.

*Sources: (i) https://www.icicidirect.com/knowledge-center/article/merger-of-hdfc-limited-and-hdfc-bank-limited dated 4th April, 2022. Accessed on 30th May, 2022*
*(ii) https://www.icicidirect.com/research/equity/blog/hdfc-bank-merger-process-with-hdfc-ltd-on-track-outlook-positive dated 2nd April 2022. Accessed on 30th May, 2022*

### 11.4.1 Developing the Business Plan

As discussed earlier, a merger or an acquisition decision is a strategic choice. The acquisition strategy should fit the company's strategic goals of increasing the net cash flows and reduce risk.

A business plan communicates a mission or vision for the firm and a strategy for achieving that mission. A well-structured business plan consists of the following activities:

i. Determining where to compete, i.e., the industry or the market in which the firm desires to compete.

ii. Determining how to compete. An external industry or the market analysis can be made to determine how the firm can most effectively compete in its chosen market(s).

iii. Self-assessment of the firm by conducting an internal analysis of the firm's strengths and weaknesses relative to the competition.

iv. Defining the mission statement by summarizing where and how the firm has chosen to compete and the basic operating beliefs of the management.

v. Setting objectives by developing quantitative measures of performance.

vi. Selecting the strategy most likely to achieve the objectives within a reasonable time period subject to constraints identified in the self-assessment.

The strategic planning process identifies the company's competitive position and sets objectives to exploit its relative strengths while minimizing the effects of its weaknesses. The firm's Mergers and Acquisitions strategy should complement this process, targeting only those industries and companies that improve the acquirer's strengths or lessen the weaknesses.

### 11.4.2 Building the Acquisition Plan

After a proper analysis of the various available options if it is determined that a merger or an acquisition process is appropriate to implement the business strategy then an acquisition plan is prepared. This plan focuses on the tactical rather than the strategic issues. The acquisition plan defines the key management objectives for the takeover, resource constraints, appropriate tactics for implementing the proposed transactions and the schedule or a time table for completing the acquisition. It furnishes a proper guidance to those responsible for successfully completing the transaction by providing valuable inputs to all the later phases of the acquisition process.

**Management objectives**

Management objectives are both financial and non-financial. The financial objectives include a minimum rate of return or operating profit, revenue and cash flow targets to be achieved within a specified time period. Non-financial objectives address the motivations for making the acquisition that support the achievement of the financial returns pre-determined in the business plan.

**Resource assessment**

The assessment of the resources involves the determination of the maximum amount of resources available to assign to the merger or acquisition. This information is useful in the selection of the right candidate for the merger or the acquisition. The resources available generally include the financial resources like the internal cash flows in excess of the normal operating requirements plus funds from equity and the debt markets. If the target is identified, resources should also include funds which the combined firm can raise by issuing equity or by increasing leverage. It is the management's perception about the likely risks that it would be exposed to by virtue of acquisition that determines the financial implications. These risks may be:

i. **Operating Risk:** It refers to the ability of the acquirer to manage the acquired company. The risk is higher in conglomerate mergers. The limited understanding of the business operations of the newly acquired firm may negatively impact the integration effort and the ongoing management of the combined companies.

ii. **Financial Risk:** It refers to the acquirer's willingness and the ability to leverage a transaction as well as the willingness of shareholders to accept near-term earnings per share dilution. The acquiring company tries to

maintain certain level of financial ratios such as the debt to equity and interest coverage ratio to retain a specific credit rating. The incremental debt capacity of the firm can be estimated by comparing the relevant financial ratios to those of comparable firms in the industry. The difference represents the amount of money that the firm can borrow without making the current credit rating vulnerable.

iii. **Overpayment Risk:** It refers to the possibility of dilution in the earnings per share or reduction in the growth of the firm because of paying more than the economic value of the acquired firm.

**Time table**

A time table or a schedule that recognizes all the key events that should take place in the acquisition process is the final component of a properly structured acquisition plan. It should be both realistic and aggressive to motivate all the participants in the process to work as fast as possible to achieve the management objectives established in the acquisition plan. The schedule should also include the names of the individuals who will be responsible for ensuring that the set objectives are achieved.

### 11.4.3 The Search Process

After the firm has developed a viable business plan that requires an acquisition to realize the firm's strategic direction and an acquisition plan the search for the right candidate for acquisition begins. The search for a potential acquisition candidate generally takes place in two stages:

i. The first stage of the search process involves establishing a primary screening process. The primary criteria based on which the search process is based include factors like the industry, size of the transaction and the geographic location. The size of the transaction is best defined in terms of the maximum purchase price a firm is willing to pay. It can be expressed as the maximum purchase price to earnings, book, cash flow or revenue ratio or a maximum purchase price stated in terms of rupees.

ii. The second stage involves developing the search strategy. Such strategies generally involve using computerized database and directory services to identify the prospective candidates. Law, banking and accounting firms also form valuable sources from which information can be obtained. Investment banks, brokers and leveraged buyout firms are also useful sources although they are likely to require an advisory fee.

### 11.4.4 The Screening Process

The screening process starts with the reduction of the initial list of potential candidates identified by using the primary criteria such as the size and the type of the industry. In addition to the primary criteria employed, secondary selection criteria include a specific market segment within the industry or a specific product

line within the market segment. Other measures like the firm's profitability, degree of leverage and the market share are also used in the screening process.

### 11.4.5 First Contact

The contact phase of the process involves meeting the acquisition candidate and putting forward the proposal of acquisition. It could run through several distinctively identifiable phases that need a little more elaboration.

**Alternative approach strategies**

The approach employed for contacting the target depends on the size of the company and whether it is publicly or privately held. For small companies in which the buyer has no direct contacts, a letter expressing interest in a joint venture or marketing alliance is enough. Thorough preparation before the first contact is essential for that alone enables the acquirer to identify the company's strengths and weaknesses and be able to explain the benefit of the proposal to the client convincingly. A face to face meeting is then arranged when the target is willing to entertain the idea of an acquisition. Contact is made through an intermediary for a medium sized company. The intermediaries might include members of the acquirer's board of directors, accounting firm, lender or an investment banker. For a large sized company, contact is made through an intermediary but, it is important that the contact is made with the highest level of the management of the target firm.

### 11.4.6 Discussing Value

Valuation of the target company is the most critical part of a deal. A conservative valuation can result in collapse of the deal while an aggressive valuation may create perpetual problems for the acquiring company. The commonly used valuation methods are:

i. **Discounted Cash Flow Method:** In this method, valuation represents the present value of the expected stream of future cash flow discounted for time and risk. This is the most valid methodology from the theoretical standpoint. However, it is very subjective due to the need to make several assumptions during the computations.

ii. **Comparable Companies Method:** This method is based on the premise that companies in the same industry provide benchmark for valuation. In this method, the target company is valued vis-á-vis its competitors on several parameters.

iii. **Book Value Method:** This method attempts to discover the worth of the target company based on its Net Asset Value.

iv. **Market Value Method:** This method is used to value listed companies. The stock market quotations provide the basis to estimate the market capitalization of the company.

Acquirers rarely rely on a single method for valuation. Normally, the target companies are valued by various methods. Different weights are assigned to the values computed by various methods. The weighted average valuation helps in eliminating the errors that may creep in, if a single method is relied upon. Neither the buyer nor the seller will be in a position to establish the exact value for the business unless a detailed evaluation is done. The best solution is to determine a range.

**Preliminary legal documents**

The common first step in a merger or an acquisition transaction is to negotiate a bilateral (i) confidentiality agreement and (ii) a letter of intent.

i. **Confidentiality Agreement:** In the confidentiality agreement, the buyer requests the seller to make available the historical data and the collateral information. The seller also requests the acquirer to furnish similar information to assess the financial credibility of the seller. It is important for the seller to do this to identify whether the buyer is capable of raising the finance to complete the transaction. The confidentiality agreement is mutually binding on both the parties and it covers only that information which is not available publicly. It should also have a reasonable expiry date.

ii. **Letter of Intent:** The letter of intent represents the parties' preliminary agreement to agree. It carries the principle areas of agreement between the two parties. It formally specifies various issues like, the reason for the agreement between the parties, the major terms and conditions, the responsibilities of both the parties while the agreement is in force, the mode of payment of fees, the expiration date etc. The letter of intent also includes conditions like an agreement that selected personnel of the target company will not compete with the merged firm for some period of time if they would have to leave. The agreement may also indicate the amount of the purchase price to be kept in the escrow if the buyer wishes.

**Negotiation**

The negotiation phase of the acquisition process consists of many activities conducted simultaneously by various members of the acquisition team. The actual purchase consideration is determined during this phase. This is different from the preliminary valuation of the target company made when the first contact is made.

**Defining the purchase price**

The purchase consideration can be defined in three ways: (i) the total consideration, (ii) the total purchase price or the enterprise value, and (iii) the net purchase price. Each definition differs from the other with respect to the purpose which it serves.

**Total consideration**

The total consideration consists of cash or stock or new debt issues or combination of any of them. Total consideration is the term commonly used in the legal documents to describe the different types of payment to be made to the shareholders of the target company. The payment may also include non-financial assets (such as the real estate) which are also referred as payment in kind. Each component of the total consideration should be viewed in present value terms. The stock component of the total consideration is the current value of the future dividends or net cash flows, or the acquiring company's stock price per share times the number of shares to be exchanged for each outstanding share of the seller's stock. (The estimation of this exchange ratio is shown below). The new debt issue component is the present value of the cumulative interest payments plus principal, discounted at some appropriate market rate of interest. It can be represented as:

$$PV_{TC} = C + PV_S + PV_{ND}$$

Where,

$PV_{TC}$ = Present value of total consideration,

C = Cash consideration,

$PV_S$ = Present value of stock issued, and

$PV_{ND}$ = Present value of new debt issued.

**Calculation of Exchange Ratio from the perspective of the acquired and the acquiring firm**

Whenever a firm 'A' acquires another firm 'B', the compensation to the shareholders of the acquired firm is usually paid in the form of shares of the acquiring firm. In other words, shares of firm A will be given in exchange for shares of firm B. Thus, the exchange ratio is a very important factor in any kind of merger. Firm A will want to keep this ratio as low as possible, while firm B will want it to be as high as possible. In any case, both firms would ensure that post-merger, their equivalent price per share will at least equal their pre-merger price per share. Given below is the model developed by Conn and Nielson for determining the exchange ratio. The symbols used in this model are:

| | | |
|---|---|---|
| ER | = | Exchange ratio |
| P | = | Price per share |
| EPS | = | Earnings per share |
| PE | = | Price earning multiple |
| E | = | Earnings |
| S | = | Number of outstanding equity shares |
| AER | = | Actual exchange ratio |

In addition, the acquiring, acquired and combined firms will be referred to by subscripts A, B and AB respectively.

Firm A would ensure that the wealth of its shareholders is preserved. This implies that the price per share of the combined firm is at least equal to the price per share of firm A before merger:

$$P_{AB} \geq P_A$$

For the sake of simplicity consider that,

$$P_{AB} = P_A$$

Price earnings ratio of the combined firm x Earnings per share of the combined firm gives the Market Price per share.

$$P_{AB} = PE_{AB} \times EPS_{AB} = P_A \quad \ldots (1)$$

Earnings per share of the combined firm can be expressed as:

$$EPS_{AB} = (E_A + E_B)/[S_A + S_B (ER_A)] \quad \ldots (2)$$

$ER_A$ = number of shares of firm A given in lieu of one share of firm B.

Substituting formula of $EPS_{AB}$ in equation (1) we get –

$$P_A = PE_{AB} (E_A + E_B)/[S_A + S_B (ER)]$$

From the above equation, we may solve for the value of $ER_A$ as follows:

$$ER_A = -(S_A/S_B) + [(E_A + E_B) PE_{AB}]/P_A S_B$$

After discussing the maximum exchange ratio acceptable to the shareholders of firm A above, we will now calculate the minimum exchange ratio acceptable to the firm B($ER_B$). The basic condition is –

$$P_{AB} (ER_B) \geq P_B \quad \ldots(3)$$

Using the equality form of above equation and substituting $P_{AB}$ from equation 1 in equation 3 we get –

$$PE_{AB} \times EPS_{AB} \times ER_B = P_B$$

Substituting the value of $EPS_{AB}$ from equation 2 in the above equation, and solving the equation for $ER_B$ we get –

$$ER_B = P_B S_A/[(PE_{AB}) (E_A + E_B) - P_B S_B]$$

**Illustration 1**

The particulars of Alpha and Beta is as follows:

| **Particulars** | **Alpha** | **Beta** |
|---|---|---|
| Profit (₹ In cr.) | 100 | 75 |
| No. of Shares (crore) | 20 | 25 |

*Contd. ....*

| | | |
|---|---|---|
| EPS (₹) | 5 | 3 |
| P/E Multiple | 30 | 10 |
| Market Price (₹) | 150 | 30 |

Alpha proposes to acquire Beta and gives its shares in exchange of the shares of Beta.

**Solution**

$$ER = \frac{-S_1}{S_2} + \frac{(E_1 + E_2)PE_{12}}{P_1 S_2}$$

$$ER = \frac{-20\,cr}{25\,cr} + \frac{(100\,cr + 75\,cr)\,PE_{12}}{150\,(25\,cr)} = -0.8 + 7/150\ P/E$$

Thus, the maximum exchange ratio at different levels of PE are:

| P/E | 20 | 25 | 30 | 35 | 40 | 50 |
|---|---|---|---|---|---|---|
| ER | 0.13 | 0.36 | 0.6 | 0.83 | 1.06 | 1.53 |

**Total Purchase Price or Enterprise Value**

The total purchase price or the enterprise value of the target firm consists of the total consideration plus the market value of the target firm's debt assumed by the acquiring company. The value often quoted in the financial press and other media as the purchase price is the enterprise value because it is most visible to those not familiar with the details of the transaction. It is the approximate figure of the total investment made by the acquiring firm to purchase the target firm. It does not measure the liabilities the acquirer assumes nor does it measure the potential to recover a portion of the total consideration paid to the target company's shareholders by selling the undervalued or redundant assets. This can be represented as:

$$PV_{TPP} = PV_{TC} + PV_{AD}$$

Where,

$PV_{TPP}$ = Present value of total purchase consideration,

$PV_{AD}$ = Present value of assumed debt, and

$PV_{TC}$ = Present value of total consideration.

**The Net Purchase Price**

The net purchase price is the total purchase price plus other assumed liabilities less the proceeds from the sale of redundant target assets on or off the balance sheet. The net purchase price is the most comprehensive measure of the actual price paid for the target firm. It includes all known cash obligations assumed by the acquirer as well as any portion of the purchase price that is recovered through the sale of assets. It may be larger or smaller than the total purchase price.

$$PV_{NPP} = PV_{TPP} + PV_{OAL} - PV_{DA}$$

Where,

$PV_{TPP}$ = Present value of total purchase consideration,

$PV_{OAL}$ = Present value of other assumed liabilities, and

$PV_{RA}$ = Present value of sale of discretionary or redundant assets.

The negotiation phase also involves other activities which happen simultaneously. They are refining valuation, deal structuring, due diligence and developing the financing plan.

**Refining valuation**

Improving the preliminary valuation based on new information revealed during due diligence provides the starting point for negotiating the agreement of purchase and sale. The buyer should review the historical data of the past five years. The 5 years of the historical data should be normalized or adjusted for non-recurring gains, losses, or expenses. Non-recurring gains or losses result from either the sale of land, equipment, patents, software or copyrights. Non-recurring expenses include settlement of litigation, employee bonuses, etc. These adjustments are made to allow the buyer to normalize the irregularities in the historical information and to better understand the underlying dynamics of the business.

The normalized historical data will help the buyer project a minimum of 5 years of cash flows and adjust the projected cash flows for the amount and timing of anticipated synergy. The assumptions on which the buyer makes the projections also have to be clearly mentioned.

**Structuring the deal**

Deal structuring involves meeting the needs of both the parties by dealing with issues of risk and reward by constructing an appropriate set of compensation, legal, tax and accounting structures. It is the process of identifying and satisfying most of the priority objectives of the parties involved in the transaction subject to their tolerance for risk.

The decisions made throughout the deal structuring process influence various attributes of the deal. These attributes include how the ownership is determined, how assets are transferred, how the interests of the ownership are protected, and how the risk is shared among the parties to the transaction. Other aspects like the type, number, and complexity of the documents required for closing, the type of approval required and the time needed to complete the transaction are also dictated by this document. The process starts with the determination by each party of their initial negotiating positions, potential risks, alternatives for managing risk, and levels of tolerance for risk, and the conditions under which either of the parties would withdraw from the deal.

## Due Diligence

The basic function of due diligence is to assess the benefits and the costs of a proposed acquisition by inquiring into all relevant aspects of the past, present and the predictable future of a business to be purchased. Due diligence is of vital importance to prevent "unpleasant surprises" after completing the acquisition. The due diligence should be thorough and extensive. Both the parties to the transaction should conduct their own due diligence to get the accurate assessment of potential risks and rewards. There is no precise definition of the term, 'due diligence'. Generally, it is a process of enquiry and investigation about proposed merger deal. It is a judgment process of the deal. The due diligence consists of five strands, viz.,

- The verification of assets and liabilities.
- The identification and quantification of risks.
- The protection needed against such risks which will in turn feed into the negotiations.
- The identification of synergy benefits.
- Post-acquisition planning.

In a merger both the parties will conduct due diligence. In an M&A deal, due diligence can be conducted from different perspectives. Following table shows various due diligence topics and their focus on enquiry.

**Table 11.1: Due Diligence Topics and their Focus on Enquiry**

| Due Diligence Topics | Focus of Enquiries | Expected Results |
|---|---|---|
| Financial | Historical records, review of management and systems. | Confirms underlying profits. Provides basis for valuation. |
| Legal | Various contractual Acts in the country. | Warranties and indemnities, validation of all existing contracts, sale and purchase agreement. |
| Commercial | Market conditions, competitive position and target's commercial prospects. | Sustainability of future profits, planning, decision on strategy to be adopted for the combined business. |
| Tax | Existing tax levels, liabilities and arrangements. | Avoid any unforeseen tax liabilities, opportunities to optimize position of combined business. |
| Management | Management quality, organizational structure. | Identification of key integration issues, outline of new structure for the combined business. |

*Source: ICFAI Research Center*

**Buyer due diligence**

The main objective of undertaking due diligence by the buyer is to identify and to confirm the source of value and lessen the potential liability by trying to eliminate the flaws that reduce value.

The due diligence exercise is carried out by a team of executives from the acquirer, their Investment Bankers, Solicitors and Chartered Accountants. The team should have members with experience of all dimensions of the business like finance, marketing, human resources, operations, legal, etc. The members should have in depth knowledge of the industry and the operations to be reviewed. The exercise should cover all material factors which are likely to affect the future of the business.

Due diligence exercise covers careful study of information in public domain like financial statements, corporate records like minutes of meetings, past prospectuses, share price movements, etc. All contracts entered into by the firm with lenders, suppliers, customers, franchisee, lease agreements, asset purchases agreements, etc., need to be carefully studied. Special attention should be given to litigations, contingent liabilities, environmental disputes, liens and encumbrances, product warranties, inter-company transactions, tax disputes, etc.

Due diligence should always be conducted in the shortest possible period in the interest of maintaining a cooperative relationship at the time of negotiations. A long and detailed due diligence, is likely to uncover all the items that the buyer will use as an excuse to lower the purchase price. Hence, there is a possibility that the seller may seek to stop the process before the appropriate time. The best possible solution is to agree to a shortened period.

**Seller's due diligence**

Though the major part of the due diligence procedure is carried out by the buyer, the seller also has to perform certain aspects of due diligence on the buyer. In such a process the seller may determine whether the buyer has the financial resources to finance the agreed purchase price.

**Developing the Financing Plan**

One of the very important activities in the negotiation phase is to develop a financing plan. This activity is a key input in determining the purchasing price, as it helps in identifying a practical limit of the amount of the purchase price the buyer can offer the seller. According to the capital budgeting theory, an investment should be funded as long as its net present value is greater than or equal to zero. Applying the concept of capital budgeting to acquisition financing, we can determine the purchase price as the present value of the target company, plus the synergy created by combining the acquiring and target companies discounted at the acquirer's cost of capital.

Based on the purchase price determined, a financing plan is attached to the acquirer's business and the acquisition plan and is used to obtain the financing for the transaction. A financing plan is usually used as a marketing or sales document to negotiate the best possible terms for financing the proposed transaction.

**Obtaining Bridge or Interim Financing**

If the payment is made only through cash, then the buyer can obtain the financing from traditional sources like banks, investment bankers, insurance companies, underwriters, venture capitalists, leveraged buyout funds, etc. Banks usually provide temporary or bridge financing primarily to pay all or a portion of purchase price and meet possible working capital requirements until permanent financing is found. The lending by banks is usually asset based, for which assets such as accounts receivable, land, fixed equipment or inventory is kept as the collateral.

**Mezzanine Financing**

Mezzanine financing refers to the sub-ordinated debt financing which typically includes the characteristics of both debt and equity. There are significantly fewer sources of sub-ordinated debt than there are of senior debt or equity, so it is often considered to be specialty financing.

Sub-ordinated debt is substantially riskier than senior debt since the lender generally has a lesser right over the collateral and cash flow than the senior lender. As a result, subordinated debt is rather an expensive financing. Hence, such lenders usually ask for equity in the form of warrants, to supplement what they would have earned as interest income to get capital gains at a later date for the higher risk which they have accepted.

**Permanent Financing**

Permanent financing usually consists of long-term unsecured debt, popularly called junk bonds. Such financing can be obtained through the services of investment bankers or underwriters who by virtue of their market reputation can raise funds via a private placement with ease. Such debt is sub-ordinate to the bank debt if the firm goes bankrupt.

**Venture Capital Firms**

Venture capitalists are also a significant source of funds for financing both start-ups and acquisitions. The venture capital firms identify and screen opportunities, transact and close deals, monitor and add value, and raise additional capital. Venture capitalists have a high appetite for risks, which is evident from the fact that they lend even when the traditional sources like banks, financial institutions, etc., are not ready to lend. They consider high risk in search of high profits.

**Seller financing**

Seller financing represents a very important source of financing for buyers. In this form of financing the seller agrees to defer the receivable of a portion of the

purchase price until a future date. Thus, the buyer's overall risk is reduced because he is required to block less capital when the deal is finalized. In addition, the operational risk gets shifted to the seller, in case the buyer defaults on his loan obligation.

### 11.4.7 Developing the Integration Plan

Making the combined firm perform in line with the expectations is a difficult task. For the result to be in line with expectations proper planning is needed before the agreement of purchase and sale is signed. Once the documents are signed, the buyer will lose the leverage over the seller. The decisions made in the pre-closing have great influence on the post-closing integration activity. Without adequate planning, integration is unlikely to provide the synergies anticipated by, at the cost included in, and within the time provided in the acquisition plan.

The benefit packages, contracts for employees, retention bonuses, etc., all should be negotiated before closing. Covenants and conditions in the contract also impact integration. Earn-outs, payments to the seller based on the future performance, and deferred purchase price mechanisms, involving the placement of some portion of the purchase price in the escrow account until certain conditions have been realized can limit the buyer's ability to effectively integrate the target into the acquirer's operations.

Successful integration of the firms requires getting the employees in both the firms to work towards the achievement of the common goals. This is achieved through trust and mutual cooperation.

An integration manager should be selected prior to the closing of the deal. Factors critical to the acquired company's success during the initial integration period like key managers, vendors and customers and what is needed to retain, these valued assets should be identified.

**Activity 11.1**

a. Discuss the three types of conglomerate mergers.

……..……

……..……

b. It is the management's perception about the likely risks that it would be exposed to by virtue of acquisition that determines the financial implications. What are the various risks that an acquisition is exposed to?

……..……

……..……

### 11.4.8 Closing the Deal

Closing is the final legal procedure where the company changes hands. It consists of all necessary shareholder, regulatory and third party consents. All the necessary legal approvals are attained at this stage. Considerable planning before closing is essential to minimize the obstructions that a target company may place before the buyer. Proper care must be exercised to ensure that all the necessary filings required by law have been made. Non-compliance with the law may delay or prevent the merger or acquisition. Many transactions also require approval of the shareholders of both the acquiring and the target companies before the ownership is legally transferred.

At the end of the closing phase a closing document is prepared which is a definitive agreement of purchase and sale that indicates all the rights and obligations of both the parties before and after closing. The complexity of the transaction determines the length of this document. The document mainly outlines the following features of the deal:

**Purpose of acquisition**
The reason why the merger or the acquisition is taking place is mentioned.

**Price**
The purchase price or the total consideration may be fixed at the time of closing, subject to future adjustment or contingent to future performance as the case may be.

**Allocation of price**
The allotment of the purchase price to both the parties is agreed upon. This helps in eliminating the chance that the parties involved will take different positions for tax purposes.

**Payment mechanism**
Payment may be made at the time of closing by cheques or wire transfer. Some portion of payment can also be deferred by issuing a promissory note to the seller. A portion of the purchase price can also be put in escrow account to facilitate settlement of claims in future.

**Assumption of liabilities**
In an asset purchase the assets which are to be accepted by the buyer are listed in detail. Those liabilities not accepted by the buyer are retained by the seller. In case of a share transaction or a merger, all the known and the unknown liabilities are assumed by the buyer.

**Representations and Warranties**
Representations and warranties cover all the areas which are of the greatest concern to both the parties. They are intended to provide for full disclosure of all the information relevant to the transaction.

**Covenants**

Covenants cover the obligations of both the parties between the signing of the definitive agreement and closing.

**Conditions for closing**

Certain pre-conditions set in the definitive agreement have to be met before the close of the contract. The pre-conditions include the assumption that the seller would abide by the representations and warranties and will live up to the obligations under the covenants.

**Indemnification**

The seller at a later date in the definitive agreement will have to indemnify the buyer, the liability that may arise out of misrepresentations or breaches of warranties or covenants. Similarly, the buyer also indemnifies the seller. The period of indemnity is limited to usually a year.

Other documents which are required to complete the transaction of a merger or an acquisition are:

- Mortgages, loan agreements, trade names and trademarks.
- Supplier and customer contacts.
- Distributor and sales representative agreements.
- Stock option and employee incentive programs.
- Insurance policies, coverage and claims pending.
- Pending litigations for and against each parties.
- Articles of incorporation, bylaws and corporate seals.

### 11.4.9 Post-Closing Integration

This is the most important integration phase in the acquisition process. We will discuss this phase in greater detail later in the chapter.

### 11.4.10 Post-Closing Evaluation

The post-closing evaluation is done to determine, if the acquisition is meeting expectations, to determine corrective actions if necessary, to identify what was done and what should be done to avoid making the same mistakes in the future acquisitions.

Success of the merger can be measured by evaluating the actual performance of the firm after the merger against the performance anticipated in the acquisition plan. Only a few acquiring firms closely monitor the performance of the acquisition according to the plan. Many firms commonly overlook this phase and fail to find out the effectiveness of the acquisition process. The lessons can sometimes be embarrassing, but help not to commit the same mistakes in the future acquisitions.

The success or failure of the deal determines which questions to ask when trying to collect the lessons learned. Whatever might be the result, the questions are straight forward but the answers are invaluable.

**What to ask after a successful deal?**

- What went well for the successful acquisition of the process?
- What were the problems encountered during the acquisition process?
- How can the acquisition process be improved to uncover those problems earlier?
- Is the acquisition in line with the expectation?

**What to ask after the deal has failed?**

- Was missing the acquisition a gain or a loss for the company?
- If it was a loss what could be the better alternative?
- If it was a gain, what went wrong?
- How could the flaws be identified earlier and how could the time be saved?

## 11.5 Participants in the Merger and Acquisition Process

Moving from the concept stage to a completed transaction requires a group of highly skilled advisors. Each advisor specializes in a specific aspect of the merger and acquisition process. Understanding the roles of the various players is helpful in identifying the type of resources required for a specific transaction. There are many professionals who play an essential role in the successful completion of a deal. The role played by such professionals can be explained as follows:

**Investment Bankers**

Mergers and Acquisitions is one of the most admired departments in I-banking. It is a fee based advisory department which, works with companies in various industries that wish to acquire other companies. Such acquisitions could be in the form of combining of equal sized companies (mergers), or the purchase of a smaller company by a larger one (acquisitions). Mergers and Acquisitions departments of the investment banking firms also give consultancy services on strategy for hostile takeovers, as well.

Investment bankers are always at the forefront of the acquisition process. They offer strategic and tactical advice, screen potential buyers and sellers, make initial contact with a seller or buyer and provide negotiation support, valuation and deal structuring. Investment bankers help to identify the firm's strategic objectives and assist in evaluating alternative strategies for achieving these objectives.

The main objectives of an investment banker would be to assist companies in achieving their strategic financial objectives like growth, shareholder liquidity

and maximization of shareholder value. To fulfill such objectives, the investment bankers provide the following services.

i. **Identification of Areas for Restructuring:** After understanding the long-term business plan, investment bankers help in identifying the business lines, products, technologies, processes to be hived off or acquired as the case may be. This stage involves an in-depth study of cost structures, make or buy decisions, financial viability, valuations, etc.

ii. **Buyer/Seller Identification:** On identifying the need, the buyers or sellers, are to be identified too. In this context investment bankers can assist in identifying and interacting with the potential buyers or sellers and short list them for further plans of action.

iii. **Structuring and Valuation:** Valuation of businesses is the most critical aspect of M&A exercise. Equally critical is structuring the transaction. The transaction has an impact on cash flows, profitability and taxability. The structured solution has to optimize all these aspects.

iv. **Negotiations:** Through presentations and interaction the investment bankers negotiate the deal at the best possible terms. They bring to the table their rich negotiating experience of several deals.

v. **Legal Compliance:** Investment bankers also have adequate in-house expertise to handle the legal compliances of the transaction. This involves compliance with Company Law, Income Tax, and Excise and Sales Tax legislations. They also draft the legal agreements wherever necessary. They also help in obtaining the necessary RBI/Government approvals.

**Lawyers**

The legal framework surrounding a typical transaction has become so complicated that no one individual can have sufficient expertise to address all the issues. In large and complicated transactions, legal teams consist of more than a dozen lawyers each of whom represents a specialized aspect of the law. The areas of expertise include tax, employee benefits, real estate, anti-trust, securities and intellectual property. In a hostile takeover the team may also include litigation experts.

**Accountants**

Services provided by accountants include advice on the optimal tax structure, financial structuring and on performing financial due diligence. A transaction can be structured in many different ways, with each having different tax implications for the parties involved. Tax accountants are vital in determining the appropriate tax structure. Accountants also perform the role of auditors by reviewing the target's financial statements and operations through a series of interviews with senior and middle level managers.

**Valuation Experts**

The valuation experts may be appointed either by the bidder or the target to determine the value of the company. They build models that incorporate various assumptions such as costs or revenue growth rate.

**Institutional Investors**

Institutional investors include public and private pension funds, insurance companies, investment companies, banks and mutual funds. Although a single institution cannot influence a company's actions, a collection of institutions can. Such shareholders can announce how they intend to vote on a matter and advertise their position in order to seek support. Institutional investors now have more influence than ever before.

**Arbitrageurs**

When a bid is made for a target company, the target company's stock price often trades at a small discount to the actual bid. This reflects the risk that the offer may not be accepted. Arbitrageurs buy the stock and make profit on the difference between the bid price and the current stock price if the deal is consummated. They place themselves in a position to influence the outcome of a takeover attempt. Arbitrageurs also provide market liquidity during transactions. With the number of merger arbitrageurs increasing, they are becoming more proactive in trying to anticipate takeover situations. Their objective is to identify the target before the potential acquirer is required by law to announce its intentions.

**Example: Courts as Participants for LVB Merger with DBS**

In the process of acquisition, some of the mergers faced legal issues and one such case was Lakshmi Vilas Bank (LVB) merger with Development Bank of Singapore (DBS). As per the merger scheme released by the RBI of LVB merger with DBS, DBS infused ₹ 2,500 crore regulatory capital into LVB which was cash strapped and that the entire process of merger took place by December 16, 2020. Being the regulator, the condition stipulated in the merger scheme was likely to create legal issues as the entire paid-up share capital of the bank was written off upon merger. This move made the bank's equity investors seek legal remedies and filed a suit in Various Courts which is transferred to Supreme Court.

*Source: https://economictimes.indiatimes.com/markets/stocks/news/lvb-shares-rise-after-cabinet-approves-merger-with-dbs-india/articleshow/79405969.cms dated 25th November, 2020. Accessed on 30th May, 2022*

## 11.6 Post-Merger Management/Post-Closing Integration

For a merger to succeed, much work remains to be done after the deal has been signed. The strategy and business model of the old firms may no longer be appropriate, when a new firm is formed. Each firm is unique and presents its own

set of problems and solutions. It takes a systematic effort to combine two or more companies after they have come under a single ownership.

All deals do not result in post-merger integration. Generally, acquirers tend to fall under two broad categories – strategic buyers and financial buyers. Financial buyers buy a business to ultimately sell it again. They do not buy the new company with an intention to integrate the acquired business into the existing entity. They do not try to manage the business. They only provide the financial support. On the other hand, strategic buyers intend to integrate the acquired company into the existing entity. They are interested in making a profit by managing the business for a long period of time. The strategic acquirer may choose to manage the acquisition as a separate subsidiary in a holding company environment or merge it with another business. In this chapter, we will look at only such strategic acquirers who acquire a firm and who intend to integrate the target company with its own entity.

Post-merger integration is an important stage of the mergers and acquisitions process. The integration process is useful to achieve proper staffing requirements, eliminate redundant assets and generate the financial returns expected by the shareholders. The path towards post-merger integration involves a series of decisions. Integration can create a sense of shared purpose for everyone in the newly combined company. This helps the employees to take up rather than resist the change in the newly formed enterprise.

Everything that is useful should be combined. Hence, a merger involves combining both domestically and globally all resources, processes and responsibilities of the buying and selling company. The resources of a firm include human resources at the board, management, and support levels. Moreover, financial, tangible and intangibles resources (company name, brand name of the seller) should also be integrated. The processes of a firm include the management systems, their compensation plans, etc. Finally, the responsibilities include their commitment to various stakeholders (customers, suppliers, shareholders, bondholders, employees and society), to the law, etc. The final integration will be to combine the newly integrated resources, processes and responsibilities into one single successful whole.

There is no one best particular way to integrate two organizations. There is also no defined process or a method that can guide integration planning and decision-making.

**Due Diligence**

The integration process begins with due diligence. In the words of S Barr, CFO Magazine, “A large part of what makes a deal successful after you complete it, is what you do before you complete it”.

Before the closing of the deal, the buyer should engage in a thorough due diligence review of the seller's business. The purpose of the review is to detect any financial and business risks that the buyer might inherit from the seller. The due diligence team can identify ways in which the assets, processes, and other resources can be combined in order to realize cost savings and other expected synergies. The planning team can also better understand the necessary sequencing of events and the resulting pace at which the expected synergies may be realized. Considering how and over what time period the integration will be implemented is important in determining the magnitude and timing of the cash flows of combined companies used in making the final assessment of value.

The integration planning involves human resource, customer and supplier issues that have to be addressed when there is a change in ownership. These issues are resolved as a part of the acquisition agreement. Buyers have the opportunity to use the results of the due diligence investigations to insert into the agreement the appropriate representations (claims) and warranties (promises). The acquisition agreement between the buyer and the seller can also set conditions for the post-merger integration at the consent of both the parties. For instance, the firm which is being acquired can insist on continuing authority for its CEO.

An acquisition agreement has a great impact on the future life of the new company. It can strengthen a merger by eliminating potential future controversies and establishing useful guidelines for future behavior or it can weaken it by creating more problems than it solves.

Due diligence identifies, validates or disputes the business reasons for the proposed merger or acquisition transaction. The challenge for many M&A teams is collecting and going through vast amounts of data to make a rational purchase decision, often under extremely tight time constraints. Due diligence for mergers and acquisitions requires broad and deep data analysis of assets and liabilities, including large balance sheet items such as accounts receivable, inventory and accounts payable to establish fair market value. It also means analyzing collections of receivables and inventory to identify doubtful accounts or obsolete stock, and analyzing cash receipts and billing files using historical trends to assess the reliability and adequacy of cash flows. To effectively discharge due diligence on these activities powerful analytical tools, which can handle various data with speed and confidence are required.

**Elements for Successful Integration**

Issues involved in post-merger integration ranges from managing cultural differences to integrating employee's compensation and benefit systems to standardizing operations. The key elements identified for a successful post-merger integration are as follows:

***Vision:*** In many successful mergers, as soon as the merger is announced, the companies form an integration team, which acquires information from the managements of both the companies about their expectations. Senior management executives in both companies also have discussions on the future vision, goals, values and policies of the new company. This helps design a vision for the new entity. While creating a new vision, it should be ensured that integration enhances the shareholder value. The information gathering process should also ensure that there is less resistance to change to speed up the process.

***Strategic Leadership:*** The next important thing is to appoint a key executive, who has the ability and influence to organize resources to carry-out a smooth transition and integration. The executive is responsible for the entire integration process, from planning to implementation. Often, this leader also happens to be the head of the joint integration team. Alternatively, there can also be a separate head for the integration team, who forms a link between the operational level and top management.

***Action Plan:*** Successful mergers have in common a comprehensive plan and implementation process that is effective and also shortens the integration period. The plan should have clear-cut definitions for various responsibilities and should be periodically reviewed by the integration team. The integration process should be streamlined to increase efficiency.

From the above it is clear that what we need is a comprehensive method that can be customized to each specific organization and purpose. Let us look at one such model.

**The Merger Integration Work Streams Model**

There are different but strongly interdependent and continuing sets of responsibilities that are critical for the success of any merger integration. They are:

i. Integration leadership roles and responsibilities

ii. Integration planning and implementation

iii. Communication

iv. Structure and Staffing

v. Re-recruiting

vi. Cultural Integration

vii. Human capital related integration

viii. Measurement and feedback

ix. Project Management

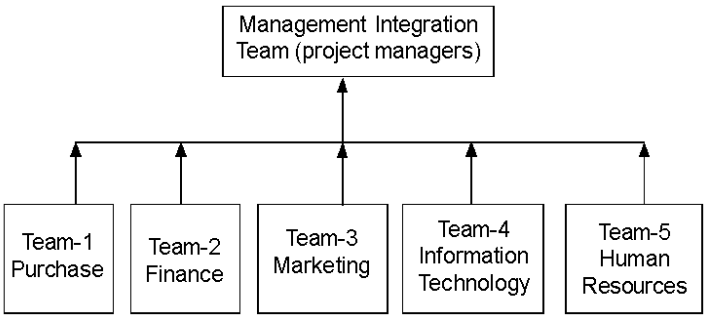
### Integration Leadership Roles and Responsibilities

Integration begins with a clear strategic direction, objectives and a determination of the primary value drivers of the combined entity. Both the firms come to an agreement regarding the integration process and the time to be taken to complete the process. Important governance issues and the desired level of integration for the new company are discussed as early as possible since they have a significant impact on the strategic planning of the business.

The post-merger integration organization should consist of both a management integration team and a series of integration work teams. The project managers and the team who would work on the process are selected from both the companies. The responsibilities are shared by the executive staff of both the companies so that coordination and communication become a critical link.

Each team known as task forces would be responsible for integrating a specific portion of the integration plan. The team's primary responsibility is to coordinate the task forces and the overall process. The task forces make up the majority of the integration infrastructure. The task forces together with their respective teams are primarily responsible for designing transition plans, capturing synergies, and implementing the action items required for successful business integration.

**Figure 11.1: Model for Integration Infrastructure**




*Source: ICFAI Research Center*

Other team members might include advisors, such as investment bankers, accountants, attorneys and consultants. To be effective, the work teams should have access to accurate timely information and adequate resources.

The leaders of the task force should be those individuals who are senior having the authority to get things done. The task forces, like the core integration team should include balanced representation from both the companies. This balance serves as a symbolic and a purely practical business necessity. The teams leading the task forces should be encouraged to bring in ideas into the process to cultivate creativity by encouraging solutions rather than by dictating processes and procedures. The teams should be given access to adequate resources, accurate and timely information, as well as timely feedback.

Task forces can also form sub-teams (composed of people of both companies) to serve as primary matter experts, planners and implementers of major sub-categories of issues. For instance, the task force in human resources can create various sub-teams for compensation and rewards, retirement, health and welfare, etc. Each team will be responsible to coordinate with other sub-teams and task forces on issues of mutual dependence.

**Planning and Implementation**

During the negotiation stages of the merger deal only, the parties to the deal should begin planning the integration of the two businesses. Guidance should be obtained to set the appropriate time to begin integration planning and to establish deal specific protocols that will govern the sharing of information and the coordination of activities.

An initial meeting is organized to provide a coordinated start to the planning process. The objectives of such a meeting include gaining clear understanding of the task force's purpose, roles, responsibilities, deadlines and other issues. The leaders of the task force are given an overview of the deal, the expected synergies and the strategic parameters that have already been decided as a result of the negotiations. The meeting gives an early opportunity to identify and discuss potential functional and cultural differences.

**Preparation of the Charter**

Given the complexity of merger integration the task force's initial step in the planning process should be to provide a detailed, customized charter to help their sub-teams start on the job quickly. The charter serves several important purposes which include planning, role clarification, resourcing, scheduling, establishment of accountability and responsibility, etc. The charter typically includes:

**Objective Statement:** The objective statement describes the goal of the new organization.

**Specific Synergy Targets:** This lists all the present known synergy possibilities that fall under each task force's responsibilities. The description of the project along with the estimated value of the target, the time for accomplishment and the list of any other task forces that are linked with this synergy are given.

**Sub-team Resourcing Requirements:** It contains the list of key individuals who should be involved in the various issues and responsibilities of the task forces.

**Data and Documentation Requirements:** This gives specific requests for information that will be needed for sufficient understanding of the partner organization and its relevant business processes.

**Initial Identification of Issues:** This component identifies issues, tasks, responsibilities, policies, decisions, synergy explanations and other points that require thorough planning for the transition.

**Integration Plan Document**

The integration plan document outlines the specific expectations for the integration plan and gives examples of the types of data and the level of data required which depends on the level of transaction's scope, timing, complexity, objectives and the synergy targets that have been identified.

**Steps in the Planning Process**

The task force planning and implementation process typically takes place as follows:

1. Current situation is analyzed to get a basic understanding.
2. Data is collected and documented in information, process maps and measures.
3. The integration solution is identified and the integration process designed.
4. Integration plans are developed and the road map for installation is made.
5. Approval is obtained from the top authorities to go ahead with the integration project.
6. Detailed preparation of the procedure to implement the proposed design is made through announcements, scheduling, etc.
7. Training sessions are conducted to aid in the installation activities.
8. Every step in the implementation activity is measured and monitored and any deviation from the standard is adjusted.
9. The integrated firm is handed over to the management or the owners.
10. Finally, the integration project is completed.

Successful merger integration results from careful planning followed by effective implementation. The implementation of the integration plan starts with communication and includes organizing the structure of the new company, its staffing, cultural and functional integration.

**Communication**

At the time of a merger or an acquisition transaction communication has to be used effectively so that rumors do not become the main source of information to the stakeholders. Before the public announcement of an acquisition or a merger is made the integration team should prepare a communication plan. The plan should contain the key messages as well as the specifications of target stakeholders and appropriate media for conveying the messages to each group.

An effective communication in a merger and acquisition transaction is guided by the following principles:

i. **Communication should be a Priority and Linked to the Strategic Objectives of Integration Effort:** Any message about a particular goal

should always be communicated along with adequate reasons for doing so and the benefits likely to be achieved out of it. The messages should be conveyed to all the stakeholders who will be the most effected by any change.

ii. **Communication should be honest:** All stakeholders should be made aware of the realistic limits and goals so that they would be prepared to face any worst scenario. Changes in the work practices and compensation may be viewed as breaking on commitments made by the prior management. This may result in losing of key employees besides de-motivating them. To minimize this, potential changes must be explained honestly and precisely so that they can understand why they are being made.

iii. **Communication should be proactive:** Unless the announcement of a merger would harm one or both the parties the communication process should be started well in advance with ample lead time and should be spread early so that a defensive position is not needed when people get to know about the merger.

iv. **Communication should be consistent:** It should be ensured that the communication to all stakeholders is consistent. Consistent communication helps people to absorb and internalize the true content of the messages. It conveys the intention of the new organization to live up to commitments made to its major stakeholders. It is a first step to build-up confidence between the management of the new company and its stakeholders.

v. **Communication should be repeated through various channels:** Communication should be made through various channels like newsletter articles, internal memos, videotapes, and specifically face to face interaction. The last is the most effective change management tool available to management. Regular scheduled meetings also form an excellent medium of communication during the crisis period. All external communication in the form of press releases should be coordinated with the public relations department to ensure that the same information is released to employees. Internal e-mail systems, voicemail, or intranets may be used to facilitate employee communications.

vi. **Communication should be two ways:** An organization should establish mechanism for two-way feedback. All stakeholders should get an opportunity to give and get feedback during the design, testing and implementation of all change factors. Feedback is obtained on all work processes that will be integrated, on specific goals set to be achieved during the Mergers and Acquisitions transaction and also the lessons to be applied to future mergers and acquisitions.

A communication plan during an integration effort typically consists of four phases. In the first phase the merger or the acquisition is announced to everybody.

In the second phase, various issues that may arise during the integration process are identified. These issues would arise from all the stakeholders (customers, suppliers, shareholders, lenders, employees and others) who would like to know how changes would affect the overall strategy, share prices, business operations, job security, working conditions, total compensation, etc. The human resource department should learn what employees know and want to know, what the prevailing rumors are and what the employees find most confusing. This can be achieved through surveys, interviews, focus groups or employee meetings.

In the third phase, the rollout occurs where communication should include information about the proposed changes. This should be followed by training to employees in the new skills, roles and methods that are required to manage the merged unit.

In the final stage feedback is obtained and the implementation of the integration plan is fine-tuned wherever warranted.

**Re-Recruiting**

**Retaining the Key Employees**

People often leave organizations during mergers and acquisitions. Even when the key personnel remain on board, they lose their commitment, especially when the environment becomes unstable, uncertain or changes dramatically as is certain to emerge during mergers and acquisitions.

To retain the key employees, the integration team should formulate a re-recruitment plan which involves: (i) Identifying key people or groups (ii) Understanding what motivates them, and finally (iii) Developing and executing an action plan to address what motivates them.

i. **Identifying Key People or Groups:** People whose absence would have the most detrimental effect on the organization are the key people. All the employees who will be affected by the merger or the acquisition are identified and a list is made. The impact of their absence on the business is estimated. An employee is considered vital or important if his absence results in the loss of a key client or loss of knowledge about a core product or service or loss of crucial skills in project management.

ii. **Factors that Motivate People:** The factors that motivate people are:

    **Security:** All employees look for security of their job as the most important aspect at the time of a merger or an acquisition. Job security thus becomes the basic issue at all the levels of the organization during mergers. For all employees who have been identified as key, it is important to communicate that their jobs are secure at the early stage itself. Key people need to realize

that they are integral to the success of the merger and they would have an important role to play in the future success of the new organization. They also need to be communicated of their pay, benefits and the potential for increment. Sometimes, "stay bonuses" are announced to protect the loss of key people until the initial reactions to the merger or acquisition have settled down. This gives some time to the decision makers to determine the dynamics of the new organization and the roles that people will fit into without the fear of losing people in the meanwhile.

**Inclusion:** To maintain the loyalty of key people during the merger and acquisition transaction, the company should involve the key people in the meetings or in the integration process or by sharing regular information with them. Letting the key people know what is being discussed and asking for their inputs make them feel a part of the organization.

**Control:** The key managers and executives develop a certain addiction to control over how things are handled and they want to maintain that control. This need to control can be satisfied if some of the merger related decisions are left to them.

**Ego:** The key employee's ego can be fed during integration by giving rewards like bonuses for accomplishments, inclusion in the integration process, etc.

iii. **Developing and Executing an Action Plan:** Once the key people and the key motivators are identified actions are to be taken to retain key people during a major change. Individuals or the groups who are important to the organization's future success are identified and the impact of losing them is quantified. This is compared to the cost of retaining them in the organization. Re-recruitments actions are then initiated.

Additionally, exit interviews are conducted for employees who have announced their resignations. Exit interviews can be a valuable tool in understanding how the integration that the company is undertaking is affecting employees' general fear about the happenings in the merged unit and their motivation to stay.

**Structure and Staffing**

Effective planning and staffing for a post-merger organization is one of the most important integration works.

**Structure**

A properly structured organization should support the acceptance of a culture in the new company that is desired by the top management. The structure of an organization depends on the previous organization charts and the needs of the business. The previous organization charts provide insights into how individuals from both the target and the acquiring company will interact within the new

company since they reveal the past experience and also the future expectations of individuals with regard to reporting relationships. Structure should also facilitate decision-making, provide internal controls, and promote behaviors consistent with the mission and principles of the new company.

There are three basic organizational structures: (i) Functional, (ii) Product or service and (iii) Divisional.

i. In a functional organization, the people are assigned to various departments such as finance, marketing, sales, customer service, etc. This type of structure is highly centralized.

ii. In a product or service organization the functional specialists are grouped, based on product line or the service offering. Each product line or service has its own functional staff. This type of structure is more decentralized.

iii. In divisional organization structure, the groups of products are combined into independent divisions or strategic business units. Each unit has its own management team and is highly decentralized.

**Centralized vs. Decentralized**

A decentralized structure may slow down the pace of integration, as there is no single authority to determine policies. On the other hand, a centralized structure may make the post-merger integration much easier since the senior management has the authority to dictate policies and govern all aspects of the combined companies. Though centralized management provides easier integration, it can also be detrimental if the policies imposed are not appropriate for the operating units.

Instead, a right structure during the integration phase may be an evolving one. The structure may be centralized during the initial integration phase so that decisive and timely action can be taken based on the available information. Once the integration is relatively completed, the new company can move to a more decentralized structure.

**Merging the Corporate Boards**

Mergers have significant impact on the boards of both the companies. In a merger of companies of comparable size, the members of the boards of both the firms are merged into the new company board. As part of the merger agreement, a planned reduction in the board of the combined company is made. In a merger between firms of different sizes the smaller company's board will not generally be included in the new company's board when the target company is fully integrated with the acquirer. However, if the acquired company is to be operated as a subsidiary of the acquirer its board may remain the same.

**Integrating Senior Management**

The historical performance of the individual companies and their respective organizations will provide a crucial insight into the selection of the appropriate candidates for the senior management positions in the new company. The team should agree on a new strategy for the combined companies and select people who are best suited to implement it.

**Integrating Middle Management**

Like the senior management level, middle level jobs should also be given to people having superior integration skills. Senior managers should be given the responsibility of selecting the middle level managers.

The process for creating a proper structure requires inputs from all the levels of management. It should be consistent with the combined firm's business strategy. Before establishing a structure, the integration team should agree on the specific functions that need to be carried out to run the combined business. These should reflect the specific roles and responsibilities of each function. Once the functions have been identified, the personnel required for executing each function have to be identified from the available workforce within the organization and local community, describing the ideal structure to meet the roles and responsibilities assigned by the senior management.

**Functional Integration**

The integration team also has to determine the extent to which the operations and support staff are to be centralized or decentralized. The main areas of focus for integration should be: information technology, manufacturing and operations, finance, sales, marketing and research and development.

i. **Manufacturing and Operations:** The integration process involves re-evaluating the overall capacity, identifying the potential for future cost reductions, determining the age and the condition of facilities and the compliance with environmental laws. Manufacturing capabilities which duplicate the capabilities of the acquirer should be considered and the better of the two selected. The production planning and materials ordering functions need to work closely together, because the quantity and composition of the materials ordered depends on the accuracy of sales projections. Consolidation of plant starts with the adoption of a common set of systems and standards for all the manufacturing activities. Certain facilities can be closed when there is excess capacity.

ii. **Information Technology:** Each company's quality and effectiveness of systems is revalidated and a new information system is established. The process should focus on hardware, software, technical support, communications capabilities, and compatibility of existing systems.

iii. **Sales:** The extent of integration of sales force of the two firms depends on their relative size, the nature of their products and markets, and the geographic location. A small sales force can be combined easily when the products sold are similar. The sales force should be kept separate if the products sold require an in-depth understanding of the customers' needs and a detailed knowledge of the product. The sales force should also be kept separate when the product or service is sold to specific markets. Integration of the sales force may result in significant cost savings by eliminating duplicate sales representatives and reducing travel, entertainment and training expenses.

iv. **Marketing:** The degree of integration of the marketing function depends on the global nature of business the diversity and uniqueness of product lines and the pace of change in the marketplace. A worldwide operated business is inclined to decentralize marketing operations with more concentration on the local markets.

v. **Purchasing and Supply Chain Management:** Managing the purchasing function and supply management of the merged firm efficiently can reduce the total costs of goods and services purchased by merged companies by 10-15%. The newly combined company may choose to realize savings by reducing the number of suppliers by identifying the most critical suppliers of both the acquirer and the acquired companies.

vi. **Research and Development:** The integration team responsible for managing the integration of R&D activities needs to define future areas of R&D collaboration and set priorities for future research subject to senior management approval. Research of both the companies can make a detailed effort and get to know each other's work. The projects are ranked according to their impact on the key stakeholders. The projects receiving the highest scores are then funded while the rest are discarded.

**Staffing Plans**

Following the determination of the appropriate organizational structure and the pool of current and potential employees available to staff the new organization, a detailed staffing plan can be developed. Some employees are generally lost in the efforts to form a new company. Other employees who have remained with the organization have to be trained to fill the critical positions. An early development of staffing plan provides an opportunity to include key personnel from both the firms in the integration effort.

**Compensation**

Merging the compensation plans is one of the most challenging activities of the integration process. The extent of integration of the compensation plans depends on whether the two companies are going to be managed separately or remain

integrated. When the companies are to be integrated, the new plan will be designed in consultation with the acquired unit's management.

**Staffing Process**

The organization should provide a variety of process maps, tools and templates for the managers and employees to use when candidates are to be rated and interviewed and staffing decisions are made. The following are a comprehensive model of staffing:

a. The areas of priority are identified and a comprehensive plan for rationalization and consolidation is developed. The strategic business plan and major parameters of the deal are combined with specific due diligence information and cost projections to provide a variety of scenarios to senior managers.

b. The mission critical jobs, which are needed in carrying out the business plan of the new organization are identified and assessed.

c. The specific skills required on the mission critical jobs are established. Data is collected from the existing as well as new sources of information.

d. The required skills for each job is defined and noted down so as to accurately portray the specific behavior, attitudes and actions that the organization perceives as essential to the success of those particular roles.

e. A list of all the candidates from both the companies is prepared. Other interested candidates are also considered.

f. Multiple raters are asked to make a survey and assess each candidate against the set competencies.

g. Team interviews are conducted. A competency based interview guide is then used to determine specific evidence of the candidate's behavior and achievements in each major competency area.

h. The rating team meets to decide on the final candidates. Specific details are discussed with respect to creating the best offers and opportunities for all candidates involved.

i. A communication plan is prepared and completed. The successful candidates are notified of their selection after the approval of the functional executive officer.

j. The hiring managers individually meet the selected candidates to plan approaches to key issues, work out details of the transition to the new organization, set priorities and define the developmental opportunities. Additional orientation and training is given to employees who are selected from the acquired and the other organizations.

Structure and Staffing decisions are always very difficult to be made and always charged up politically. The following are the general principles to be followed while making any structure and staffing decisions:

a. The structure and staffing decision process should be started with a due diligence analysis of the human capital and the organization in general. Such formal process should be used to discover, compare and contrast organizational structures, depth of talent, management processes and individual styles. Various situations of reduction in number of employees and consolidation are developed and their costs estimated so that an approximate range of total staffing synergies can be provided along with their costs of implementation.

b. The structure and staffing decisions should be based on strategic considerations and on the determination of the new company's organization business plans. A strategic guide identifies the facilities to be closed or consolidated, products to be updated or exploited, research initiatives to be funded or discontinued and other business processes to be used in the new company. Only when this strategic translation process takes place will it be possible for the task forces to determine the exact work requirements, structures, role descriptions and staffing needs in order to carry out their specific functions in the new organization.

c. Structure and Staffing decisions should start as early as possible. To gain a full understanding of the important relationships and realities of the new organization people need to see an organizational chart. An organizational chart serves as an essential clarification and instructional role, helping to improve the effectiveness of communication and decision-making processes and developing an atmosphere of common understanding. It also provides an opportunity to include the key personnel from both the firms in the integration effort.

d. The two organizations involved in the deal will need to determine their own optimal level of involvement and assessment. Inputs should be obtained from the current organization, the new organization and the current hiring manager and the data from an external assessment tool or an interview with an outside professional.

e. Communicate openly about the process to make decisions on structure and staffing. The greatest barrier to change in any kind of organization is the organization's lack of communication about tough structural and staffing decisions. The information about the process that will be followed in making structural and staffing decisions should be widely propagated throughout the organization.

f. In order to work effectively the hiring managers have to be trained about the steps and responsibilities of the selection process.

g. Identify and correct the mistakes. Any mistake which has been made in the structure and staffing decisions should be identified and corrected promptly. This kind of response is required to set and maintain the objective as expected.

h. Capture and Retain Knowledge: Many key people are likely to leave the organization during the time of a merger or an acquisition. Thereby the organization loses the technical talent. This can be avoided by conducting exit interviews with such candidates. Some acquirers pay knowledge bounty to prevent institutional knowledge from leaving the organization along with the departing employees.

i. Start the development and team building process: The new team formed should be brought together as quickly as possible to help with the necessary steps of formulating and establishing an identity. This is necessary to promote clear understanding and commitment of the new organization's strategy, business plan, its core values and cultural objectives.

**Cultural Integration**

Culture refers to the common set of values, traditions and beliefs that influence the behavior of a person. Large and diverse businesses have a culture and a series of subcultures that reflect the local conditions. When two companies with different cultures merge, the newly formed company will take on a new culture that may be quite different from either the acquirer's or the target's culture. A company's culture is created and continuously strengthened by processes that take place in –

a. Rules and policies
b. Goals and measures
c. Compensation and recognition
d. Staffing and selection
e. Training and development
f. Ceremonies and events
g. Leadership behavior
h. Communication
i. Organizational structure

The above factors collectively make up the environment that surrounds the work force which in turn builds the organizational culture.

The cultural issues specific to a company depend on size and maturity, on the industry in which the company is operating, and also the geographic location.

i. **Company Size and Maturity:** Companies operating in the introductory stage are usually unstructured and informal in terms of certain rules and regulations like the dress code, etc. Compensation may largely contain stock options and other forms of deferred income (though not very common in the Indian corporate world). Company policies are either non-existent or not in the written form. On the contrary, firms in the mature phase have structures well-defined internal controls, compensation structures and employment policies. Employees have clearly defined job descriptions.

ii. **Industry:** High technological firms irrespective of their size are often more informal and flexible in terms of the working hours, dress code, etc. Companies dealing directly with the public often have a formal dress code and require a high level of decorum to instill a sense of confidence and trust in the public.

iii. **Geographic Location:** Integrating companies situated in two different parts of the world (cross-border transactions) face language barriers and different customs, working conditions, work ethics and legal structures creating an entirely new set of challenges. If the cultures are extremely different, integration may not be appropriate.

iv. **A New Corporate Culture:** When two different companies with different corporate cultures merge a new culture may emerge in the combined firm that may be noticeably different to the previous cultures of the individual companies. Generally cultural differences are less in mergers taking place in the same industry and of comparable sizes than in cross industry or cross-border transactions and companies of different sizes and maturity. A company's culture is something that evolves over a long period of time and hence any change in culture has to be carefully managed.

The first step in achieving cultural integration is to develop a cultural profile of both the target and the acquirer. The data or the information may be obtained from the employees, surveys, interviews and by observing the management styles and practices in both the companies. The information is then used to analyze how different or similar both the companies are and the competitive strengths and weaknesses of the two cultures. After a thorough review of the information the senior management must decide those characteristics of both cultures that are to be highlighted in the new business.

**Techniques for Integration**

Sharing common goals, standards, services and space can be highly effective and practical way to integrate different cultures.

**Shared Goals:** Common goals drive different units of an organization to cooperate and work together. For instance, at the functional level similar procedures for the new product development can propel the different units of the

organization to work together as teams to launch the product by the target date. Although having common goals is very useful for the integration process, specific goals of individuals are also important.

**Shared Standards:** Shared standards or practices enable the adoption of the best practices found in one unit by the other unit. The standards of a company include operating procedures, technological specifications, ethical values, internal controls, employees' performance measures, comparable reward systems, etc., throughout the combined companies.

**Shared Services:** Some of the services can be centralized. These centralized services provide services to the other operating units. Usually centralized services include accounting, internal audit, legal, public relations, etc.

**Shared Space:** Integration of acquired company's and target company's employees in the same offices is a highly desirable way to improve communication and idea sharing. Sharing the same research centers, library, etc., also facilitates communication and cooperation.

**Human Capital Integration**

Some functions bear more responsibility for the overall integration success and the human resource function is one of them. The human resource role plays a strategic role for enterprise wide integration and a support role for business units in transition.

The greatest difficulty in most merger deals has been consistently found to be people and cultural issues, areas over which the human resource can exercise some positive influence. The human resource backed by a supportive and proactive senior leadership team has the greatest ability to influence integration results in a positive direction. The human resource function has priorities that fall under two distinct phases. The first phase includes transition responsibilities like organizational structure, selection and staffing, compensation, benefits and retention. The second phase includes responsibilities for full integration like rationalization and alignment of all the acquired company's organizational and human resources, processes, to directly support the business objective of the new company. Proper human capital integration eliminates proliferation of practices that no longer support business needs. They help in quickly and powerfully reinforcing the new culture and drive the behavior of the employees toward key objectives.

**Measurement and Feedback**

During the integration process there should always be sufficient mechanisms for tracking and reporting on the results. This can be done with the use of different types of merger integration measures. The formal tracking of an integration process helps perform the following functions:

- Determine whether the transition is proceeding according to plan.
- Ensure a good flow of communication.
- Stress upon the need for corrections in the course of integration.
- Involve more number of people in the combination process.
- Send a message about the new company's culture.

Usually, separate but interrelated measurement processes must be continually managed in the following areas during merger integration.

i. **Integration measures:** These measures are necessary in assessing specific integration events and hence determining whether the overall integration approach in accomplishing the mission of leading the organization through the process of change. Brief surveys of the task force members and employee focus groups are some of the examples of these measures.

ii. **Operational measures:** These measures are necessary in identifying the impact of the merger on the ability of the organization to conduct its continuing day-to-day business. A business must continue in the midst of the most disruptive conditions. Examples of such measures include statistics that indicate variation in the production or quality, inability to process accounts receivable in the timely manner, etc.

iii. **Process and Cultural measures:** These measures are necessary to determine the status and the effectiveness of the condition of merger driven efforts and cultural integration efforts to revamp the business processes or elements of the organizational culture. Examples of such measures include reports on the status of completion of the task forces integration plans, surveys, focus group for the employees, etc.

iv. **Financial measures:** These measures are necessary in tracking and reporting on whether the organization is achieving the expected synergies of the deal. Summaries of the actual synergy projects in process, elements of a synergy process, are some of the examples of such measures.

**Project Management**

Project management is a central part of the integration planning process. Successful merger integration results from careful planning followed by effective implementation and follow up. Making project management a dedicated core function of the integration process will pay-off in many ways. Some of the tools and processes that help in project management are:

a. **Integration Timeline:** An overall integration timeline helps in having an effective grasp of key steps in the process of integration. The executive staffs of both the companies are briefed on the integration process before the public announcement of the merger. Such an arrangement gives enough time for the project managers to be selected and to start off the planning for the

integration immediately after the initial public announcement. The integration timeline should be flexible and revised as and when the project progresses. It is used as a regular element of communication, to advise the organization of what progress has been made and the essential steps to be taken at a particular time.

b. **Consolidated Project Plan:** A consolidated project plan is a fundamental tool in keeping the overall integration effort moving. This tool involves the consolidation of the individual task forces' plans into one comprehensive plan for integration. The particular components are owned and managed by individual task forces, but the overall consolidation plan and its distribution are managed by its core team. The consolidation project plan helps in:

- Prioritizing the work which drives the deal value directly and are obligatory for accomplishing the core work.
- Establishing accountability to the executive staff, the core team members etc. The review is aimed at assessing the progress and the priorities.
- Furthering communication and involvement throughout the organization.
- Reporting the progress of the integration process at every stage of the project.

**Example: TCS Tech Support for Air India Merger with Tata Group**

There are various issues that need to be handled post-merger as we can see from the post-merger of Air India with Tata Group. Tata Sons, the holding company, prepared sweeping changes in managing the acquired airlines. Due diligence was conducted by several Tata Group of companies such as Tata Steel on labour, TCS on technology etc.

Some of the immediate steps undertaken by the group were as follows:

1. A new set of directors will take over the company
2. The holding company Tata & Sons will install new leadership
3. Refinance debt
4. Renegotiate high-cost vendor deals
5. Refurbish old aircrafts and modernise the seats and other interiors
6. Tap the strengths of other operating companies like TCS and Taj Sats
7. Overhaul existing cost structure and operating systems and models
8. Redesign the operating crew dress
9. TCS to manage all the digital operations of the airlines

*Contd. ....*

10. Reduce operational and maintenance costs
11. Hire new CEO as a part of make over plans

Leverage ties with aerospace majors such as Boeing etc. to replace older aircrafts with more fuel-efficient ones.

*Source: https://timesofindia.indiatimes.com/business/india-business/group-plans-sea-change-in-ai-to-rope-in-tcs-for-tech-thrust/articleshow/86879440.cms dated 9th October, 2021. Accessed on 30th May, 2022*

## 11.7 Reasons for Failure of Mergers and Acquisitions

There are various reasons why mergers and acquisitions fail. The most common of these reasons are:

i. **Payment of High Price:** The key to a successful M&A is when the maximum price and not a penny more is paid. While the shareholders of the acquired company, particularly if they receive cash, do well, the continuing shareholders are burdened with overpriced assets, which dilute future earnings. This will come into sharp focus in the year following the merger as companies are forced by the new merger accounting rules to revalue and write off goodwill booked in prior-year acquisitions.

ii. **Culture Clash:** Lack of proper communication, differing expectations, and conflicting management styles due to differences in the corporate culture contribute to failure of implementation plan and hence failure of the merger.

iii. **Overstated Synergies:** An acquisition can create opportunities of synergy by increasing revenues, reducing costs, reducing net working capital and improving the investment intensity. Overestimation of such synergies may lead to a failure of the mergers.

iv. **Failure to Integrate Operations:** Once the firms merge management must be prepared to adapt plans in the light of changed circumstances or inaccurate prior information. Inability to do so plans leads to the failure of the merger.

v. **Inconsistent Strategy:** For mergers and acquisitions to succeed they must be driven by a sound business strategy. Inaccurate assessment of the strategic benefits of the merger may lead to its failure.

vi. **Poor Business Fit:** When the product or service does not naturally fit into the acquirer's marketing, sales, distribution systems or geographic requirement, it no longer remains an ideal fit. Such a firm delays efficient integration and may also lead to the failure of the mergers.

vii. **Inadequate Due Diligence:** The process of due diligence helps in detecting any financial and business risks that the buyer might inherit from the seller. Inadequate due diligence results in the failure of the merger.

viii. **Over Leverage:** Cash acquisitions frequently result in the acquirer assuming too much debt. Future interest costs consume a great portion of the acquired company's earnings. An even more serious problem results when the acquirer resorts to cheaper short-term financing and then has difficulty refunding on a long-term basis. A well-planned capital structure is critical for a successful merger.

ix. **Boardroom Split:** When mergers are structured with 50/50 board representation or substantial representation from the target, care must be taken to determine the compatibility of the directors following the merger. A failure to focus on this aspect of the merger can create or worsen a culture clash and slow down or prevent integration.

x. **Regulatory Delay:** The announcement of a merger is a dislocating event for the employees and other constituents of one or both companies. It is customary to have detailed plans to deal with potential problems immediately following an announcement. However, when there is the possibility of regulatory delay, the risk of substantial deterioration of the business increases as time goes on, with valuable employees and customer and supplier relationships being lost. This loss is a key consideration in evaluating whether a particular merger should be undertaken.

**Example: Nvida – Arm: The Deal Endangered by Regulators**

Nvida planned for the acquisition of Arm, the British semiconductor manufacturer in 2020. The deal was expected to be the largest M&A in semiconductor industry worldwide. The deal caught the attention of regulators of US (where Nvida operates), UK and EU (home for Arm) and China (SoftBank being the owner of Arm). The regulators perceived the deal to be anti-competitive. Tech competitors such as Google and Microsoft also expressed their opposition to the deal citing negative effects of competition and pricing.

In the words of Rob Enderle of Enderle Group, the deal was "endangered from the start because of the regulatory issues that it exposed. A sizeable dominant company doing a merger like this would have been red-flagged internationally like this one was. They needed to get through regulatory approvals quickly to get this done, so it failed because they did not do so." Thus there were various reasons for M&A and one such reason was regulatory bottlenecks.

*Source: https://pitchbook.com/news/articles/biggest-failed-mergers-and-acquisitions-tech-nvidia-arm dated 10th February, 2022. Accessed on 18th July, 2022*

**Activity 11.2**

a. What are the responsibilities that are critical for the success of any merger integration?

……

……

b. Write a short note on shared goals.

……

……

## Check Your Progress

1. Which of the following is a type of financing often used in leveraged buy-outs in which all claimants hold approximately the same proportions of each security?

   (a) Mezzanine Financing
   (b) Strip Financing
   (c) Seller Financing
   (d) Bridge Financing
   (e) Permanent Financing

2. Which of the following statements is/are not true with respect to strategic buyers and financial buyers?

   I. Strategic buyers buy the new company with an intention to integrate the acquired business into the existing entity.

   II. Financial buyers provide financial support and also manage the business.

   III. Financial buyers are interested in making a profit by managing the business for a long period of time.

   (a) Only (I) above
   (b) Only (III) above
   (c) Both (I) and (II) above
   (d) Both (I) and (III) above
   (e) Both (II) and (III) above.

3. During the integration process, there should always be sufficient mechanisms for tracking and reporting on the results. This can be done with the use of different types of merger integration measures. Which elements of a synergy process are explained above?

   (a) Operational measures
   (b) Integration measures

(c) Process measures
(d) Cultural measures
(e) Financial measures.

4. The second stage of a typical LBO operation involves making the firm private. The company can be made private in which of the following format(s)?

   I. Stock Purchase.

   II. Debt Purchase.

   III. Asset Purchase.

   (a) Only (I) above
   (b) Only (III) above
   (c) Both (I) and (II) above
   (d) Both (I) and (III) above
   (e) All (I), (II) and (III) above.

5. Which of the following types of mergers can be called concentric merger?

   (a) Market extension merger
   (b) Horizontal merger
   (c) Pure conglomerate merger
   (d) Product extension merger
   (e) Vertical merger.

## 11.8 Summary

- Mergers could be of three types – horizontal, vertical and conglomerate. Horizontal mergers are associated with providing economies of scale. Vertical mergers achieve cost efficiencies by internalizing transactions. Financial conglomerates improve the resource allocation in the combined firm whereas the managerial and concentric conglomerates show potentials for synergy and transfer of managerial capabilities.
- Mergers and Acquisitions are conducted in ten different phases with each phase being as important as the other. These steps are highly interrelated and do not necessarily follow a logical order.
- The first two phases of the acquisition process, namely – the business plan and the acquisition plan, define the overall strategic direction for the business, the key objectives, and the available resources and tactics for completing an acquisition.
- The search phase helps identify the prospective acquisition candidates based on a few selection criteria.

- The screening phase is a refinement of the search phase and involves the application of more criteria to filter the list of candidates identified in the search process.
- Thereafter, a first contact is made with a letter of intent and a confidentiality agreement. The negotiation phase concurrently conducts many activities. These activities include deal structuring, conducting due diligence, refining valuation and developing the financing plan. The actual amount of the purchase price is determined during this phase.
- The next phase is the integration planning phase which is one of the very important aspects of the acquisition process done before closing. Without adequate planning integration is unlikely to provide the synergies anticipated.
- The closing phase involves organizing, finalizing and signing all the necessary legal documents. All necessary third party consents and regulatory and shareholder approvals are obtained at this stage.
- The post-closing integration phase is a very vital phase and consists of effective communication with all the stakeholders, retaining the key employees, identifying and resolving immediate cash flow needs, etc. Post-closing evaluation is the final stage, which helps in the identification of the mistakes which help avoid making the same mistakes in the future acquisitions.
- Various participants like the investment bankers, lawyers, accountants etc., are involved at various stages of the acquisition process.
- Mergers and acquisition often fail to achieve the desired objective. The reason can be any one or two or more combination of factors such as payment of high price, overestimated synergies, inconsistent strategy, inadequate due diligence, clash of corporate cultures, improper business fit, etc.

## 11.9 Glossary

**Concentric Merger:** A merger in which there is carry-over in specific management functions or complementarity in relative strengths among specific management functions rather than carry over or complementarity in only generic management functions.

**Conglomerate Merger:** A merger between firms operating in unrelated industries. Any combination which is not horizontal or vertical.

**Defensive Merger:** The directors of a threatened company may acquire another company for shares as a defensive measure to prevent the unwelcome takeover bid. To do this, they put large block of shares of their own company in the hands of shareholders of friendly company to make their own company least attractive for takeover bid.

**Horizontal Merger:** It is a merger of two competing firms, which are at same stage of industrial process.

**Hostile Takeovers:** An acquirer may not offer the proposal to acquire the target company's undertaking, but may silently and unilaterally pursue efforts to gain controlling interest in it against the wishes of the management. They are also called raids or takeover raids.

**Mezzanine Financing:** Subordinated debt issued in connection with leveraged buy-outs.

**Product Extension Merger:** A type of conglomerate merger which involves a combination between firms in related business activities that broadens the product lines of the firms. These are also called concentric mergers.

**Vertical Merger:** This would give backward integration to the company to assimilate the sources of supply and forward integration towards the market. i.e., the merging undertaking would be a buyer or a supplier using its product as intermediary material for final production.

## 11.10 Suggested Readings / Reference Material


1. Richard Brealey and Stewart Myers and Franklin Allen and Alex Edmans (2023). Principles of Corporate Finance. 14th Edition, McGraw Hill India
2. Hubbard & Obrien (2022). Money, Banking and Financial System. 4th edition, Pearson Education
3. Sheeba Kapil (2021). Financial Valuation and Modelling. Wiley
4. Prasanna Chandra (2020). Strategic Financial Management: Managing for value creation. 2nd edition, McGraw Hill
5. Rick Mann & David Tarrant (2020). Strategic Finance for Strategic Leaders: The First Five Tools. Clarion strategy publishing
6. Kalyani Karna (2019). Strategic Financial Management. 1st edition. Corporate Plus Publications Private Limited
7. Edward I Altman (2019). Corporate Financial Distress, Restructuring and Bankruptcy. 4th edition, Wiley
8. Stephen A. Ross, Randolph Westerfield (Author), & Jordon (2018). Fundamentals of Corporate Finance. 12th edition, McGraw Hill College


## 11.11 Answers to Check Your Progress Questions

**1. (b) Strip Financing**

Strip financing is a type of financing often used in leveraged buy-outs in which all claimants hold approximately the same proportions of each security.

**2. (e) Both (II) and (III) above**

Financial buyers provide financial support and also manage the business and Financial buyers are interested in making a profit by managing the business for a long period of time are not true with respect to strategic buyers and financial buyers.

**3. (e) Financial measures**

Financial measures are necessary in tracking and reporting on whether the organization is achieving the expected synergies of the deal.

**4. (d) Both (I) and (III) above**

The company can be made private in Stock Purchase and Asset Purchase.

**5. (d) Product extension merger**

Product extension merger can be called concentric merger.

# Unit 12

# Theories of Mergers

**Structure**



*"Merger is a cataclysmic event second only to big bang in the amount of energy that it produces."*

- Joan Centrella

## 12.1 Introduction

Mergers and acquisitions are events which change the situation greatly like a big bang and produces positive energy for the acquirer. The strategy of mergers and acquisition is adopted for a variety of reasons. The reason might be to increase the buying power with the suppliers, achieve consolidation of supply or markets, or to achieve a distribution network for the existing product line or to reduce the risk through product diversification. Whatever be the fundamental reason, one thing that all merger and acquisition strategies have in common is the desire to strengthen the existing business and help its growth. Various analysts have proposed various theories to explain the motives behind corporates using mergers and acquisition strategies. We shall now take a deeper look at each of them.

## 12.2 Objectives

After going through the unit, you should be able to:

- Outline Efficiency Theories
- Discuss Information and Signaling, Market Power, and Tax considerations

- Describe Agency Problems and Managerialism, Hubris Hypothesis and Free Cash Flow Hypothesis
- Analyze Value Increases by Redistribution

## 12.3 Efficiency Theories

Efficiency theories of mergers suggest that Mergers and Acquisitions (M&As) provide a mechanism by which capital can be used more efficiently and that the productivity of the firm can be increased through economies of scale. According to these theories mergers and acquisitions have the potential for social benefits. These theories can be further divided as follows:

- Differential Efficiency Theory
- Inefficient Management Theory
- Synergy
- Pure Diversification, Strategic Realignment to Changing Environments
- Undervaluation

**Differential Efficiency Theory**

According to the differential efficiency theory of mergers, if the management of firm A is more efficient than the management of firm B and if firm A acquires firm B, the efficiency of firm B is likely to be brought up to the level of firm A. As per the theory, this increased efficiency of firm B is attributed to the merger.

The theory implies that some firms operate below their potential and as a result have below average efficiency. Such firms are most vulnerable to acquisition by other more efficient firms in the same industry. This is because firms with greater efficiency would be able to identify firms with good potential but operating at lower efficiency. They would also have the managerial ability to improve the latter's performance.

However, a difficulty would arise when the acquiring firm is over-optimistic and overestimates its ability to improve the performance of the acquired firm. This may result in either the acquiring firm paying too much for the acquired firm or the acquirer not improving the acquired firm's performance up to the level of the acquisition value given to it.

The managerial synergy hypothesis is an extension of the differential efficiency theory. It states that a firm, whose management team has greater competency than is actually required by the current responsibilities in the firm, may seek to utilize the surplus resources by acquiring and improving the efficiency of a firm, which is less efficient due to lack of adequate managerial resources. Thus, the merger will create a synergy, since the surplus managerial resources of the acquirer combine with the non-managerial organizational capital of the acquired firm.

Particularly, when these surplus resources are indivisible and cannot be released, a merger enables them to be optimally utilized. Even if the firm has no opportunity to expand within its industry, it can diversify and enter into new areas. However, since it does not possess the relevant skills related to that business, it will attempt to gain a 'toehold entry' by acquiring a firm in that industry, which has organizational capital along with inadequate managerial capabilities.

**Inefficient Management Theory**

This is similar to the concept of managerial inefficiency but it is different in that inefficient management means that the management of one company simply is not performing up to its potential. Another control group is in a position to manage the assets of the firm more effectively. Inefficient management simply represents management that is incompetent in the complete sense. In the differential efficiency theory or the managerial synergy hypothesis, the management seeks to complement the management of the acquired firm and has experience in the particular line of business activity of the acquired firm. Hence, it is more likely to be the basis for horizontal mergers. On the contrary, inefficient management theory could be the basis for conglomerate mergers also.

**Example: Inefficient to Efficient – The Story of CG Power under Murugappa Management**

According to Differential Efficiency theory, an inefficient firm if merged with an efficient firm will also become efficient as we can see in case of CG Power and Industrial Solutions Ltd (CGPISL). Murugappa Group, a Chennai based international conglomerate, acquired an ailing and highly levered CGPISL in 2020. The merged company achieved a complete financial turnaround in its first full year of operations under the new Murugappa group management. CGPISL cleared net debt of ₹ 650 crore, including that related to the CG House and bounced back and performed to their potential, regaining the confidence of customers and vendors. CGPISL achieved highest sales by motors division and railway division, highest-ever order booking for the transformer division and an order book of ₹ 3,686 crore. The inefficient company CGPIL after merging with an efficient Murugappa group started making profits. This is a classic example of combination of two substances or factors to produce a greater effect together than that which the sum of the two operating independently and Murugappa group created a turnaround of the acquired company.

*Source: https://www.financialexpress.com/industry/cg-power-achieves-financial-turnaround-under-murugappa-group/2510969/ dated 3rd May, 2022. Accessed on 31.05.22*

**Synergy**

Synergy refers to the type of reactions that occur when two substances or factors combine to produce a greater effect together than that which the sum of the two

operating independently could account for. It refers to the phenomenon 2 + 2 = 5. In mergers, this means the ability of a combination of two firms to be more profitable than the two firms individually. In anticipation of such synergistic benefits, acquirer firms incur the expenses of the acquisition process and still pay premium for the shares of the target shareholders. Synergy allows the combined firm to have a positive Net Acquisition Value (NAV).

$$NAV = V_{AB} – [V_A + V_B] – P – E$$

Where,

$V_{AB}$ = the combined value of the two firms,

$V_B$ = the market value of the shares of B,

$V_A$ = A's measure of its own value,

P = premium paid for B, and

E = expenses of the acquisition process.

Rearranging the above equation:

$$NAV = [V_{AB} – (V_A + V_B)] – (P + E)$$

Where,

$[V_{AB} – (V_A + V_B)]$ represent the synergistic effect.

This sum must be greater than the sum of P + E to validate going forward with the merger. If it is not greater than the sum of P + E, there will be an overpayment for the target.

**Financial Synergy**

The impact of a corporate merger or acquisition on the costs of capital to the acquiring or the combined firm refers to financial synergy. The managerial synergy hypothesis is not relevant to the conglomerate type of mergers because a conglomerate merger implies several and often successive acquisitions in various diversified areas. Under such conditions the managerial capacity of the firm will not develop quickly enough to be able to transfer its efficiency to several newly acquired firms in a short time. Additionally, managerial synergy is applicable only in cases where the firm acquires other firms in the same industry.

Financial synergy occurs as a result of the lower costs of internal financing versus external financing. A combination of firms with different cash flow positions and investment opportunities may produce a financial synergy effect and achieve lower cost of capital. If the cash flows of the two firms are not perfectly correlated, the firms may reduce risk. If the instability in the cash flows is reduced due to acquisition, suppliers may consider the firm to be less risky. It is less likely that the firm would become technically insolvent. Tax saving is another consideration. The combined debt capacity of the merged firm may be greater than the sum of their individual capacities before the merger.

The theory of financial synergy also states that when the rate of cash flow of the acquirer is greater than that of the acquired firm, capital is relocated to the acquired firm and hence, its investment opportunities improve.

**Operating Synergy**

The operating synergy theory of mergers state that economies of scale and economies of scope exist in an industry and that before a merger takes place, the levels of activity at which the two firms operate are insufficient to exploit these economies.

The economies of scale refer to the spreading of the fixed costs over increasing levels of production. Economies of scale are mostly seen in businesses having substantial fixed overhead expenses. Economies of scope refer to using a specific set of skills or an asset, which is currently being used to produce a specific product or service or to produce related products or services.

Operating economies of scale are achieved through horizontal, vertical and conglomerate mergers. Operating economies occur when the resources like people, equipment and overheads are indivisible. The productivity of such resources increases when they are spread over a larger number of units of output. For instance, expensive equipment in manufacturing firms should be utilized at optimum levels to decrease the cost per unit of output.

Operating economies in specific management functions such as production, R&D, marketing or finance may be achieved through a merger between firms, which have proficiencies in different areas. For instance, when a firm whose core competence is R&D, merges with another firm having a strong marketing strategy; the two businesses would complement each other after the merger.

Operating economies are also achieved in generic management functions such as, planning and control. According to the theory, even medium-sized firms need a minimum number of corporate staff. For instance, when the capabilities of corporate staff of a firm responsible for planning and control are underutilized and such a firm acquires another firm, which has just reached the size at which it needs to increase its corporate staff, the acquirer's corporate staff would be fully utilized, thus achieving economies of scale.

Vertical integration, i.e., combining of firms at different stages of the industry value chain also helps in achieving the operating economies. This is because vertical integration reduces the costs of communication and bargaining.

**Pure Diversification**

Diversification provides numerous benefits to managers, employees, owners of the firm and to the firm itself. In addition, diversification through mergers is commonly preferred to diversification through internal growth, given that the firm may lack internal resources or capabilities required. However, the timing of

diversification is an important issue since there may be several firms looking for to diversification through mergers at the same time in a particular industry. The benefits of diversification to the various stakeholders of the firm can be explained as follows:

i. **Employees:** Employees of a firm develop firm-specific skills over time, which make them more efficient in their current jobs. These skills are valuable to only that firm and job and not to any other jobs. Hence, employees have fewer opportunities to diversify their sources of earning income, unlike shareholders who can diversify their portfolio. Therefore, they seek job security and stability, better opportunities within the firm and higher compensation (promotions). These needs can be fulfilled through diversification, since the employees can be assigned greater responsibilities in the diversified firm.

ii. **Owner-managers:** Owners who are also managers of a firm will be able to retain corporate control over his firm through diversification and simultaneously reduce the risk involved.

iii. **Firm:** A firm builds up information on its employees over time, which helps it to match employees' skills profile with jobs within the firm. Managerial teams are thus formed within the firm. This information is not transferred outside and is specific to the firm. When the firm is closed, these teams are destroyed and value is lost. If the firm diversifies, these teams can be shifted from unproductive activities to productive ones, leading to improved profitability, continuity and growth of the firm.

iv. **Goodwill:** In due course of its operation, a firm develops a reputation in its relationships with suppliers, creditors, customers and others, resulting in goodwill. Various strategies like investments in advertising, employee training, R&D, organizational development, etc., are adopted to attain this goodwill. Diversification helps in maintaining the firm's reputation and goodwill.

v. **Financial and tax benefits:** Diversification through mergers also results in financial synergy and tax benefits. Since, diversification helps in reducing the risk, it ultimately increases the corporate debt capacity and reduces the present value of future tax liability of the firm.

## 12.4 Costs and Benefits of Merger

When a company, say 'A' acquires another company say 'B', then it is a capital investment decision for company 'A' and it is a capital disinvestment decision for company 'B'. Thus, both the companies need to calculate the Net Present Value (NPV) of their decisions.

To calculate the NPV of company 'A' we need to calculate the cost and benefit of the merger.

The benefit of the merger is equal to the difference between the value of the combined identity ($PV_{AB}$) and the sum of the value of both firms as a separate entity. It can be expressed as:

$$\text{Benefit} = (PV_{AB}) - (PV_A + PV_B)$$

Assuming that compensation to firm B is paid in cash, the cost of the merger from the point of view of firm A can be calculated as:

$$\text{Cost} = \text{Cash} - PV_B$$

Thus,

$$\text{NPV for A} = \text{Benefit} - \text{Cost}$$

$$= (PV_{AB} - (PV_A + PV_B)) - (\text{Cash} - PV_B)$$

The net present value of the merger from the point of view of firm B is the same as the cost of the merger for 'A'. Hence,

$$\text{NPV to B} = (\text{Cash} - PV_B)$$

NPV of A and B in case the Compensation is in Stock.

In the above scenario, we assumed that compensation is paid in cash. However, in real life compensation is most of the cases is paid in terms of stock. In that case, cost of the merger needs to be calculated carefully. It is explained with the help of an illustration – Let us assume that Firm A plans to acquire firm B. Following are the statistics of firms before the merger:

| | A | B |
|---|---|---|
| Market price per share | ₹ 100 | ₹ 40 |
| Number of shares | 10,00,000 | 5,00,000 |
| Market value of the firm | ₹ 100 million | ₹ 20 million |

The merger is expected to bring gains, which have a PV of ₹ 10 million. Firm A offers 2,50,000 shares in exchange for 5,00,000 shares to the shareholders of firm B. The cost in this case is defined as:

$\text{Cost} = \alpha PV_{AB} - PV_B$

Where,

α represents the fraction of the combined entity received by shareholders of B.

In the above example, the share of B in the combined entity is: – $\alpha$ = 2,50,000 / (10,00,000 + 2,50,000) = 0.2

Here, we assume that the market value of the combined entity will be equal to the sum of present value of the separate entities and the benefit of merger. Then,

$PV_{AB}$ = $PV_A$ + $PV_B$ + Benefit

= 100 + 20 + 10 = ₹ 130 million

Cost = $\alpha PV_{AB} - PV_B$

= 0.2 x 130 – 20 = ₹ 6 million

Hence,

NPV to A = Benefit – Cost

= 10 – 6 = ₹ 4 million

NPV to B = Cost to A = ₹ 6 million.

## 12.5 Strategic Realignment to Changing Environments

The strategic realignment theory suggests that firms use the strategy of M&As as ways to rapidly adjust to changes in their external environments. Strategic planning as studied earlier is concerned with the firm's environment and its constituencies and is not just an operating decision. The strategic planning approach to mergers implies that there is a possibility of achieving economies of scale or using the under-utilized managerial capacity of the firm. It may also mean that by external diversification the firm acquires management skills needed for increase in its present capabilities.

Adjustment to the environment can be done through internal development also but the speed of adjustment through external diversification is faster. Timing is a very important factor in capturing the growth opportunities. When a company has an opportunity of growth available only for a limited period of time slow internal growth may not be sufficient. Competitors may respond quickly and take advantage of the slow internal growth of the company. In such cases, external growth i.e., growth through mergers and acquisitions proves to be a better alternative. Merger with another company that has the resources, such as management, office, etc., already in place helps in the speedy growth of the company.

Generally, the sources of change are many but recently the regulatory and technological changes have been the major forces in creating new opportunities for growth or threats to a firm's primary line of business.

**Regulatory change**

In recent years, the merger and acquisition activity has more been happening in the industries like the financial services, telecommunications, media, etc. that have been subject to major deregulation. Deregulation helped in the reducing the artificial barriers in these industries and stimulated competition. Increased

competition has made companies in these sectors resort to mergers and acquisitions to achieve greater operating efficiency.

**Example: Consolidation of Public Sector Banks - A Strategic Realignment**

Economic reforms especially in financial services sector was enabling the Government of India for strategic realignment of certain public sector banks (PSBs) by mergers to create large entities and the sector witnessed the first round of consolidation which is as follows:

1. State Bank took over 5 of its associates and Bharatiya Mahila Bank.
2. Merge 10 PSBs into 4 as part of plans to create fewer and stronger banks and they are
   a. Oriental Bank of Commerce and United Bank of India into Punjab National Bank (PNB)
   b. Syndicate Bank merged with Canara Bank
   c. Andhra Bank and Corporation Bank into Union Bank of India
   d. Indian Bank with Allahabad Bank

The consolidation among PSBs infused a significant quantum of capital and mitigate risk for further losses thereby forcing the government to pump further capital.

The subject matter pertained to the year 2020 when the merger of 10 PSBs to 4 PSBs took place. Thus firms use the strategy of M&As as ways to rapidly adjust to changes in their external environments.

*Source: https://timesofindia.indiatimes.com/business/india-business/private-banks-set-to-become-larger-consolidation-likely-over-fy22-24-report/articleshow/87315007.cms dated 27th October, 2021. Accessed on 31.05.22*

**Technological Change**

Technology advancement has created new competitors, products, markets and industries. The increased use of information technology in current times is expected to boost technology's role in motivating takeovers and corporate restructuring. The large, more bureaucratic firms are often unable to demonstrate the creativity and speed which smaller firms display. With talent in short supply and short product life cycles such large firms often do not have the time or the resources to innovate. As a result, large firms often look to mergers and acquisitions as the fast and inexpensive way to acquire new technologies and proprietary knowledge. Technological acquisitions are also made as a defensive weapon to keep the important new technologies out of the competitors reach.

The growing significance of the technological change has modified the way to evaluate and value the target companies, increase the importance of intangible assets such as intellectual property and the way in which deals are structured. The speed of development of technology will drive the pace of deregulation, because the speed of technological change makes it increasingly unlikely that any one company can continue to remain a monopoly.

### Undervaluation

Undervaluation of the target companies can also be one of the motivating factors leading to mergers. Undervaluation refers to the target being worth more than what it is actually valued at. Undervaluation may be because of the underperformance of the management. A firm may also be undervalued according to the estimates of the acquirer possessing certain insider information about the firm, which the general market does not have.

Another important aspect of undervaluation is the difference between the market value of the assets and their replacement costs. If a company requires additional capacity to produce a particular product, it could achieve this capacity by buying a company producing the same product instead of beginning from the scratch.

### The q-ratio and buying undervalued assets

The q-ratio is defined as the ratio of the market value of the acquiring firm's stock to the replacement cost of its sales. Firms, which are interested in expanding their business have a choice of investing in new plant and equipment or obtaining the assets by acquiring company, whose market value is less than the replacement cost of its assets (i.e., q <1) can go in for a merger. This was the main reason behind the mergers in the 1970's, when high inflation and the interest rates led to the drop in stock prices below the book value of many firms. The high inflation also caused the replacement costs of the assets to be much higher than the actual book value of assets.

## 12.6 Information and Signaling

A tender offer in the acquisition spreads the information that the target shares are undervalued and immediately the market revalues those shares even if the offer turns out to be unsuccessful. No particular action by the target firm or any other is necessary for occurrence of revaluation. The offer also motivates the management of the target firm to implement a more efficient business strategy on its own. No additional outside offer other than the offer itself is needed for the upward revaluation.

Analysts who oppose this theory suggest that the increase in the share value of the target firm in an unsuccessful offer is due the expectation that the target firm will be subsequently acquired by another firm. Firms, which have some special resources generally do this. The share price of the firm, which do not receive subsequent offer within five years of the unsuccessful first offer will fall to the earlier level and the share price of those firms, which receive a subsequent offer will increase.

The signaling theory is a variation to the information hypothesis. It states that certain actions convey other significant forms of information. A firm receiving a tender offer may give a signal to the market that it possesses extra value, which was not recognized by the market earlier. It may also signal that the future cash

flows of the firm are likely to rise. When the acquirer uses stock to buy a firm it may signal that the target firm stock of the acquirer is overvalued. When a firm buys back its own shares, the market may take it as a signal that the management has information that its shares are undervalued and there are growth opportunities for the firm.

**Example: Signalling through Thirdware Acquisition by Tech Mahindra**

Once there is an offer by a company for acquisition of another, the market revalues those shares as it is normally felt that the targeted shares are undervalued. It also holds good for the acquiring company shares as well to prove its strength which we can see in the case of Tech Mahindra acquiring Thirdware, another IT company.

When the announcement was made by Tech Mahindra that it will acquire 100 per cent stake in Mumbai-based enterprise application company Thirdware for $42 million (about ₹ 322 crore) in an all-cash deal, its shares gained 0.9 per cent from ₹ 1487 to ₹ 1500. Tech Mahindra said that the acquisition will bolster its digital solutions and services in automotive consulting, design, development, and implementation in areas like ERP (Enterprise Resource Planning), EPM (Enterprise Performance Management), RPA (Robotic Process Automation), and IIoT (Industrial Internet of Things).

Thus a tender offer in the acquisition spreads the information that the target shares are undervalued and immediately gives signals for the market to revalue those shares.

*Source: https://economictimes.indiatimes.com/markets/stocks/news/tech-mahindra-rises-as-firm-to-buy-100-stake-in-thirdware/articleshow/90194047.cms dated 14th March, 2022. Accessed on 31.05.22*

## 12.7 Market Power

One of the main motives for a merger is to increase the share of a firm in the market. Increasing the market share means increasing the size of the firm relative to the other firms in an industry. This is also referred to as monopoly power. Through market power, a firm gets the ability to set prices at levels that are not sustainable in a more competitive market.

There are three sources through which market power can be achieved. They are product differentiation, entry barriers, and market share. Through horizontal integration a firm can increase its market share. In spite of considerable increase in market share, lack of significant product differentiation or barriers to entry could prevent a firm from increasing its price significantly above the marginal cost. Even in industries that have become more concentrated, there may be considerable amount of competition.

Horizontal mergers, which take place with a motive to attain market power are always of great concern to the Government because they might lead to

concentration of power or monopoly. Hence, comparisons between their efficiencies versus their effects of increased concentration must be made. The Herfindahl index or the H index helps in identifying the inequality of firms as well as the degree of concentration of industry sales. The theory behind its use is that if one or more firms have relatively high market shares, it is of greater concern than the share of the largest four firms.

**Example: Reliance Retail Acquisition Spree to Increase Market Power**

Companies go for acquisition to increase the share of a firm in the market in relative to the other firms in an industry with a motive to attain market power as in case of Reliance Retail (RR). RR has a long list of acquisitions which includes:

a. Justdial for $ 469M in Jul 2021
b. Addverb for $ 132M in Jan 2022
c. Purple Panda Fashions for $ 125M in Mar 2022
d. Clovia for $ 125 million in March 2022
e. Hamleys Toys for $ 88 million
f. Netmeds.com for $ 83 million
g. Urban ladder for $ 24 million
h. Abraham & Thakore in March 2022
i. Lingerie brand amanté from Sri Lanka-based MAS Holdings for an undisclosed amount
j. Actoserba Active Wholesale

RR was also in the process of acquiring some more retail companies. According to the RR officials, the top management was aiming to take the company to the level of Walmart in this decade and to become a global market power. Increasing the market power is increasing the size of the firm reach relative to the other firms in an industry.

*Source: https://tracxn.com/d/acquisitions/acquisitionsbyReliance-Retail dated 28th April, 2022. Accessed on 31.05.22*

**Example:** In a market 5 firms have a market share of 10 percent each and the remaining is held by 50 firms, having a market share of 1 percent each. The H index of the industry is:

$$5(10)^2 + 50(1)^2 = 500 + 50 = 550$$

In another market one firm has a market share of 47 percent and the remaining 53 percent is held by 53 different firms having 1 percent market share. The H index of the industry is:

$$(47)^2 + 53(1)^2 = 2,209 + 53 = 2,262$$

Higher the index, higher is the market concentration.

## 12.8 Tax Considerations

Mergers and acquisitions could be a valuable means to secure the benefits of tax. The potential tax benefits resulting from the carry forward of the net operating costs and the unused tax credits carry forwards and the capital gains and the step-up in the acquired assets basis affect the return of the firms involved in tax acquisitions.

Taxes affect the merger process as well as the merger incentives. However, the method of merger and the method of payment used in the merger, affects the tax attributes of the acquired firm.

**Carry Over of Net Operating Losses and Tax Credits**

When a firm having accumulated tax losses and tax credits is acquired by another firm then the acquirer can take the benefit from certain tax benefits. However, there should be some continuity of interests of the acquirer in the target firm. The continuity of interest can be achieved by meeting two conditions. Firstly, a majority of the target corporation should be acquired in exchange for the stock of the acquiring firm. This ensures that there is continuity in interests in the merged firm. Secondly, the acquisition should have been made for legitimate business purposes and not only with an intention to benefit from the tax attributes. This is ensured when the target's operations are continued. With the establishment of continuity in interests, the merger becomes a tax free organization in which the capital gains or losses of the shareholders of the target can be deferred and the tax attributes of the target are inherited.

**Stepped Up Asset Basis**

Acquisitions, which do not establish a continuity of interest are treated as taxable transactions. The acquiring firm can step-up or increase the tax basis of the acquired firm's assets to their fair market value and take depreciation charges on this new basis. Hence, an increase in the tax basis of the assets of the acquired firm results in greater cash flows and may also reduce any gains realized on the premature disposition of assets.

**Substitution of Capital Gains for Ordinary Income**

A firm with very few internal investment opportunities can acquire a firm with growth opportunities so as to substitute capital gains taxes for ordinary income taxes. The acquirer makes use of the excess cash, which otherwise would have to be paid as dividends. The acquiring firm later sells the acquired firm to realize capital gains.

When the growth of the firm has slowed so that the earnings retention cannot be justified, then an incentive for sale to another firm is created. Rather than paying out future earnings as dividends subject to the ordinary personal income tax, an owner can capitalize future earnings in the sale to another firm. The buyer will be

a firm, which invites additions to its internal cash flow for investment purposes. The transaction is a tax-free exchange of securities.

**Other Tax Incentives**

If a firm having operating losses merges with another firm, which has taxable profits then there will be a net gain to the acquiring firm often at the expense of the government. The losses can be used to reduce the taxable income. Even if the two firms, which have merged have current profits, a merger can reduce future tax liability as the variability of cash flows is lowered after the merger. One firm's profits can be offset by other firm's losses which results in tax savings. Thus, the present value of the combined firm's tax liability is reduced. Smaller the correlation between the two firms' cash flows, larger is this effect.

The implications of the income tax provisions on the merging firms in India are given in detail in Appendix A at the end of this chapter.

**Example: Tax Benefits for DBS Bank Post LVB Merger**

Companies which acquire loss making take tax benefits as the profit of the acquiring firm can adjust the losses of the acquired firm and thereby reduce the tax burden. This enables the acquiring firm to improve the profit % due to reduced tax burden as in case of loss making Lakshmi Vilas Bank getting merged with profit making DBS.

DBS Bank India, the wholly-owned subsidiary of the Singaporean lender, witnessed a surge in FY21 net profit at ₹ 312 crore on the merger of Lakshmi Vilas Bank (LVB). DBS Bank India bailed out LVB and in the process, increased its network. Acquisitions of a loss-making entity is a valuable means to secure the benefits of tax.

*Source: https://economictimes.indiatimes.com/markets/stocks/earnings/post-lvb-merger-dbs-bank-india-reports-higher-net-profit-for-fy21-npas-zoom/articleshow/84231854.cms dated 8th July, 2021. Accessed on 31.05.22*

## 12.9 Agency Problem and Managerialism

The conflict of interest between the principal (shareholders) and agent (managers) in which the agent has an incentive to act in his own self-interest because he bears less than the total costs of his actions is called an agency problem. When managers own only a portion of the shares in the firm it causes them to work less vigorously than otherwise and encourages them to take more benefits since they do not bear the cost. The agency costs include: (i) the costs of structuring the contracts between the managers and owners (ii) costs of monitoring and controlling the behavior of the agents by the principal (iii) costs of bond to guarantee that the agents will make optimal decisions or the principals will be compensated for the outcome of suboptimal decisions, and (iv) loss experienced by the principal due to the divergence between the agents decision and the decision to maximize principals' interests.

**Acquisitions as a Solution to Agency Problems**

A takeover through a tender offer or a proxy fight enables outside managers to gain control of the decision processes of the target while avoiding existing managers. There is always a threat of takeover when a firm performs badly either because of inefficiency or because of agency problems. The stock markets act as an external monitoring device since the decisions made by the managers is reflected in the stock price. Low stock price will put pressure on the managers to perform more efficiently and stay in line with the interests of the shareholders. If the stock markets do not perform the role of a monitoring device to control agency problems effectively then the market for takeovers provides an external control device as a last alternative. A takeover through a tender offer or a proxy fight enables outside parties to gain control over the management control of the firm. Poor performance of the existing management either because of inefficiency or because of agency problems may lead to mergers.

**Managerialism**

This theory suggests that mergers are not a solution for the agency problem but are the result of the problem. Merger activity is a manifestation of the agency problems of inefficient, external investment by managers who are only motivated to increase the size of their firms. They assume that compensation is a function of the size of the firm and hence involve unprofitable investments through mergers.

**Hubris hypothesis**

Hubris hypothesis is an explanation of why mergers may happen even if the current market value of the target firm reflects its true economic value. Hubris hypothesis implies that managers' look for acquisition of firms for their own potential motives and that the economic gains are not the only motivation for the acquisitions.

Roll suggests that the takeovers are a result of the hubris hypothesis on part of the buyers. They presume that their valuations are right though the market valuation may be otherwise. The pride of the management makes them believe that their valuation is superior to the market. Thus, the acquiring company tends to overpay for the target because of over-optimism in evaluating potential synergies.

This theory is particularly evident in case of competitive tender offer to acquire a target. The parties involved in the contest may revise the price upwards time and again. The urge to win the game often results in the winners curse. The winners curse refers to the ironic hypothesis that states that the firm which overestimates the value of the target mostly wins the contest. The factors that result in the hubris spirit are the desire to avoid a loss of face, media praise, urge to project as an "aggressive" firm, inexperience, overestimation of the synergies, overenthusiastic investment bankers, etc. It is called the winner's curse in the

sense that the winner is cursed to pay more than what the company is actually worth.

**Example: The Mega Deal of Bristol-Myers Squibb and Celgene Merger**

According to Hubris hypothesis, the acquiring company sometimes tend to overpay for acquisition of the target company because of over-optimism in evaluating potential synergies which can be observed in case of Bristol-Myers Squibb and Celgene merger in November 2019.

The massive size of the transaction of $ 95 bn was termed as a megadeal. Celgene became a subsidiary of Bristol-Myers Squibb and the synergy was that the merger brought together two of the world's largest cancer drug manufacturers and the deal amounts were much greater than the sum of the parts.

*Source: https://dealroom.net/blog/successful-acquisition-examples dated January 2022. Accessed on 31.05.22*

**Free Cash Flow Hypothesis**

Free cash flow is the cash flow in excess of the amounts required to fund all projects that have positive net present values, when discounted at the applicable cost of capital. Such free cash flow is usually paid back to the shareholders to maximize the share price. However, payment of the free cash flow reduces the amount of resources under the control of the management thereby reducing their power. In such circumstances, the firm has to issue new shares or borrow money from the markets for making any additional investments and hence will be subjected to monitoring of capital markets.

**Value Increases by Redistribution**

Redistribution among the shareholders is the main source of value increase in mergers. The gains come at the expense of other stakeholders in the firm. The expropriated stakeholders under the redistribution hypothesis include bondholders, the government (in the case of tax savings) and the organized labor.

**Activity 12.1**

a. Explain the differential efficiency theory of merger..

……

……

b. Write a short note on tender offer.

……

……

## Check Your Progress

1. Which of the following efficiency theories of mergers states that the management seeks to complement the management of the acquired firm and has experience in the particular line of business activity of the acquired firm?

   (a) Operating synergy theory

   (b) Financial synergy theory

   (c) Undervaluation theory

   (d) Inefficient management theory

   (e) Differential efficiency theory.

2. Which of the following theories explain why mergers may happen even if the current market value of the target firm reflects its true economic value?

   (a) Free Cash Flow Hypothesis

   (b) Managerialism

   (c) Hubris Hypothesis

   (d) Market Power

   (e) Agency Problem.

## 12.10 Summary

- Corporate restructuring attained through mergers, tender offers, joint ventures, divestitures and spin-offs have many theories involved to justify the activities. These theories are: efficiency theories, information and signaling theory, agency problems and managerialism, free cash flow hypothesis, market power, taxes and redistribution.
- The efficiency theories emphasize on the fact that merger and other such forms of asset redeployment have potential for social benefits. These involve improving on the present performance of the management and achieving synergies. It includes the differential managerial efficiency, inefficient management, synergy, pure diversification, strategic realignment to changing environments and undervaluation theories.
- Other theories of mergers include information and signaling, agency problems, managerialism, free cash flow, market power, taxes and redistribution.
- Information theory suggests that the share price of the target firm is revalued upwards after a tender offer whether it is successful or not. According to this

hypothesis, the tender offer generates new information and that the revaluation is permanent.

- Signaling is involved in mergers and tender offers in a number of ways. The fact that the firm has received a tender offer is in itself a signal to the market that the firm possesses unrecognized additional values or that the future cash flow streams would be increasing in the near future.
- The firm faces an agency problem when the managers own a fraction of the shares of the firm. Such a partial ownership causes managers to work less vigorously and to take away more perquisites.
- Market power theory suggests that increased concentration resulting in monopoly will lead to a gain to the merged firm.
- Free cash flow hypothesis comes as a rescue to the agency costs involved in a takeover activity. The hypothesis states that the free cash flow must be paid to the shareholders if the firm has to remain efficient and intends to maximize its share price.
- The effects of tax can also be an important determinant of mergers though they do not play a very significant role. Carryover of the net operating losses, stepped-up asset basis, and the substitution of capital gains for the ordinary income are some of the tax motivations for mergers.

## 12.11 Glossary

**Agency Problem:** Conflicts of interests among stockholders, bondholders and managers.

**Differential Managerial Efficiency:** A theory which infers that more efficient managements takeover the firms with less efficient managements and achieve gains by improving the efficiency of the target.

**Financial Synergy:** A theory which suggests a financial motive for mergers, especially between firms with high internal cash flows and poor investment opportunities and firms with low internal cash flows and high investment opportunities which in the absence of a merger require expensive external financing.

**Free Cash Flow:** Cash available for distribution after taxes but before the effects of financing. Calculated as net income plus depreciation less expenditure required for working capital and capital items adjusted to remove effects of financing.

**Free Cash Flow Hypothesis:** This is Jensen's theory of how the pay-out of free cash flow helps resolve the agency problem between the managers and the shareholders. It says that the paying of current and future free cash flows reduces the power of the management.

**q-Ratio (Tobin's q Ratio):** The ratio of market value of the firm's securities to the replacement costs of its physical assets.

**Redistribution Hypothesis:** A theory that the increase in value in mergers represents wealth shifts among the stakeholders rather than a real increase in value.

**Tender Offer:** The acquirer pursues takeover (without consent of the target) by making a tender offer directly to shareholders of the target company to sell their shares. This offer is made for cash.

**Undervaluation:** A firm's securities are selling for less than their intrinsic, or potential, or long run value for one or more reasons.

## 12.12 Suggested Readings / Reference Material


1. Richard Brealey and Stewart Myers and Franklin Allen and Alex Edmans (2023). Principles of Corporate Finance. 14th Edition, McGraw Hill India
2. Hubbard & Obrien (2022). Money, Banking and Financial System. 4th edition, Pearson Education
3. Sheeba Kapil (2021). Financial Valuation and Modelling. Wiley
4. Prasanna Chandra (2020). Strategic Financial Management: Managing for value creation. 2nd edition, McGraw Hill
5. Rick Mann & David Tarrant (2020). Strategic Finance for Strategic Leaders: The First Five Tools. Clarion strategy publishing
6. Kalyani Karna (2019). Strategic Financial Management. 1st edition. Corporate Plus Publications Private Limited
7. Edward I Altman (2019). Corporate Financial Distress, Restructuring and Bankruptcy. 4th edition, Wiley
8. Stephen A. Ross, Randolph Westerfield (Author), & Jordon (2018). Fundamentals of Corporate Finance. 12th edition, McGraw Hill College


## 12.13 Answers to Check Your Progress Questions

**1. (d) Inefficient management theory**

Inefficient management theory states that the management seeks to complement the management of the acquired firm and has experience in the particular line of business activity of the acquired firm.

**2. (c) Hubris Hypothesis**

Hubris Hypothesis explains why mergers may happen even if the current market value of the target firm reflects its true economic value.

# Unit 13

# Methods of Valuation of Firms

**Structure**



*"A firm can have value only if it ultimately delivers earnings."*

— Aswath Damodaran

## 13.1 Introduction

Valuation of a firm depends on the earnings its securities provide and there are various approaches to ascertain its valuation. Every asset, whether financial or real, has value. Value is an expression of an asset's worth. An asset can be measured in terms of sentimental value or financial value. Some of the definitions of value or valuation as defined in different dictionaries are described below. Each of these differs from the other in language, but fundamentally means the same.

"Value is the rate of worth set upon a commodity."

"Value is the intrinsic worth of a thing."

"Value is worth that property or those properties of a thing, which render it useful or estimable."

Valuation is the, "act of determining the value or the price of anything", or "estimation of things' worth especially by a professional valuer."

To realize the financial benefit of an investment, the owner must be able to obtain its return either through ownership or exchange.

## 13.2 Objectives

After going through the unit, you should be able to:

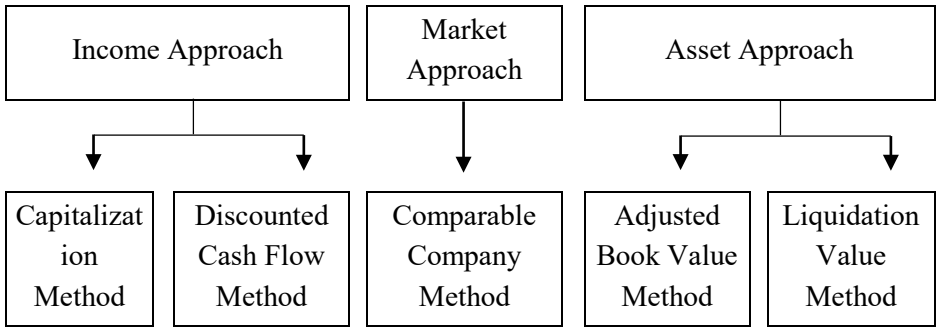
- Explain Various Approaches to Valuation
- Discuss Role of Valuation
- Describe Discounted Cash Flow Model, Equity Valuation Model and Firm Valuation Model
- Illustrate Comparable Company Approach
- Enumerate Option Pricing Method
- Identify Choosing the Right Valuation Method

## 13.3 Approaches to Valuation

There are various approaches and methodologies to value a firm. Some of the very common approaches to valuation are the discounted cash flow approach, the comparable firms approach, adjusted book value approach and the option pricing model approach. The discounted cash flow approach relates the value of the firm to the present value of its expected future cash flows. The comparable firms approach estimates the value of the firm in relation to the value of other similar firms based on various parameters like earnings, sales, book value, cash flows, etc. The adjusted book value approach involves estimation of the market value of the assets and liabilities of the firm as a going concern. Option pricing models are used to value assets which have option like features. Let us look at their classification in more detail.

Businesses vary in the nature of their operations, the markets they serve and the assets they own. Hence, the body of knowledge in business valuation has established three primary approaches by which businesses can be appraised. The three approaches are again divided into different types. The three basic approaches to valuation can be grouped as under:

**Figure 13.1: Approaches to Valuation**




*Source: ICFAI Research Center*

Each approach brings a unique focus on value. The income approach looks at future returns discounted to reflect their relative level of risk, the market approach

establishes value based on the price paid for alternative investments and the asset approach establishes value based on a hypothetical sale of the company's underlying assets. Let us look at each of them in detail:

**Income Approach**

The income approach to valuation is to a large extent dependent on the particular definition of income or cash flows and the selection of an appropriate discount rate. It involves projected cash flows for a specific number of periods plus a terminal value to be discounted to the present, using the appropriate discount rate. The difference in the number of periods, i.e., one versus multiple, establishes a difference between the two principal methods within the income approach.

**Single-period Capitalization Method:** This is a simpler method under the income approach and involves the capitalization of the return at the cost of capital for a company for one year. Here, the return chosen should be a representative of the company's anticipated long-term future performance.

**Multiple-period Discounted Cash Flow Method:** This method involves two stages. The first stage involves forecasting of cash flows for a specific number of years and the second stage involves estimating the terminal value, i.e., the value for all the years after the forecast period. Unless the company being valued has very stable earnings and constant growth, the multiple-period discounting method should not be used.

**Market Approach**

The market approach is widely used to value private firms. The market approach is based on the principle of substitution where the price of an asset will be the only cost of acquiring an equally desirable substitute. In other words, the value under the market approach is determined based on the prices that have been paid for similar assets in the relevant market place. Relative valuation method is one of the best known methods under the market approach to valuation.

**Relative Valuation or Comparable Company Approach:** Relative valuation or comparable company approach to valuation values an asset or a firm based on how an exactly identical firm (in terms of risk, growth rate and cash flows) is priced. Relative valuation is much more likely to reflect the current mood of the market, since it attempts to measure the relative value and not the intrinsic value.

**Asset Approach**

The asset approach is primarily used to value a business when the primary goal in the acquisition process is to achieve control of the assets owned by the target. It is also used in capital intensive industries or in acquisitions where the non-operating assets can be sold off to recover some of the acquisition cost. The asset approach to valuation is done either on the premise of a going concern or liquidation.

**Adjusted Book Value:** When the asset or the firm is valued, based on the going concern premise, then it is called the 'adjusted book value' approach. Under this method, it is assumed that the business will continue operating and the assets are evaluated based on their value in use.

**Example: Asset Approach, Adjusted Book Value Method**

Under the adjusted book value method, it is assumed that the business will continue operating and the assets are evaluated based on their value in use as we can observe in the case of Swasthik Industrial Products Pvt Ltd as on March 2022:

*(₹ in lakh)*

| Particulars | March 2021 | March 2022 |
|---|---|---|
| Equity capital | 325.00 | 325.00 |
| Reserves and surplus | 1415.50 | 1675.25 |
| Long term debt | 145.65 | 125.35 |
| Short term debt | 265.00 | 280.35 |
| Value of the company | 2151.15 | 2405.95 |

The value of the company as per asset approach (adjusted book value method) was estimated at ₹ 2405.95 lakh.

*Source: ICFAI Research Center*

**Liquidation Method:** When the asset or the firm is valued, based on the liquidation premise, then it is called the 'liquidation value' method. Under this method, it is assumed that the operations of the business will cease and liquidation will occur. The assets are valued at the proceeds they generate in a sale. The costs involved in liquidating the business must be subtracted, while determining the net proceeds.

Some of the other important approaches to valuation are as follows:

**The Replacement Cost Approach**

The approach states that the assets of a business are worth their cost of replacement. The approach is most suitable to businesses that have substantial amounts of tangible assets whose actual cost of replacement can be easily determined. In case of businesses whose primary assets consist of intellectual property, it may be very difficult to determine the actual cost of replacing the firm's intangible assets using this method. The accuracy of this approach is heavily dependent on the skill and specific industry knowledge of the appraisers employed to conduct the study.

It is simple but involves the most tedious process of valuation. It may be measured in terms of (i) the gross current replacement cost or (ii) the net current replacement cost.

It includes both tangible and intangible assets. Tangible assets include land, buildings and machinery, inventories, work-in-progress etc. Intangible assets include cost of recruitment and training people, the creation of markets and protective devices such as copy rights and trademarks, development of customer base etc. Such an estimate is compared with the asking price of the company or is used as a basis for an offer and subsequent negotiation.

Its disadvantage is the difficulty in getting accurate information, as it is difficult to find out replacement costs of the assets which have been depreciated, rendered technologically obsolete and inoperative.

**Option Pricing Model**

The option pricing model can be used to value any asset which has the characteristics of an option. Option pricing theory has a wide range of applications in corporate finance, involving everything from capital budgeting to valuation. An option is an asset with pay-offs which are contingent on the value of an underlying asset. The equity of a public limited firm has the characteristics of a call option. Hence, the option pricing model can be applied to value the firm.

The traditional investment analysis methods analyze the projects on the basis of expected cash flows and discount rates, but fail to consider the numerous other options that are usually associated with many projects. These options are:

i. The option to delay a project, when the firm has exclusive rights to the project,
ii. The option to expand the project to develop new products or markets sometime in the future, and
iii. The option to abandon a project if the cash flows do not meet the expectations.

For such projects, the option pricing model of valuation proves to be a better alternative.

Each of the above three approaches are explained in detail in the subsequent chapters.

## 13.4 Role of Valuation

Valuation plays different roles in different tasks.

**Portfolio Management**

The attitude of the investors towards investment determines the role of valuation in portfolio management. It plays a nominal role for passive investor and a greater role for an active investor. The nature and role of valuation also differs for

different active investors. Valuation plays a main role in portfolio management for (i) fundamental analysts and (ii) a secondary role for technical analysts.

i. **Fundamental Analysts:** According to the fundamental analysts, the financial characteristics like the growth prospects, risk profile and cash flows determine the true value of the firm. Hence, valuation is the central focus in fundamental analysis. Some analysts use discounted cash flow models while others use multiples, such as price earnings ratios and book values ratios.

ii. **Chartists:** According to the chartists, prices of shares are driven by the psychology of investors. The past information available about the price movements, trading volumes, short sales, etc., gives an indication of investor psychology and future price movements. Valuation for such chartists can be used to determine support and resistance lines on price charts.

iii. **Information traders:** Prices of shares move on availability of information about the firm. Information traders trade prior to receiving such information or soon after it is revealed in financial markets. The information trader focuses on the relationship between information and change in value rather than value alone. Hence, he may buy an overvalued firm if he believes that the next information is going to raise the price. If there is a relationship between how undervalued or overvalued a firm is and how its stock price reacts to new information, then valuation greatly influences the investment trader's decision to invest.

**Example: RIL Creating Value through Acquisitions**

Value of a company depends on how healthy and strong it is and it is for the managers to create such companies. Creating healthier companies is based on corporate decisions such as projects it undertakes, the sources from which the projects are financed and the dividend policy which is observed in case of Reliance Retail, a division of Reliance Industries.

Reliance Industries Ltd. (RIL) made several acquisitions in the past three years to boost the product offerings of its subsidiaries—Reliance Jio Infocomm Ltd. and Reliance Retail Ltd., among others. RIL put in $566 million+ in media and education, $194 million+ in retail, $1.2 billion+ in telecom and internet firms, $100 million+ in digital firms, and $391 million+ in the chemicals and energy space. Some of the acquired companies are Fynd, Grab, Haptik, Reverie, Saavn, Purple Panda Fashions (Clovia), Tesseract, Den Networks and Hathway Cable & Datacom Ltd, Hamleys, Netmeds, Asteria Aerospace, Now Floats Technologies, Radisys, Balaji Telefilms and Eros International, Urban Ladder, JustDial, Milkbasket, Zivame, Portico, Dunzo, Shri Kannan

*Contd. .....*

Departmental Store, Jaisuryas, Kalanikethan, Abraham & Thakore, Ritu Kumar, Manish Malhotra, AK-OK, Genesis Colors, Future101 Design, Addverb Technologies, Portico, Amante, Rahul Mishra, Lithium Werks and Embibe. Most of these companies were start-ups and the acquisition mode was through internal accruals and boosted the value of RIL. The market capitalization (MC) of RIL over the last three years was as follows:

| Year (March 31st) | $ in bn |
|---|---|
| 2020 | 183.56 |
| 2021 | 215.27 |
| 2022 | 224.50 |

Over the last three years the MC of RIL was raised by 18%.

Thus one can understand that the primary objective in corporate finance is to maximize the value of the firm and managers who focus on building shareholder value, create healthier companies as seen in case of RIL.

*Sources: (i) https://startuptalky.com/reliance-industries-acquisitions/ dated 22nd March, 2022. (Accessed on 28th June, 2022)*
*(ii) https://companiesmarketcap.com/reliance-industries/marketcap/ dated 01.06.2022 (Accessed on 28th June, 2022)*

**Acquisition Analysis**

Valuation plays a central role in acquisition analysis. The fair value for the target firm has to be decided by the bidding firm and the target firm has to determine a reasonable value for itself before taking a decision whether to accept or reject the project.

In takeover analysis, the effect of synergies on the combined value of the two firms has to be considered before the decision is made on the bid. Further the effect of value, of changing management and restructuring the target firm will have to be taken into account in deciding on a fair price.

**Corporate Finance**

The primary objective in corporate finance is to maximize the value of the firm. Managers who focus on building shareholder value will create healthier companies than those who do not. The value of a firm depends on many decisions that it makes like the projects it undertakes, the sources from which the projects are financed and the dividend policy. Understanding the relationship between investment, financing and dividend decisions is very important to make value increasing decisions and to have a sensible financial restructuring.

Valuation done by management consulting firms often provides the basis for the restructuring of these firms. These firms offer advisory services to companies on how to increase value.

## 13.5 Valuation: Some Misconceptions

Let us look at some of the misconceptions regarding valuation.

**Valuation Models Give an Exact Estimate of Value**

The appropriateness of valuation depends upon the quality of the data, correctness of the assumptions and the application of the right valuation model. Most of the data pertaining to projected cash flows is futuristic and is thus characterized by uncertainty. This makes valuation an inexact and imprecise exercise. The valuation process gives us at best a value anchor. A value range may be determined based on the margin of error which in turn is a function of the degree of uncertainty of the cash flows.

**Valuation is a Totally Objective Exercise**

The models used in valuation may be quantitative, but the inputs leave plenty of room for subjective judgments. The opinions and the biases of the valuer are reflected in the valuation. The estimation of the future cash flows depend upon the aggressiveness or the conservatism of the assumptions made. Further, a certain degree of subjectivity exists while determining the discount rates.

**A Well-done Valuation is a Timeless Treasure**

Any valuation exercise is time specific and is reflective of the information available to the valuer at that specific point of time. As time passes by, the flow of new information begins. The information may be firm specific, industry specific or pertain to the market as a whole. Thus, the valuation done in the past becomes increasingly obsolete and the same needs to be updated to reflect the current information.

**The Value Estimated is Important; the Process Does Not Matter**

The valuation exercise depends on the robustness of the valuation process. Hence, the focus should not be exclusively on the outcome in the form of a definitive value figure. The valuation process is informative and provides valuable insights about the firm. The process reveals a great deal about the determinants of value and the user should make an effort to understand the valuation process.

**The Market is Always Wrong**

The benchmark for comparison of a valuation exercise is the market valuation of the firm. When the value estimated is significantly different from the market valuation, there can be two conclusions: the valuer is right and the market has substantially undervalued/overvalued the firm, or that the market is right and the valuation is incorrect. It is observed that very often, the instantaneous conclusion drawn is that the market is wrong. In such cases, it is prudent to give the benefit of doubt to the market as the collective wisdom of the market, as a whole is generally superior to the judgment of the valuer.

**Example: LIC IPO – Not up to Expectation**

There are many an occasion when the markets go wrong as in the case of the much-hyped Life Insurance Corporation (LIC) of India shares. The shares made a weak stock market debut. The LIC shares opened for trading at ₹ 872 on the National Stock Exchange (NSE) against its issue price of ₹ 949, a decline of 8.11 per cent or ₹ 77 from the issue price. Though the price finally settled at ₹ 875.25 at closing, there was not much positive movement in trading in the first month of its issue. (Traded at ₹ 661 on 24th June, 2022.)

When the value estimated is significantly different from the market valuation, either the valuer is right and the market has undervalued/overvalued the firm, or that the market is right and the valuation is incorrect as seen in case of LIC IPO.

*Source: https://www.outlookindia.com/business/lic-ipo-s-weak-debut-investors-disappointed-but-long-term-hope-floats-news-197229 dated 18th May, 2022. Accessed on 28th June, 2022*

## 13.6 Discounted Cash Flow Model

The discounted cash flow approach to valuation estimates the intrinsic value of an asset, based on the fundamentals. The intrinsic value of an asset is the present value of the benefits associated with it. It is the value that would be attached to the firm by all knowing analysts, who not only know the expected future cash flows, but can also find the right discount rate to their cash flows and value them with complete accuracy.

The discounted cash flow approach is the foundation on which all the other approaches to valuation are based. Some of the advantages of this approach are:

i. The value is estimated as a sum of all components that make up the enterprise value, instead of just the equity. This helps in identifying and understanding the separate investment and financing sources of value for the equity holders.
ii. It can be applied to the company as a whole and also to individual business units.
iii. It is consistent with the capital budgeting process familiar to most companies.
iv. It is not only simple to carry on with personal computer tools, but also sophisticated enough to deal with complex situations.
v. It helps in identifying the key leverage areas and hence helps in the search for value creating ideas.

**Basis for Discounted Cash Flow Valuation**

The discounted cash flow approach to valuation is based on the concept of time value of money. The value of an asset is computed as the present value of all expected future cash flows that the asset generates. It is represented as:

$$\text{Value} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+k)^t}$$

Where,

n = Life of the asset

$CF_t$ = Cash flow period t

k = Discount rateThe discount rate is the function of the risk of the estimated cash flows. Riskier assets have higher discount rates and safer assets have lower discount rates.

**Types of Discounted Cash Flow Models**

There are many discounted cash flow models in existence. However, the extent of variation in different models is limited to only a few dimensions.

There are basically three models to the discounted cash flow valuation:

i. Cash flow to equity model,

ii. Cash flow to firm model, and

iii. Adjusted present value model.

The cash flow to equity model is used to value only the equity stake in the business. The value of equity is obtained by discounting the cash flows to equity. The cash flows to equity are all cash flows remaining after meeting all expenses, reinvestment needs, tax obligations and net debt payments. These cash flows are discounted at the rate of return required by equity investors in the firm. It is represented as:

$$\text{Value of equity} = \sum_{t=1}^{t=n} \frac{\text{CF to Equity}}{(1+k_e)^t}$$

where,

CF to equity = Expected cash flow

$k_e$ = Cost of equity

The dividend discount model is a specialized case of equity valuation, where the value of the equity is the present value of expected future dividends.

The cash flow to firm approach is used to compute the value of the entire firm, which includes cash flows available to all the suppliers of capital to the firm like the equity holders, bondholders and preferred stock holders. The value of the firm in this approach is obtained by discounting all expected cash flows of the firm after meeting all operating expenses, reinvestment needs and taxes, but before any payments to either debt or equity holders. Such cash flows are discounted at the weighted average cost of capital which is the cost of the different components of financing used by the firm.

The adjusted present value approach is used to value each claim on the firm separately. In this approach, the firm is valued in pieces, beginning with

operations and adding the effects on value of debt and other equity claim holders. The value of equity is computed as a first step, assuming that the firm is financed only with equity. Then the value added (or taken away) by debt by considering the present value of the tax benefits that flow from debt and the expected bankruptcy costs is considered.

Value of the firm = Value of all equity financed firm + PV of tax benefits – Expected bankruptcy costs

All the three approaches are based on discounting the expected cash flows. However, the relevant cash flows and discount rates are different under each model.

**Steps in Discounted Cash Flow Valuation**

There are five steps in estimating the value of a firm under discounted cash flow model. They are:

i. Estimating the free cash flow for the explicit forecast period.
ii. Estimating the growth in earnings.
iii. Computing the cost of capital.
iv. Computing the continuing value.
v. Determination of value of the firm.

Each of the above steps is discussed hereafter in detail.

**Estimation of Free Cash Flow**

The value of an asset is directly proportional to its capacity to generate cash flows. Hence, the first step in the discounted cash flow approach to valuation, is to estimate the free cash flow for the explicit forecast period. The estimation of cash flows is based on three basic principles. They are:

i. **Cash Flows should be After Taxes:** This means that all cash and non-cash items like depreciation that are subject to taxes should be considered while estimating the cash flows of a project.
ii. **Cash Flows Should be Incremental:** This means that all cash inflows and outflows that can be directly or indirectly attributed to the project should be considered while estimating the cash flows of the project.
iii. **Cash Flows and Discount Rates should be Consistent:** If the cash flow is to the equity investors the discount rate should be the cost of equity and if the cash flow is to the entire firm, then the discount rate should be the weighted average cost of capital. The discount rate must be in post-tax terms.

**Cash Flows should be After Taxes**

Any project which is expected to generate income is also subjected to tax liability. An analyst often is faced with a choice of two different tax rates, i.e., the effective tax rate and the marginal tax rate while analyzing the impact of taxes on cash flows. The effective tax rate is the widely reported tax rate in the financial

statements which is given as the total tax paid as a proportion of the total income generated by a business. The marginal tax rate is defined as the tax on the last rupee of income generated in the business. The marginal tax rate depends on the government regulations and gives what firms have to pay as taxes on their marginal income.

**Reasons for Differences in the Marginal and Effective Tax Rates**

There are three reasons for the effective tax rate being different to the marginal tax rate.

i. There is always a difference in the accounting standards followed by firms for tax purposes and reporting purposes. Some firms use straight-line depreciation method for reporting purpose and accelerated depreciation for tax purposes resulting in reported income being higher than taxable income on which the taxes are based.

ii. The tax credits used by firms to reduce the taxes that they pay in turn reduce the effective tax rate below the marginal tax rate.

iii. When firms defer tax payments to future periods, the effective tax rate will be different from the marginal tax rate.

The income generated by the firm's existing assets and projects is marginal. Hence, marginal tax rate is more appropriate rate used to estimate the tax liability. Moreover, if the same tax rate has to be applied to earnings every period, marginal tax rate is the safer choice as none of the reasons mentioned above can be perpetually regular. It is very important that the tax rate to be used to compute the terminal value be the marginal tax rate.

Non-cash charges (accounting expenses that reduce income, but does not create a cash outflow for the firm) also have a significant impact on the cash flows if they affect the tax liability. Non-cash charges such as depreciation reduce the taxable income, but do not cause a cash outflow. As a result, depreciation is added back to the net income to arrive at the cash flows on a project. For some projects, which generate large depreciation charges, the significant portion of the net present value can be attributed to the tax benefits of depreciation which is written as:

Tax benefit of depreciation = Depreciation x Marginal tax rate.

**Illustration 1**

Apex Ltd. is evaluating an investment proposal to manufacture trucks for Horizon Ltd. The project will require an initial investment of ₹10 lakh in plant and equipment. This initial investment will be depreciated straight line down to a salvage value of ₹ 2 lakh at the end of 8 years. The project will generate revenues of ₹ 3 lakh and will incur operating expenses of ₹1 lakh in the first year. These revenues and expenses are expected to grow at around 5% a year over the

remaining 7 years of the project. The marginal tax rate for the company is 36%. Estimate the free cash flows to the firm. Also verify the effect of depreciation on the net present value of the project (Assume the cost of capital at 10%).

**Solution (₹)**

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|
| Revenues | 3,00,000 | 3,15,000 | 3,30,750 | 3,47,290 | 3,64,650 | 3,82,880 | 4,02,030 | 4,22,130 |
| Less: Operating expenses | 1,00,000 | 1,05,000 | 1,10,250 | 1,15,760 | 1,21,550 | 1,27,630 | 1,34,010 | 1,40,710 |
| Less: Depreciation | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 |
| = EBIT | 1,00,000 | 1,10,000 | 1,20,500 | 1,31,530 | 1,43,100 | 1,55,250 | 1,68,020 | 1,81,420 |
| EBIT(1 – t) [t = 36%] | 64,000 | 70,400 | 77,120 | 84,180 | 91,585 | 99,360 | 1,07,530 | 1,16,110 |
| Add: Depreciation | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 | 1,00,000 |
| FCFF | 1,64,000 | 1,70,400 | 1,77,120 | 1,84,180 | 1,91,585 | 1,99,360 | 2,07,530 | 2,16,110 |
| PV of FCFF | 1,49,076 | 1,40,750 | 1,33,017 | 1,25,795 | 1,18,975 | 1,12,440 | 1,06,460 | 1,00,920 |

Present value of after tax operating cash flows = ₹ 9,87,433

Salvage value of the project = ₹ 2,00,000

PV of salvage value of the project = $2,00,000/(1.10)^8$

= ₹ 93,280

Net present value of the project = –10,00,000 + 9,87,433 + 93,280

= ₹ 80,713.

Present value of tax savings from depreciation

= (100,000 x 0.36) x PVIFA $_{(10\%, 8 \text{ years})}$

= 36,000 x PVIFA $_{(10\%, 8 \text{ years})}$ = ₹ 1,92,060.

Without the depreciation tax benefits of ₹ 1,92,060, the net present value of the project would have been negative.

**Cash Flows should be Incremental**

The second important principle which should be followed while estimating cash flows is the incremental cash flow principle. It means that, only those cash flows which affect the inflow or outflow that is a direct or indirect consequence of taking up a particular project for which the valuation is done should be included. Many factors that arise in the context of capital budgeting such as (i) the sunk costs, (ii) working capital, (iii) opportunity costs, and (iv) allocated costs can be dealt with by using the incremental cash flow principle.

i. **Sunk Costs:** Sunk costs are expenses that have been incurred before the project analysis is done and cannot be recovered if the project is not taken

up. Since such expenses cannot be recovered if the project is rejected, hence, sunk costs are to be ignored.

ii. **Working Capital:** Working capital is the difference between current assets and current liabilities. Working capital affects the cash flows, but does not affect the accounting income of the firm. In an attempt to estimate the effect of changes in working capital on the cash flows, the current portion of long-term debt and cash should be eliminated while estimating the working capital. The current portion of long-term debt is eliminated for two reasons: (i) to avoid double counting, since it is already considered as part of the overall financing of the project; and (ii) since the objective of the analysis is to estimate the future working capital needs and the current portion of long-term debt is generally an unpredictable and highly variable component of working capital.

It is inappropriate to consider the changes in the cash balances while estimating the effect of changes in working capital on the cash flows since it is difficult to prove that an increase in cash balance is a cash outflow and a decrease in cash balance is a cash inflow. Firms no longer keep large amounts of idle cash when they can earn interest on their cash balances. Hence, while estimating the effect of changes in working capital on the cash flows, only non-cash working capital is considered. Non-cash working capital is the difference between current assets and current liabilities excluding the current portion of long-term debt.

Non-cash working capital = (Inventory + Accounts Receivable)
– (Accounts Payable + Taxes Payable)

Now, an increase in non-cash working capital can be viewed as a cash outflow as more money is tied-up in the assets and a decrease in non-cash working capital as release of cash or a cash inflow and the same cannot be easily deciphered, if the cash component is also included in the working capital estimate.

Working capital requirements on a project is a function of the expected growth in revenues and expenses on the project. However, it varies from business to business. Some businesses such as the retail industry require high working capital and some businesses as in the service industry do not require much of working capital.

It is very important to determine the working capital requirements on every project, because a change in working capital affects cash flows. Failure to consider working capital requirements in investment analysis has two serious consequences.

i. Working capital tends to increase in the initial years of growth of a project, and these increases cause cash outflows. Ignoring working

capital needs in investment analysis leads to overestimation of after tax cash flows.

ii. Even when the working capital is recovered at the end of the project, the present value of cash flows generated by changes in working capital will be negative. As a result, the net present value of a project will be overstated if working capital is not included in the analysis. Projects showing a positive net present value when working capital is ignored may later show negative net present value when the working capital needs are taken.

From the above discussion it is clear that the after tax cash flow to the firm can be estimated after incorporating the investment needs, the projection needs of the operating income and the working capital requirements. It is given as:

After tax cash flow to the firm

= EBIT (1 – t) + Depreciation – Capital expenditure
– Change in working capital.

iii. **Opportunity Cost:** Opportunity cost of an investment is the expected return that would be earned in the next best investment.

Many businesses use resources which are already a part of the business and which will just be transferred to the new project. The use of such resources creates a potential for an opportunity cost which might be a significant portion of the total investment needed on the project. The opportunity cost usually takes the form of the lost rental revenue or the foregone sale price or the cost of replacing the asset. Hence, the present value of opportunity costs estimated should be added to the initial investment while estimating the net present value of the project.

iv. **Allocated Costs:** Costs that cannot be traced directly to the business units in a firm are called the allocated costs. Costs that are not directly traceable to revenues generated by individual products or divisions are charged across all the divisions based on the revenues, or profits or assets. The effect of such an allocation on investment analysis is analyzed in terms of whether they create incremental cash flows.

**Cash Flows should be estimated consistently**

The cash flows and the discount rates used on the cash flows have to be estimated consistently in terms of inflation and also the investor group being analyzed.

There are two basic approaches to deal with leverage. The first is to estimate the cash flows associated with debt financing, i.e., the interest and principal payments and then to calculate the residual cash flows left over for equity investors. This cash flow to equity has to be discounted at the cost of equity, which reflects the

expectations of equity investors. This present value is compared to the equity investment in the project to calculate the net present value or the internal rate of return. The second approach is to calculate the cumulative cash flows to both the equity investors and the lenders of the firm and then discount it at the cost of capital which is obtained as the weighted average of the rate of return of the equity investors and the after tax cost of borrowing. The resultant net present value is compared to the total investment required in the project to calculate the net present value or internal rate of return.

If the cash flows to equity are discounted at cost of capital, the net present value will be overstated since the cost of capital is usually much lower than the cost of equity. Similarly, when the cash flow to the firm is discounted at the cost of equity, the net present value will be understated.

Inflation can be dealt in two ways while estimating the cash flows. The first method is by incorporating the expected inflation into the estimates of future cash flows resulting in nominal cash flows for the project and then to discount these cash flows at the nominal discount rate which also incorporates expected inflation. The second method is to estimate the cash flows in real terms and discount these real cash flows at a real discount rate.

Real cash flow$_t$ = Nominal cash flow$_t$ / (1 + Expected inflation rate)$^t$

Similarly, the relation between nominal and real rates is given as:

Nominal discount rate = (1 + Real discount rate) (1 + Expected inflation) – 1

If nominal cash flows are discounted at real rate, the net present value will be overstated and if real cash flows are discounted at the nominal rate, the resultant net present value will be understated.

**Illustration 2**

Estimating the cash flows to equity and cash flows from debt.

The following background information is available

| | | |
|---|---|---|
| EBIT | = | ₹ 500 lakh |
| Capital expenditure | = | ₹ 300 lakh |
| Depreciation | = | ₹ 200 lakh |
| Revenue | = | ₹ 7,000 lakh |
| Working capital as a percentage of revenue | = | 25% |
| Tax rate | = | 36% |

The revenues and earnings are expected to grow at a stable growth of 5% for 5 years.

Capital expenditures are offset by depreciation.

Estimate the free cash flow to the firm and the free cash flow to the equity holders.

**Solution**

Free Cash Flow to the Firm (FCFF) = EBIT (1 – t) + Depreciation and Amortization – Capital expenditures – Change in non-cash working capital.

*(₹ In Lakh)*

| | 0 | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|---|
| EBIT | 500 | 525 | 550 | 580 | 610 | 640 |
| – taxes | 180 | 189 | 198 | 210 | 220 | 230 |
| –(Cap exp. – Depreciation) | 100 | 105 | 110 | 115 | 120 | 126 |
| – Change in WC* | | 90 | 90 | 95 | 105 | 100 |
| FCFF | 220 | 141 | 152 | 160 | 165 | 184 |

* Estimation of change in working capital.

| | | | | | | |
|---|---|---|---|---|---|---|
| Revenues | 7,000 | 7,350 | 7,720 | 8,100 | 8,510 | 8,930 |
| Working capital | 1,750 | 1,840 | 1,930 | 2,025 | 2,130 | 2,230 |
| Change in WC | | 90 | 90 | 95 | 105 | 100 |

**Illustration 3**

ABC Ltd. requires an initial investment of ₹ 12 lakh for its new store for which ₹ 4 lakh would come from borrowing at an interest rate of 8%. The interest is paid for 5 years and the entire principal with interest is repaid at the end of the sixth year. The interest expenses are tax deductible at a rate of 36%, but the principal payments are not. The cash flows to the firm are expected to be ₹ 80,000 initially. These cash flows are expected to grow at a rate of 30% for the first 4 years and at 75% from the fifth year. Estimate the free cash flow to equity.

**Solution**

Free cash flow to equity = (Net operating income – Interest) + Depreciation and amortization – Capital expenditure – Change in working capital – Principal repayments + Proceeds from new debt issues.

or

FCFE = FCFF + Borrowing – Interest (1 – t) – Principal repaid

| Year | FCFF | Borrowing | Interest (1– t) | Principal repaid | FCFE |
|---|---|---|---|---|---|
| 0 | (12,00,000) | 4,00,000 | | | (8,00,000) |
| 1 | 80,000 | | 20,480 | | 59,520 |
| 2 | 1,04,000 | | 20,480 | | 83,520 |
| 3 | 1,35,200 | | 20,480 | | 1,14,720 |
| 4 | 1,75,760 | | 20,480 | | 1,55,280 |
| 5 | 3,07,580 | | 20,480 | | 2,87,100 |
| 6 | 5,38,265 | | 20,480 | 4,00,000 | 1,17,785 |

**Estimating Growth in Earnings**

The value of the firm is the present value of expected future cash flows generated by the firm. The most important input in valuation is the growth rate used to forecast future revenues and earnings. Growth of a firm is basically estimated in three ways:

i. Historical growth rate;

ii. Analysts estimates of growth; and

iii. Fundamental determinants.

i. **Historical Growth Rate:** The historical growth rate can be estimated by looking at the growth in the firm's past earnings, assuming that the future will be a reflection of the past. While past growth might not be a good indicator of future growth it conveys information that can be valuable while making estimates for the future. There are certain difficulties faced while estimating the growth rate in earnings. The average growth rates can be complicated depending on how the average is estimated. The presence of negative earnings in the past also makes the estimation of growth rates complicated.

ii. **Analysts Estimates of Growth:** Equity research analysts track the firm to come up with the right estimate of its growth and to use that growth rate in valuation. Forecast of growth by analysts will be better than using historical growth rates, because in addition to the historical data analysts also use other information that may be useful in predicting future growth. Analysts use additional information like the firm specific information that has been made public since the last earnings report, macroeconomic information that may impact future growth, information revealed by competitors on future prospects, private information about the firm, public information other than earnings etc.

iii. **Fundamental Determinants of Growth:** Determination of the growth from the fundamentals of the firm involve determination of the amount reinvested into new assets and the quality of these investments, with investments widely

defined to include acquisitions, building up distribution channels or even expanding marketing capabilities. Let us begin by looking at the relationship between fundamentals and growth in equity income and then move on to consider the determinants of growth in operating income.

**Growth in Earnings from Equity**

When valuing equity in aggregate, we consider the net income as earnings and when valuing equity per share, we consider the earnings per share as earnings.

**Growth in Earnings per Share**

The growth rate is primarily determined by the relationship between the percentage of earnings retained by the firm and the return on equity on its projects. Firms that have higher retention ratios and earn higher returns on equity usually have much higher growth rates in earnings per share than firms who do not have such characteristics. This relationship can be explained as follows:

Growth rate in earnings in a particular year is the excess of earnings which the firm has earned over the previous year. It is given as:

$$g_t = \frac{NI_t - NI_{t-1}}{NI_{t-1}}$$

Where,

$g_t$ = Growth rate in net income, and

$NI_t$ = Net income in year t.

From the definition, of net income, the net income in year t-1, given as:

$NI_{t-1}$ = Book value of equity$_{(t-2)}$ x Return on equity$_{(t-1)}$

Similarly, the net income in year t is given as:

$NI_t$ = [Book value of equity$_{(t-2)}$ + Retained earnings$_{(t-1)}$] x $ROE_t$

Assuming that the return on equity is unchanged over the years:

$ROE_t = ROE_{t-1} = ROE$

Then the growth rate is obtained as:

$$g_t = \frac{\text{Retained Earnings}_{t-1}}{NI_{t-1}} \text{ x ROE}$$

= Retention ratio x Return on equity

$g_t = b$ x ROE

**Note:** Here, we assume that the firm's only source of equity is the retained earnings and also the firm has not raised additional equity capital by issuing new shares.

**Growth Rate in Net Income**

To obtain the relationship between growth in net income and fundamentals, we need a measure of that investment that goes beyond retained earnings. To obtain

such a measure we have to look at how much equity the firm reinvests into its businesses in the form of net capital expenditures and investments in working capital.

Equity reinvested

= Capital Expenditure – Depreciation + Change in working capital

– (New debt issued – Debt repaid)

$$\text{Equity reinvestment rate} = \frac{\text{Equity Reinvested}}{\text{Net Income}}$$

Expected growth in net income = Equity Reinvestment Rate x Return on Equity

Unlike retention ratio, the reinvestment rate can be well above 100% because firms can raise new equity.

**Determinants of Return on Equity**

The return on equity affects both the earnings per share and the net income growth of the firm. It also depends on the leverage decisions of the firm. Increasing the leverage in the firm will lead to a higher return on equity, if the pre-interest after tax return on capital employed exceeds the after tax interest rate paid on debt.

$$ROE = ROC + D/E\ [ROC - i\ (1 - t)]$$

Where,

$$ROC = \frac{EBIT(1-t)}{\text{BV of Debt} + \text{BV of Equity}}$$

Where,

D/E = BV of debt / BV of equity,

i = Interest rate on debt, and

t = Tax rate on ordinary income.

From the above equation the growth rate can be represented as:

$$g = b\left(ROC + \frac{D}{E}[ROC - i(1-t)]\right)$$

**Growth Rate in Operating Income**

Growth in operating income is determined by the total amount reinvested into the business and the return earned on such capital invested.

Expected growth rate $_{EBIT}$ = Reinvestment rate x Return on capital

Total reinvestment = Capital expenditure – Depreciation + Change in working capital

Reinvestment rate = Reinvestment/EBIT (1 – tax rate)

**Illustration 4**

Alpha Ltd. operates in the pharmaceutical industry. The firm is expected to pass through two phases of growth (i) initial high growth and (ii) a stable growth

period. The tax rate for the firm is 40%. The following parameters are available for the firm:

| | Initial Growth Phase | Stable Growth Phase |
|---|---|---|
| Return on assets | 25% | 18% |
| Debt equity ratio | 1 | 1 |
| Interest rate on debt | 12% | 10% |
| Pay-out ratio | 24% | ? |
| Growth rate | ? | 10% |

Estimate the growth rate of revenues for the firm in the initial growth phase.

**Solution**

Growth rate for the initial phase can be given by the formula.

$$g = b\left(ROA + \frac{D}{E}[ROA - i(1-t)]\right)$$

b = 1 – Pay-out ratio

g = (1 – 0.24) [0.25 + 1 [0.25 – 0.12 (1 – 0.4)]]

= 0.76 x 0.428 = 0.3253 or 32.5% approximately

Pay-out ratio in the stable growth phase = 1 – b

$$= 1 - \frac{g}{ROA + \frac{D}{E}[ROA - i(1-t)]}$$

$$= 1 - \frac{0.1}{0.18 + 1[0.18 - 0.1(1-0.4)]}$$

= 1 – 0.333 = 0.6667 or 66.67%

**Activity 13.1**

a. Valuation plays a main role in portfolio management for fundamental analysts and a secondary role for technical analysts. Explain.

……

……

b. What are the basic three models to the discounted cash flow valuation?

……

……

**Estimating Cost of Capital**

The cost of capital represents the opportunity cost of investing, creditors and shareholder funds in one particular business instead of others with equivalent risk.

It is the discount rate which is used to convert expected future free cash flows into present value for all investors.

The following points should be remembered while estimating the cost of capital for it to be consistent with the discounted cash flow approach:

- Since the free cash flows represent the cash available to all contributors of capital the cost of capital should be the weighted average of all costs of all sources of capital like debt, equity, etc.
- Since the free cash flow is estimated after taxes, the discount rate also should be computed after taxes.
- Since the expected free cash flow is estimated in nominal terms, nominal rate of return obtained from real rates and expected inflation should be used.
- Since each provider of capital expects a return that compensates the risk taken, the systematic risk taken by each of them has to be adjusted.
- Since market values represent the true economic claim of each type of financing market value, weights are employed to each financing element.

The weighted average cost of capital is given as:

$$WACC = k_d (1 - T)\frac{B}{V} + k_p \frac{P}{V} + k_e \frac{S}{V}$$

Where,

$k_e$ = Cost of Equity

$k_d$ = Cost of debt

T = Marginal tax rate

B = Market value of interest bearing debt

V = Market value of the enterprise being valued (V = B + P + S)

$k_p$ = Cost of preference capital

P = Market value of the preferred stock

S = Market value of equity

In this section, we will discuss the approaches followed to estimate the cost of various forms of financing.

**Cost of Equity**

The cost of equity is the rate of return that investors require to make an equity investment in a firm. There are two approaches to estimate the cost of equity. They are:

i. The Capital Asset Pricing Model, and
ii. The Arbitrage Pricing Model.

i. **Capital Asset Pricing Model:** The capital asset pricing model or the CAPM measures risk in terms of non-diversifiable variance and relates expected returns to this risk measure. The non-diversifiable risk for an asset is

measured by its Beta which is used to yield an expected return. The CAPM equation is given as:

Expected return or $k_e = R_f + \beta(R_m - R_f)$

Where,

| | | |
|---|---|---|
| $K_e$ | = | Cost of Equity |
| $R_f$ | = | Risk-free rate |
| $R_m$ | = | Expected return on the market risk |
| $R_m - R_f$ | = | Market risk premium |
| $\beta$ | = | The non-diversifiable risk for an asset |

- **The Risk-free Rate**

  The risk-free rate is the return on an asset that has no default risk and is completely uncorrelated to returns on anything else in the economy. Two conditions have to be met for an asset to be risk-free. (i) There can be no default risk, and (ii) There can be no reinvestment risk.

  Securities issued by the government have no default risk because government controls the printing of currency. It is assumed that the government would fulfill its promises at least in nominal terms. Hence, the Treasury Bill rate is usually taken as the risk-free rate and the historical premium earned by a broad equity market index over and above this security rate is used to estimate the expected return on the market. The cost of equity thus obtained is used as a discount rate for each year's cash flows.

- **The Market Risk Premium:** The market risk premium or the price of taking risk is the difference between the expected rate of return on the market and the risk-free rate of return over a measurement period. The market risk premium can be based on *ex-post* estimates, i.e., on historical data assuming that the future will be like the past or on *ex-ante* estimates that try to forecast the future. *Ex-ante* estimates of market premium are based on the current value of the share market relative to the projections of earnings or cash flows.

  Three fundamental principles determine the size of the premium:

  – **Variance in the Economy:** Economies with more volatility associated with them have higher premiums. Premium for emerging markets which have high growth and high risk are larger than premiums for developed markets. This means that the higher the uncertainty associated with future growth in the economy, higher is the risk premium.

- **Political Risk:** Markets that are prone to potential for political instability have higher risk premiums because political instability might transform into economic instability.
- **Structure of the Market:** Markets in which large, diversified and stable companies are listed have low risk premium. As more and more small and riskier companies are listed in the market, the average risk premiums for investing in such markets will also increase.

- **Historical Period Approach:** This is a simple method of estimating the market premium where the historical market risk premium is defined as the difference between the actual returns earned on stocks over a long time period and the actual returns earned on a default free asset.

  Though the measurement of risk premium using the historical approach is simple, analysts often face with some difficulties.

  - **Length of the Measurement Period:** A shorter and a more recent time period provides a more up to date estimate. The measurement period should usually last for 10 years or longer.
  - **Choice of Risk-free Security:** The risk-free rate chosen in computing the market risk premium has to be consistent with the risk-free rate used to compute expected returns. If the Treasury Bill rate is used as a risk-free rate, the market risk premium has to be the premium earned by stocks over that rate. If the long-term default free G-Sec rate is used as the risk-free rate, then the risk premium used should be the premium earned by stock over the G-Sec rate.
  - **Arithmetic and Geometric Averages:** The arithmetic mean is the average of the annual returns for the period under consideration and the geometric mean is the compounded annual return over the same period. The arithmetic mean is justified on the grounds that it is much more consistent with the mean variance framework. It is the best estimate of future expected returns because all possible paths are given equal weightage. The geometric mean is justified on the grounds that compounding is a better predictor of the average premium in the long-term.

  The arithmetic average is always higher than the geometric average. As the variation in returns increases, the difference between arithmetic and geometric mean also increases. The geometric average is independent of the time interval that is chosen for averaging, whereas, the arithmetic mean depends on the interval chosen. The true market risk premium lies between the arithmetic and geometric averages.

– ***Ex-ante* Estimates of Market Risk Premium:** The *ex-ante* estimate of market risk premium is based on the current value of the share market relative to projections of earnings or cash flows. The approach followed is to estimate the expected rate of return on the market portfolio ($R_m$) by adding the analyst consensus estimate of growth in the dividend of the market index 'g', to the dividend yield for the scrip.

$R_m$ = (Dividends/S) + g

The risk-free rate is then deducted from the market rate of return to arrive at the market risk premium.

- **Determination of Beta of a Firm:** For listed companies, using published estimates of beta is the easiest approach. If the betas from different sources vary by more than 0.2 or if the beta of a company is more than 0.3 from the industry average, then the industry average beta should be used. An industry average beta is typically more stable and reliable than the individual company beta, because measurement errors tend to cancel out. For unlisted companies, industry averages can be used.

  Analysts' estimate of a beta of a firm is based on three variables (i) Type of business of the firm (ii) Degree of operating leverage in the firm and (iii) Financial leverage of the firm.

  i. **Type of Business of the Firm:** Beta measures the risk of the firm relative to the market index. Beta is high for firms which are more sensitive to the market conditions. Thus, beta is expected to be higher in cyclical firms where the revenues and operating income tend to move strongly with the economy than in non-cyclical firms.

  ii. **Degree of Operating Leverage:** The operating leverage examines the effect of the change in the quantity sold (revenues) on the change in EBIT of the company and is measured by calculating the degree of operating leverage. The degree of operating leverage is a function of the cost structure of the firm and a firm having high operating leverage, i.e., a firm having high fixed costs relative to the total costs will have high inconsistency in the EBIT than a firm producing a similar product with low leverage.

  iii. **Degree of Financial Leverage:** The financial leverage measures the effect of change in EBIT on the EPS of the company. The interest payments made on the debt increase the variance in the net income, with higher leverage increasing the income during the boom period and decreasing the income during recession. An increase in the financial leverage will increase the equity beta of the firm. When all the firm's

risks are borne by the stockholders, i.e., when the beta of the debt is zero and the debt has a tax benefit to the firm, then:

$\beta_L = \beta_U [1 + (1 – t) (D/E)]$

Where,

$\beta_L$ = Levered beta for equity in the firm

$\beta_U$ = Unlevered beta of the firm (i.e. beta of the firm without any debt)

t = Corporate tax rate

D/E = Debt/equity ratio

The unlevered beta is determined by the type of business in which it operates and its operating leverage. Thus, it is clear that a company's equity beta or the levered beta is determined by the riskiness of the business and the amount of financial leverage it has taken.

Let us now see the effect of leverage on the beta of a firm.

Consider a firm which had a beta of 0.90 and a debt equity ratio of 1.65%, with a tax rate of 33%.

Unlevered beta of the firm

= Current beta/[1 + (1 – tax rate) (current debt/equity)]

= 0.90/[1 + (1 – 0.33) (0.0165)]

= 0.90/1.0110055 = 0.89

The levered beta at different levels of debt can be estimated as:

Levered beta = Unlevered beta [1 + (1 – tax rate) (Debt/Equity)]

If the firm increases its debt equity ratio to 10%, its equity beta would be

Levered beta (@ 10% D/E) = 0.89 [1+ (1 – 0.33) (0.10)]

= 0.89 [1.067]

= 0.95

Levered beta (@ 20% D/E) = 0.89 [1+ (1 – 0.33) (0.20)]

= 0.89 [1.134]

= 1.01

From the above we can observe that as the financial leverage increases, the beta of the firm increases consequently leading to a higher cost of equity.

**Illustration 5**

In March 2021, the 20-year G-Sec was trading at 7%. The premium earned by the government securities over the past 20 years is 6.5%. Estimate the cost of equity of a company XYZ with a beta of 1.02.

**Solution**

According to the Capital Asset Pricing Model, the cost of equity is given as:

$k_e = R_f + \beta (R_m - R_f)$

Therefore, cost of equity = 7% + 1.02 (6.5%)

= 7% + 6.63% = 13.63%

**Illustration 6**

AB & Co. is a private firm operating in the textile industry. It has a debt/equity ratio of 0.2. The tax rate applicable to the firm is 36%. Estimate the beta of AB & Co. if its debt ratio is 0.23. The following information for other publicly traded' textile firms is available.

| Firm | Beta | Debt/Equity |
|---|---|---|
| XY Ltd | 1.10 | 0.24 |
| PQ Ltd | 1.22 | 0.33 |
| CD Ltd | 1.35 | 0.22 |
| NM Ltd | 1.20 | 0.20 |

**Solution**

i. Average Beta of the comparable firm = 1.217 or 1.22 approximately.

Average Debt/Equity ratio = 0.2475 or 0.25 approximately.

$\beta_L = \beta_U [1 + (1 - t) (D/E)]$

Where,

$\beta_L$ = levered beta for equity in the firm

$\beta_U$ = unlevered beta of the firm (i.e., beta of the firm without any debt)

t = corporate tax rate

D/E = debt/equity ratio

Unlevered beta for comparable firms

= 1.22 / [1 + (1 – 0.36) (0.25)]

= 1.22/1.16 = 1.05

Equity beta for AB & Co.

= 1.05 [1 + (1 – 0.36) (0.23)]

= 1.05 x 1.15

= 1.21 approximately.

ii. **Arbitrage Pricing Model:** The capital asset pricing model defines security return as a function of one factor, i.e., the market index and is measured as a rate of return on the market portfolio. The arbitrage pricing model considers more than one beta. Each beta measures the sensitivity of a stock's return to

different underlying factors in the economy. Five fundamental factors which are considered are:

i. The industrial production index, a measure of how well the economy is doing in terms of actual physical output.

ii. The short-term real interest rate, a measure of difference between the yield on treasury bills and the consumer price index.

iii. Short-term inflation, a measure of unexpected changes in the consumer price index.

iv. Long-term inflation, measure of the difference between the yield to maturity on long-term and short-term government bonds.

v. Default risk, a measure of the difference between the yield-to-maturity on $Aaa^-$ and $Baa^-$ rated long-term corporate bonds.

The APM cost of equity is given as:

$$K_e = R_f + [E(F_1) - R_f]\,\beta_1 + [E(F_2) - R_f]\,\beta_2 + \ldots\ldots\ldots + [E(F_k) - R_f]\,\beta_k$$

Where,

$E(F_1)$ = The expected rate of return on a portfolio that resembles the kth factor independent of all other factors.

$\beta_k$ = The sensitivity of the stock return to the kth factor.

Studies suggest that the arbitrage pricing model explains expected returns better than the single factor capital asset pricing model. Industries which are more sensitive to unexpected changes in the above factors are subjected to higher market premiums and hence, require a high cost of equity.

**Illustration 7**

The Treasury Bill is being traded at 4.5%. Assume that three different factors are considered. The following additional information is available as:

| | Factor 1 | Factor 2 | Factor 3 |
|---|---|---|---|
| Risk Premium | 4% | 4.5% | 3% |
| Beta | 1.25 | 0.95 | 1.15 |

Estimate the cost of equity.

**Solution**

Using the Arbitrage pricing model, the cost of equity is computed as:

Cost of equity = 4.5% + (1.25 x 4%) + (0.95 x 4.5%) + (1.15 x 3%)

= 4.5 + 5 + 4.275 + 3.45 = 17.225%.

- **The Cost of Debt:** The cost of debt measures a firm's current cost of borrowing funds to finance its projects. The cost of debt for a firm depends on two factors. (i) The level of interest rates in the economy, and (ii) The default risk of the company.

- As the level of interest rate increases, the cost of debt for a firm also increases. Similarly, as the default risk of a firm increases the cost of borrowing money will also increase. Default risk can be measured by using the bond rating for the firm. Higher rating leads to lower interest rates and lower ratings lead to higher interest rates. If bond ratings are not available, the rates paid by the firm on its borrowings may provide a measure of its default risk.
- A tax advantage is associated with debt. Since the interest paid on debt is tax deductible, the after tax cost of debt is a function of the tax rate. The after tax cost of debt is less than the pre-tax cost of debt because of tax benefits that accrue from paying interest. As the tax rate increases, the benefits also increase. Since the interest expenses save taxes at a margin, i.e., they are deducted from the last rupee of income, the correct tax rate to be used is the marginal tax rate.

  After tax cost of debt = Pre-tax cost of debt (1 – tax rate)

- Interest creates tax benefit only when the firm has enough income to cover its interest expenses. Firms that have operating losses will not get any tax benefit in the year it incurs losses. The after tax cost of debt will be equal to the pre-tax cost of debt in that year.
- **Cost of Preferred Stock:** The cost of preferred stock is the return which the preference shareholders expect for investing in the preference shares. The preference stock creates many of the same obligations as debt, but without the tax advantage. The cost of preferred stock is given as:

  $k_p$ = Dividend per share/Market price per preference share.

  This approach assumes that preferred stock is perpetual and dividend is constant in rupee terms forever.

- **Calculation of Weights:** Weights are assigned to the equity and debt components based on the market value and not the book value since the cost of capital measures the cost of issuing securities that are issued at the market value.

**Estimation of Terminal Value or The Continuing Value**

Firms that reinvest substantial portions of their earnings and that earn high returns on such investments grow at high rates. As a firm grows, over a period of time, it finds it more difficult to maintain high growth and in due course, from a particular point of time the rate will grow at a rate less than or equal to the growth rate in the economy in which it operates. This growth rate called the stable growth rate can be continued in perpetuity. A company's expected cash flow can be separated into two periods and the value of the company can be defined as:

Value = Present value of cash flow during the explicit forecast period + Present value of cash flow after the explicit forecast period.

Hence, the value of all cash flows beyond that point can be estimated as a terminal value for the going concern. The estimation of cash flows is stopped at sometime in the future and the terminal value is computed which reflects the value of the firm at that point.

$$\text{Value of the firm} = \sum_{t=1}^{t=n} \frac{CF_t}{(1+k_c)^t} + \frac{\text{Terminal Value}_n}{(1+k_c)^n}$$

There are three ways to compute the terminal value.

i. **Liquidation Value Method:** The liquidation value method assumes that the firm would cease to operate in the future and sell its assets to the highest bidder. There are two ways to estimate the liquidation value.

   According to the first method, the liquidation value is the book value of the assets adjusted for inflation during that period. In the second method, the value of the asset is determined based on the earning power of the asset. The expected cash flows from the assets is estimated and then discounted to the present using the appropriate discount rate.

   In case of equity valuation, the estimated value of debt outstanding in the terminal year has to be deducted from the liquidation value to arrive at the liquidation proceeds for equity investors.

ii. **Multiple Approach:** The second approach to estimate the terminal value is the multiple approach. The value of the firm in the future years is estimated by applying a multiple to the firm's earnings or revenues in that year. In valuing a firm, multiples like the book value to sales can be used to get the terminal value and while valuing equity, multiples like the price earnings ratios can be used to estimate the terminal value.

   Using multiples to estimate the terminal value is more suitable while using the comparable company approach to value the firm. The consistent way to estimate the terminal value in a discounted cash flow model is to use either the liquidation value or a stable growth model.

iii. **Stable Growth Model:** This approach assumes that the cash flows beyond the terminal year will grow at a constant rate forever and the terminal value is calculated as:

$$\text{Terminal Value}_t = \frac{\text{Cash Flow}_{t+1}}{r - g_{stable}}$$

   Where,

   r = Cost of capital of the firm, and

g = Growth rate for the stable phase.

$$\text{Terminal Value of Equity} = \frac{\text{Cash flow to Equity}_{n+1}}{\text{Cost of Equity}_{n+1} - g_n}$$

The cash flow to equity can be defined as dividends or as free cash flow to equity.

**Assumptions**

Three things are assumed while estimating the terminal value using the stable growth model in the discounted cash flow valuation.

i. **Length of the High Growth Period:** Analysts often face difficulty about the length of the high growth period of the firm to be considered. Three factors are taken into account while considering how long a firm will be able to maintain high growth.

   a. *Size of the firm* – Small firms in large markets will have the potential for high growth over longer periods than larger firms, because they have more scope to grow and a larger prospective market.

   b. *Existing growth rate and excess returns* – Firms that witness high growing revenues are more likely to sustain these revenues for the next few years.

   c. *Magnitude and sustainability of competitive advantages* – If there are entry barriers in the industry and a firm has a competitive advantage over others the firm can maintain high growth for longer periods. This is the most important determinant of the length of the high growth period.

ii. **Characteristics of a Stable Growth Firm:** Firms in the stable growth have less risk, use more debt, have lower or no excess returns and reinvest less than high growth firms.

   Firms with stable growth are less risky because as firms mature they are less exposed to market risk and their betas are closer to one which is the average market beta. It is very difficult for firms with stable growth to maintain excess returns. It should be assumed that in the stable phase the firm's return on equity and capital will move towards industry averages.

   – **Debt Ratios and Cost of Debt:** As a firm matures, its debt capacity increases. Stable growth firms use more debt than high growth firms. Hence, while valuing a firm the debt ratio used to compute the cost of capital changes and while valuing equity, the change in the debt ratio will lead to the change in both the cost of equity and the expected cash flows. Whether the debt ratio in the stable period moves towards a more sustainable level depends on the managers' views on debt and how much power stockholders have in these firms. If managers are willing

to change their debt ratios and stockholders retain some power, then it is reasonable to assume that the debt ratio will move to a higher level in stable growth, if not it is safer to leave the debt ratio at existing levels.

To determine what debt ratio and cost of debt to use in stable growth, the financial leverage of larger and more mature firms in the industry is to be considered. One solution is to use the industry average debt ratio and cost of debt as the debt ratio and cost of debt for the firm in stable growth.

Stable growth firms reinvest less than the high growth firms. It is very important not only to capture the effects of lower growth on reinvestment, but also ensure that the firm reinvests enough to sustain its stable growth rate in the terminal phase.

iii. **Transition to Stable Growth:** Once the length of the high growth period is determined, the pattern of change from the high growth phase to the stable growth phase at some time in the future has to be considered. There are three distinct patterns through which a firm can shift to a stable phase. Firstly, the two stage model where a firm maintains its high growth rate for a particular period of time and then becomes a stable firm abruptly. Secondly, the three stage model, where the firm maintains its high growth rate for a period and then has a transition period, where its characteristics change as it approaches stable growth. Finally, the n stage model, where the characteristics of the firm change each year from the initial period to the stable growth period.

Selection of the growth pattern depends on the firm being valued. The two stage model is more suitable to firms with moderate growth rates where the shift will not be too significant. The three stage model is more suitable to firms with very high growth rates in operating income as it allows for a gradual adjustment not only in the growth rates but also in the risk characteristics, return on capital and reinvestment rates towards stable growth levels. For very young firms or for firms with negative operating margins, using the n stage model is more appropriate.

**Illustration 8**

Alpha India Ltd. is trying to buy Beta India Ltd. Beta India Ltd., is a small biotechnology firm that develops products that are licensed to major pharmaceutical firms. The development costs are expected to generate negative cash flows of ₹ 10 lakh during the first year of the forecast period. Licensing fee is expected to generate positive cash flows of ₹ 5, 10, 15 and 20 lakh during 2-5 years respectively. Due to the emergence of competitive products cash flows are expected to grow annually at a modest 5% after the fifth year. The discount rate for the first five years is estimated to be 15% and then drop to 8% beyond the fifth year. Calculate the value of the firm.

**Solution**

| Year | Cash Flows | Discount rate @15% | Present value |
|---|---|---|---|
| 1 | (10) | 1.15 | (8.69) |
| 2 | 5 | 1.323 | 3.779 |
| 3 | 10 | 1.521 | 6.575 |
| 4 | 15 | 1.749 | 8.576 |
| 5 | 20 | 2.011 | 9.945 |

Total sum of present value = 20.185

$$\text{Terminal Value}_t = \frac{\text{Cash Flow}_{t+1}}{r - g_{stable}}$$

$\text{Cash Flow}_{t+1}$ = $\text{Cash flow}_t (1 + g)$

= 20 (1 + 0.05) = 21 lakh

Terminal Value = 21/(0.08 – 0.05)

= ₹ 700 lakh

Present value of terminal value = 700/2.011 = 348.08

Value of the firm = ₹ 20.185 + ₹ 348.08 = ₹ 368.265 lakh

**Estimating the Value of the Firm**

The last stage in the process of valuation involves determining the exact value of the firm and then interpreting the results obtained from such valuation.

The following are the general steps followed in estimating the value of the firm using the discounted cash flow approach:

i. Discount the forecasted free cash flow to the present at the weighted average cost of capital.

ii. Discount the terminal value to the present value at the weighted average cost of capital. Since the terminal value is expressed as a value at the end of the explicit forecast period, discounting is done for the number of years in the explicit forecast period. For example, if the forecast is made for 5 years, discounting is done for 5 years and not 6 years.

iii. Calculate the value of operation by adding the present value of the explicit forecast period to the present value of the terminal value.

iv. Add the value of any non-operating assets like excess marketable securities and investments in unrelated subsidiaries whose cash flows were not included while computing the free cash flow of the firm.

v. Deduct the market value of all debt, hybrid securities and other claims to estimate the value of equity. The value of accounting liabilities like reserves that are quasi equity should not be deducted. Only the values of those items which are consistent with the cash flows are deducted. If cash flows from an item are excluded (interest bearing debt and related interest expense) while

estimating the free cash flows, then the value of liability is deducted. If the cash flows are not excluded (reserves for deferred taxes) the value is not deducted while estimating the value of equity.

### 13.6.1 Equity Valuation Model

The equity valuation model estimates the value of equity in a firm by discounting cash flows to equity at a rate of return required by equity investors. There are two models that determine the value of equity:

i. Dividend discount model, which defines the cash flows to equity as dividends, and

ii. Free cash flow to equity model, which defines free cash flow to equity as the residual cash flow left over after meeting interest and principal payments and providing for capital expenditures to maintain existing assets and create new assets for future growth.

- **Dividend Discount Model:** According to the dividend discount model, the value of stock is the present value of the dividends discounted at the rate appropriate to the risk of the cash flows. Dividend discount model is the simplest model to estimate the value of equity. The general version of the model is given as:

$$\text{Value per share of stock} = \sum_{t=1}^{t=\infty} \frac{(DPS_t)}{(1+k_e)^t}$$

Where,

$DPS_t$ = Expected dividends per share

$k_e$ = Cost of equity

There are two basic inputs to the model. They are the expected dividends and cost of equity.

- **The Gordon Growth Model:** This is the simplest model designed to value a firm in the steady state with dividends growing at a rate that can be sustained forever. The value of the stock in the Gordon model is given as:

$$\text{Value of stock} = \frac{DPS_1}{k_e - g}$$

Where,

$DPS_1$ = Expected dividends for the next period

$k_e$ = Required rate of return for equity investors

$g$ = Growth rate in dividends forever

The model is simple and a dominant approach to value equity, but the use is limited to firms that are growing at a stable rate. It is best suited for firms growing at a rate compared to or lower than the nominal growth in

the economy and which also have well-established dividend pay-out policies, which they intend to continue in the future.

- **Two-stage Dividend Discount Model:** The two-stage dividend discount model allows for two stages of growth – An initial phase where the growth rate is not stable and a subsequent steady state where the growth rate is stable and is expected to remain so for a long-term. The model is based upon two stages of growth, an extraordinary growth phase that lasts for n years and a stable phase that lasts forever afterwards. It is given as:

$$V_o = \sum_{t=1}^{t=n} \frac{DPS_t}{(1 + k_{e,h})} + \frac{V_n}{(1 + k_{e,h})^n}$$

Where,

$$V_n = \frac{DPS_{n+1}}{(k_{e,s} - g_n)}$$

Where,

DPS = Expected dividends per share in year t

k = Cost of equity

h = High growth period

s = Stable growth period

P = Price at the end of year n

$g_n$ = Steady state growth rate forever after year n

There are three basic inputs in the model:

a. **The Length of the High Growth Period:** High growth period is the period during which a company's earnings or cash flows are expected to grow at a rate much higher than the overall growth rate in the economy. The length is estimated based on a few assumptions.

The greater the current growth rate in earnings, relative to the stable growth rate, the longer the high growth period. Hence, a firm that has a growth rate in earnings of 30% will have longer high growth period than a firm with a growth rate of 10%.

Size of the firm is one of the strong forces that drive firms towards a stable growth. The larger the current size of the firm, the less likely it is to maintain an above normal growth rate and hence shorter the length of the high growth period.

b. **Required Rate of Return:** The dividends and the terminal price should be discounted back at a rate that reflects their risk to stockholders, to arrive at the value in the dividend discount model. Such discount rate is estimated by using the CAPM approach or the APM approach, as mentioned earlier. While estimating the discount rate, it is very important that the beta is

adjusted in accordance with the growth rates since there is a positive correlation between high growths and high risk. When the firm goes from high growth to low growth, the beta needs to be reduced to reflect the lower growth.

c. **Expected Dividends during High Growth Period:** The expected dividends in the high growth period can be calculated from the expected earnings in each period. The expected earnings are determined from the current earnings and the expected growth rates in earnings. The expected dividends in each period are then calculated by using the dividends pay-out ratio in each period.

The growth in earnings can be estimated with the help of different methods that we have already discussed earlier in this chapter. The earnings growth rate in the high growth scenario can take any of the following forms:

a. **Constant Growth Rate during the High Growth Period** – Here, the earnings are constant for the high growth period after which the growth rate drops to the stable level. When we assume that the growth rate and the pay-out ratio are fixed for the high growth period, the present value of dividends during the high growth period can be estimated as:

$$\text{PV of dividends in the high growth phase} = \frac{DPS_o(1+g)\left(1-\frac{(1+g)^n}{(1+k_e)^n}\right)}{k_e - g}$$

It is more appropriate for firms having a modest growth rate in the high growth period.

b. **Constant Growth Initially Followed by Gradual Reduction to Stable Growth** – Here the growth rate does not drop suddenly at the end of the high growth period, but it drops gradually to the stable growth rate.

– ***Growth Rates Change Every Year for the High Growth Period*** – Here, the growth rate and the pay-out ratios are different in every period of the high growth period reflecting changes in the investment opportunities and the firm size.

– Estimated Dividend Pay-out Ratios –

Expected dividends = Expected earnings x Pay-out ratio

The pay-out ratio should reflect the expected growth in earnings. As growth rate decreases, the pay-out ratio should increase. The pay-out ratio can be calculated from the fundamental growth model,

$g = b\ \{ROA + D/E\ [ROA - i(1 - t)]\}$

b = Retention ratio = 1 – pay-out ratio

Pay-out ratio = 1 – b

$$= 1 - [g/ ROA + D/E [ROA - i(1 - t)]$$

Where,

ROA = Return on assets

= EBIT (1 – t)/(BV of debt + BV of equity)

D/E = Debt/Equity ratio

i = Interest rate on debt

t = Marginal tax rate

– *Estimating Terminal Price* – The expected price of the stock or equity at the end of a specified holding period is called the terminal price. The price at the end of the high growth period in the two-stage dividend discount model is estimated as follows:

$$\text{Value of stock} = \frac{DPS_{n+1}}{r - g_n}$$

Where,

$DPS_{n+1}$ = Expected dividends in the first time period following the high growth period.

R = The discount rate of the stock in the stable phase.

$g_n$ = Expected growth rate in dividends in the stable phase.

The growth rate in the stable phase is assumed to be closer to the growth rate in the economy.

Once the expected dividends and the terminal price have been estimated and the discount rate has been obtained from the risk measure for the firm, the present value of the dividends and terminal price is calculated using the dividend discount model.

Since the two-stage dividend discount model is based on two clearly defined growth stages, it is best suited to firms which are in high growth and expect to maintain that growth rate for a specific time period, after which the sources from where the high growth is obtained are expected to disappear. For example, a company which has patent rights over a particular product is expected to generate super normal growth during this period. Once the patent expires, it is expected to settle back into stable growth.

**Illustration of Value of Equity of the firm using the Two-Stage DDM:**

ETN Ltd. is the world's largest manufacturer of electronic goods. It reported earnings per share of ₹ 5.7 on March, 2021 and it paid dividends per share of ₹ 2.28. The following are the various other inputs available for the firm.

| Particulars | High Growth Period | Stable Growth period |
|---|---|---|
| Length of the period | 4 years | Perpetual after 4 years |
| Expected growth rate | ? | 8% |
| Beta | 1.3 | 1.15 |
| Return on assets | 15% | 15% |
| Debt to equity ratio | 1 | 1 |
| Dividend pay-out ratio | 40% | ? |
| Interest rate on debt | 8% | 8% |

The tax rate for the firm is 40%. The Treasury Bill is being traded at 7% and the market premium is 5%. Estimate the value of the equity of the firm using the dividend discount model.

**Solution**

Expected growth rate during high growth period (g)

$$= b\left(ROA + \frac{D}{E}[ROA - i(1-t)]\right)$$

$$= 0.6\,[0.15 + 1\{0.15 - 0.08(1 - 0.4)\}]$$

$$= 0.1512 \text{ or } 15.12\%$$

Pay-out ratio for the stable growth period

$$= 1 - \{g/ROA + D/E\,[ROA - i\,(1 - t)]\}$$

$$= 1 - \{0.08/0.15 + 1[0.15 - 0.08(1 - 0.4)]\}$$

$$= 1 - 0.317$$

$$= 0.683 \text{ or } 68.3\%$$

Estimation of the value of equity:

| Year | EPS | DPS | Discount rate @ 13.5% * | Present value |
|---|---|---|---|---|
| 1 | 6.56 | 2.624 | 1.135 | 2.311 |
| 2 | 7.55 | 3.070 | 1.288 | 2.344 |
| 3 | 8.69 | 3.477 | 1.462 | 2.378 |
| 4 | 10.00 | 4.003 | 1.659 | 2.411 |

Total present value of dividends = ₹ 9.45

Terminal price = Expected divided per share$_{n+1}$/(r – g$_n$)

Expected earnings per share = 10(1 + 0.08) = 10.8

Expected dividends per share = 10.8 x 0.683 = 7.37

Terminal price = 7.37/(0.1275 – 0.08) = ₹ 155.15

Present value of terminal price = 155.15/1.659 = ₹ 93.52 app.

Value of the firm's equity = ₹ 9.45 + ₹ 93.52 = ₹ 102.97

**Workings**

*Cost of Equity

| | High growth Phase | Stable growth phase |
|---|---|---|
| $k_e = R_f + \beta (R_m - R_f)$ | 7% + 1.3(5%) = 13.5% | 7% + 1.15(5%) = 12.75% |

**Three Stage Dividend Discount Model:** The three-stage dividend discount model allows for an initial period of high growth, a transitional period where growth declines and a final stable growth phase. It does not impose any restrictions on the pay-out ratios.

$$V_0 = \sum_{t=1}^{t=n1} \frac{EPS_0 (1+g_a)^t \pi_a}{(1+k_{e,h})^t} + \sum_{t=n1+1}^{t=n2} \frac{DPS_t}{(1+k_{e,t})^t} + \frac{EPS_{n2}(1+g_n)\pi_n}{(k_{e,s} - g)_n (1+r)^n}$$

High growth phase Transition phase Stable growth

Where,

$EPS_t$ = Earnings per share in year t

$DPS_t$ = Dividends per share in year t

$g_a$ = Growth rate in high growth phase (last $n_1$ periods)

$g_n$ = Growth rate in stable phase

$\pi_a$ = Pay-out ratio in high growth phase

$\pi_n$ = Pay-out ratio in stable growth phase

$k_e$ = Cost of equity in high growth (h), transition (t) and stable growth (s)

The model requires more number of inputs like year specific pay-out ratios, growth rates and betas.

It is best suited to firms which are growing at supernormal growth rates in the initial period after which the differential advantage of the firm is expected to diminish leading to a gradual decline in the growth rates leading to a stable growth rate.

**Illustration 9**

Sunrise India Ltd. is a leading retail firm. It has posted extraordinary growth both in revenues and profits and has got lot of returns to its shareholders. Analysts assume that the earnings per share will grow at a rate of 35% a year for the next 5 years. The rate of return on the market is 12.5%. The market premium is expected to be at 5.5%. The following additional information for the firm is also available:

**Current earnings / dividend**

Earnings per share = ₹ 10.5

Dividend per share = ₹ 1.6

**Inputs for the high growth period**

Length of the high growth period = 5 years

Expected growth rate = 35% (based on the projection of analysts)

Beta during high growth period = 1.5

Return free rate of return = 7%

Dividend pay-out ratio = 12%

**Inputs for the transition period**

Length of the high growth period = 5 years

Expected growth rate = decline from 35% in year 5 to 5% in year 10 in linear increments

Beta during transition period will drop from 1.5 to 1.0 in the 10th year in linear increments

Dividend pay-out ratio = increase from 12% to 50% in year 10 in linear increments

**Inputs for the stable growth period**

Length of the high growth period = Forever after 10 years

Expected growth rate = 5%

Beta during stable growth period = 1.0

Dividend pay-out ratio = 50%

**Solution**

Estimation of Cost of Equity

Cost of equity during high growth phase

7 + 1.5 (5.5) = 15.25

Cost of equity in the transition phase

| | |
|---|---|
| Year 6 | 7 + 1.4 (5.5) = 14.7 |
| Year 7 | 7 + 1.3 (5.5) = 14.15 |
| Year 8 | 7 + 1.2 (5.5) = 13.6 |
| Year 9 | 7 + 1.1 (5.5) = 13.05 |
| Year 10 | 7 + 1.0 (5.5) = 12.5 |

Estimation of expected earnings per share, dividends per share and cost of equity for both high growth period and transition phase.

| Period | EPS | Pay-out ratio | DPS | Cost of Equity | Present Value |
|---|---|---|---|---|---|
| 1 | 14.17 | 12% | 1.7 | 15.25% | 1.47 |
| 2 | 19.14 | 12% | 2.30 | 15.25% | 1.732 |
| 3 | 25.83 | 12% | 3.10 | 15.25% | 2.025 |
| 4 | 34.87 | 12% | 4.18 | 15.25% | 2.37 |
| 5 | 47.08 | 12% | 5.65 | 15.25% | 2.80 |
| 6 | 60.73 | 19.6% | 11.90 | 14.70% | 5.10 |
| 7 | 74.70 | 27.2% | 20.32 | 14.15% | 7.63 |
| 8 | 87.40 | 34.8% | 30.41 | 13.60% | 10.06 |
| 9 | 97.01 | 42.4% | 41.13 | 13.05% | 12.03 |
| 10 | 101.86 | 50% | 50.93 | 12.50% | 13.24 |

Terminal Price = (101.86 x 1.05 x 0.50)/(0.125 – 0.05)

= 53.47/0.075 = ₹ 712.93

Present value of Terminal Price

= 712.93/ $(1.1525)^5$ (1.147) (1.1415) (1.136) (1.1305) (1.125)

= 712.93/3.8457

= ₹185.38

| | | |
|---|---|---|
| Present value of dividends in high growth phase | = | ₹ 10.397 |
| Present value of dividends in transition phase | = | ₹ 48.060 |
| Present value of terminal price at the end of transition | = | ₹ 185.380 |
| Value of the share | = | ₹ 243.837 |

**Limitations of Dividend Discount Model:** Though the dividend discount model is simple and spontaneous it has its own limitations. According to some analyst, the model is only useful to value a limited number of stocks which are stable and pay high dividends. Some of the limitations are as under:

i. Dividend discount model is used to value only those stocks which pay high dividends. However, if the dividend pay-out ratio is adjusted to reflect the changes in the expected growth rates, a reasonable value can be obtained even for non-dividend paying firms. A high growth firm paying no dividends at present can still be valued based upon dividends that it is expected to pay-out when the growth rate declines. If the payout ratio is not adjusted to reflect the changes in the growth rates the dividend discount model will underestimate the value of non-dividend paying or low dividend paying stocks.

ii. The dividend discount model does not reflect the value of unutilized assets. It only provides a conservative estimate of value by estimating only the present value of dividends.

iii. The model does not consider other ways of returning cash to the shareholders except dividends.

**Free Cash Flow to Equity Model:** The dividend discount model does not capture the true capacity to generate cash flows for stockholders because many firms do not pay all the free cash flows as dividends. Hence, the free cash flow to equity model is a more appropriate approach to value the firm. The free cash flow model estimates the value of equity as the present value of the expected free cash flow to equity over time. The free cash flow to equity is defined as the residual cash flow left over after meeting interest and principal payments and providing for capital expenditures to maintain existing assets and create new assets for future growth. The FCFE is given as:

FCFE = Net income + Depreciation – Capital Spending – Change in working capital – Principal Repayments + New debt issues

In special cases where the capital expenditures and working capital are expected to be financed at the target debt financing ratio and the principal repayments are made from the new debt issues, the FCFE is given as:

FCFE = Net income + (1 – Debt financing ratio) (Capital expenditures – Depreciation) + (1 – Debt financing ratio) Change in working capital.

The value of the stock under the free cash flow to equity model is given as:

$$V_o = \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+k_e)} + \frac{V_n}{(1+k_e)^n}$$

Where,

$$V_n = \frac{FCFE_{n+1}}{(k_e - g_n)}$$

Where,

FCFE = Expected FCFE per share in year t,

$k_e$ = Required rate of return for equity investors,

$V_n$ = Price at the end of the year n, and

$g_n$ = Growth rate forever after year n.

The free cash flow to equity model also has four basic inputs as in the dividend discount model. (i) A defined length of the high growth period, (ii) Specified free cash flow to equity during each period of growth, (iii) Rate of return that

shareholders would demand for holding the stock, and (iv) Terminal price at the end of the high growth period.

The length of the high growth period and the rate of return required by shareholders are estimated in the same way as in the dividend discount model. However, the estimation of free cash flow to equity and the terminal price is different from the dividend discount model:

- **Free Cash Flow to Equity:** Once the earnings for each period are determined the net capital expenditures, working capital needs and debt financing needs are specified to arrive at the free cash flow to equity. The capital expenditures and the working capital needs should be adjusted to reflect the changes in the expected growth. High growth companies comparatively have higher net capital expenditures and working capital needs.

- **Terminal Price:** The difference in the estimation of the terminal price in the dividend discount model and the free cash flow to equity model lies in the cash flow used. The dividend discount model uses the expected dividends after the high growth period as the free cash flow whereas the free cash flow to equity model uses the free cash flow to equity after the high growth period as the cash flow. It is given as:

$$\text{Value of stock} = \frac{FCFE_{n+1}}{r - g_n}$$

The value from the FCFE model provides a better estimate while valuing firms for takeovers or where there is reasonable chance of changing corporate control.

**Illustration 10**

BA&T is a large company operating in the cement industry. Given its large size it is unlikely that the firm will grow at a rate faster than the economy in the long-term. The free cash flow to the firm in 2021 was ₹ 4 per share. The following additional information for the year 2022 is available.

Earnings per share = ₹ 4.5

Capital Expenditure per share = ₹ 4.15

Depreciation per share = ₹ 3.30

Change in working capital/share = ₹ 1

Debt financing ratio = 30%

The earnings, capital expenditure, depreciation, and working capital are all expected to grow at 6% a year. The beta of the stock is 1.1. The Treasury Bill rate is 7%. Estimate the value per share using the free cash flow to equity method. (Assume the market premium to be 6%).

**Solution**

Cost of equity = 7% + 1.1(6%) = 13.6%

| | | |
|---|---|---|
| Earnings per share | = | 4.5 |
| Less: (Capital Expenditure – Depreciation) (1 – Debt financing ratio) | = | 0.595 |
| Less: Change in working capital (1 – Debt financing ratio) | = | 0.7 |
| = Free cash flow to Equity | = | 3.205 |
| Value per share | = | 3.205(1.06) |
| | = | 0.136 – 0.06 |
| | = | ₹ 44.70. |

**FCFE Valuation and Dividend Discount Model**

The FCFE and the dividend discount model yield similar results under two conditions. Firstly, when the dividends are equal to the free cash flow to equity the values obtained under both the methods are same. Secondly, when the FCFE is greater than the dividends but the excess cash, i.e., (FCFE – Dividends) is invested in projects having a net present value of zero, the values will be same. However, more often the results obtained from both the methods are different.

Firstly, when the FCFE is greater than the dividend and the excess cash either earns below-market interest rates or is invested in negative net present value projects, the value from the FCFE model will be greater than the value from the dividend discount model. Secondly, if the firm borrows the money to pay the dividends, the firm may become over-levered (relative to the optimal) leading to a loss in value. Finally, paying too much in dividends can lead to capital rationing constraints where good projects are rejected, resulting in a loss of value.

The difference between the value obtained from the FCFE model and the value obtained from the dividend discount model can be considered as a factor of the value of controlling a firm. It measures the value of controlling dividend policy by capturing the higher FCFE value.

To know which of these methods is more suitable to evaluate the market prices, the openness of the market for corporate control is verified. If there is a good probability that the firm can be taken over or its management changed, the market price will reflect that probability and in such cases the value of FCFE is a more appropriate benchmark. As changes in the corporate control become more difficult due to the size of the firm or due to any market regulations on takeovers, the dividend discount model is more appropriate benchmark for comparison.

### 13.6.2 Firm Valuation Model

**Free Cash Flow to Firm Model (FCFF)**

It estimates the value of the firm as the present value of the sum of all cash flows to all claim holders in the firm, including equity shareholders, preference share holders and bond holders, discounted back at the cost of capital. There are two ways of measuring free cash flow to a firm:

Free cash flow = Free cash flow to equity + Interest expense (1 – Tax rate) + Principal repayments – New debt issues + Preferred dividends.

or

Free cash flow = EBIT (1 – Tax rate) + Depreciation – Capital expenditure – Change in working capital.

The free cash flow to firm model is similar to the free cash flow to equity model except for variations in the cash flow used and the rate of return required. The free cash flow to firm is based on the operating income growth rather than net income growth. The discount rate is the cost of capital rather than the cost of equity. Hence, the present value of cash flows provides an estimate of the value of the firm rather than just value of equity.

The main difference between the FCFE model and the FCFF model lies in the estimation of growth rates. Because of the existence of leverage consequently the growth rate is high in the FCFE model relative to the growth rate in the FCFF model.

The growth rate in earnings per share can be estimated as:

$$g_{EPS} = b\ \{ROA + D/E\ [ROA - i\ (1 - t)]\}$$

Where,

b = Retention ratio = 1– pay-out ratio

Pay-out ratio = 1 – b

$$= 1 - g/\{ROA + D/E\ [ROA - i\ (1 - t)]\}$$

$$= 1 - \frac{g}{ROA + \frac{D}{E}[ROA - i(1-t)]}$$

Where,

ROA = Return on Assets,

= EBIT (1 – t) (BV of debt + BV of equity),

D/E = Debt/Equity ratio i = Interest rate on debt

t = Marginal tax rate

When the return on assets earned by a firm on its projects exceeds the after tax interest rate, increased leverage will increase the growth rate in earnings per share. The cash flow to the firm is a pre-debt cash flow and hence is not affected by the increase in leverage. Thus, the growth rate in EBIT for the same firm will depend upon only the retention ratio and the return on assets and will generally be lower.

$$g_{EBIT} = b\ (ROA)$$

The growth in capital expenditures, depreciation and capital spending will be identical for the purposes of calculating the FCFE and FCFF.

The general model of the free cash flow to firm model allows for two stages in growth – a supernormal growth phase in the initial period followed by a stable growth rate forever afterwards.

It is given as:

$$V_o = \sum_{t=1}^{t=n} \frac{FCFE_t}{(1+k_e)} + \frac{V_n}{(1+k_e)^n}$$

Where, $V_n = \dfrac{FCFF_{n+1}}{(k_e - g_n)}$

Where,

FCFE = Expected FCFF per share in year t,

$k_e$ = Weighted average cost of capital,

$V_n$ = Value of the firm at the end of year n, and

$g_n$ = Growth rate forever after year n.

The value of equity can be estimated by subtracting the market value of outstanding debt from the value of the firm.

**Advantages of firm valuation using the FCFF model**

i. The cash flows relating to the debt do not have to be considered explicitly since the free cash flow to the firm is a pre-debt cash flow.

ii. The free cash flow to firm model is more suitable especially in cases where the leverage is expected to change significantly over time because estimating the new debt issues and debt repayments when the leverage is changing becomes very cumbersome as the number of years increase.

**Illustration 11**

Raymond Inc., a leader in the development and manufacture of household products in India, reported EBIT of ₹ 1,200 lakh in 20xx prior to depreciation of ₹ 350 lakh. The capital expenditures in 20xx amounted to ₹ 420 lakh and working capital was 10% of the revenues (which were ₹ 13,000 lakh). The firm has

outstanding debt yielding a pre-tax interest rate of 8%. The tax rate for the firm is 40% and the Treasury Bill rate is 7%. The most recent beta for the firm is 1.10. The debt equity ratio of the firm was 50%.

The firm expects revenues, earnings, capital expenditures and depreciation to grow at 9.5% a year from 20x1 – 20x5 after which the growth rate is expected to drop by 4% (capital spending will offset depreciation in the steady state period). The company also plans to lower its debt/equity ratio to 25% for the steady state resulting in the pre-tax interest rate drop to 7.5%. The annual market premium of the firm is 6%.

Estimate the value of the firm.

**Solution**

Base year information (2022)

| | |
|---|---|
| Earnings before interest and taxes | = ₹ 1,200 lakh |
| Capital expenditure | = ₹ 420 lakh |
| Depreciation | = ₹ 350 lakh |
| Revenues | = ₹ 13,000 lakh |
| Working capital as a percentage of revenues | = 10% |
| Tax rate | = 40% |
| *High Growth Phase* | |
| Length of high growth phase | = 5 years |
| Expected growth rate in FCFF | = 9.5% |
| Beta | = 1.10 |
| Cost of debt | = 8% |
| Debt ratio | = 50% |
| *Stable Growth Phase* | |
| Expected growth rate in FCFF | = 4% |
| Cost of debt | = 7.5% |
| Debt ratio | = 25% |

The forecasted cash flows to the firm over the next five years are given as follows:

| | 20x1 | 20x2 | 20x3 | 20x4 | 20x5 | Terminal year |
|---|---|---|---|---|---|---|
| EBIT | 1314 | 1438.83 | 1575.52 | 1725.19 | 1889.09 | 1964.65 |
| – tax @ 40% | 525.6 | 575.53 | 630.21 | 690.07 | 755.64 | 785.86 |
| – (cap exp- Dep) | 76.65 | 83.93 | 91.91 | 100.64 | 110.20 | 114.61 |

*(Contd. .)*

| | | | | | | |
|---|---|---|---|---|---|---|
| – change in WC * | 123.5 | 135.23 | 148.08 | 162.15 | 177.55 | 81.86 |
| FCFF | 588.25 | 644.14 | 705.32 | 772.33 | 845.7 | 982.32 |
| PV of FCFF @ 9.2% | 538.69 | 540.16 | 541.64 | 543.13 | 544.21 | |

Cost of equity for the high growth phase

= 7% + 1.1(6) = 13.6%

Cost of capital during the high growth phase

= 13.6 x 0.5 + 8 (1 – 0.4) x 0.5

= 6.8 + 2.4 = 9.2%

* Estimation of Change in Working Capital

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Revenues | 13000 | 14235.0 | 15587.33 | 17068.12 | 18689.59 | 20465.10 | 21283.70 |
| WC | 1300 | 1423.5 | 1558.73 | 1706.81 | 1868.96 | 2046.51 | 2128.37 |
| Change in WC | | 123.5 | 135.23 | 148.08 | 162.15 | 177.55 | 81.86 |

Estimation of Beta for the stable phase – As the firm reduces its debt, the interest rate goes down. With the reduced debt the equity in the firm will be less risky and the new beta of equity can be calculated as:

New Beta = Old beta/(1 + (1 – t) Old D/E)} x {1 + (1 – t) New D/E ratio}

= {1.1/(1 + (1 – 0.4)0.5)} x {1+ (1 – 0.4) 0.25}

= 0.846 x 1.15 = 0.97 approximately

Cost of equity for the stable growth phase

= 7% + 0.97(6) = 12.82%

Cost of capital during the stable growth phase

= 12.82 x 0.75 +7.5 (1 – 0.4) x 0.25

= 9.615 + 1.125 = 10.74

Terminal Value = 982.32/(0.1074 – 0.04) = 14,639.64

Present Value of Terminal Value

= $14,639.64/(1.092)^5$ = 9,421.8

Value of the firm

= 2,707.83 + 9,421.8 = ₹ 12,129.63 lakh

**Firm Valuation**

**Adjusted Present Value Model:** The value of the firm in the adjusted present value approach is estimated in three steps.

The first step is to value the firm without debt. Secondly, estimate the present value of the interest tax savings generated by borrowing a given amount of money. Finally, estimate the effect of borrowing the amount on the probability that the firm will go bankrupt, and also the expected cost of bankruptcy. The value of levered firm can be written as:

Value of levered Firm = Value of unlevered firm + Present value of tax benefits of debt – Present value of expected bankruptcy costs.

- **Value of Unlevered Firm:** The value of the unlevered firm is estimated by valuing the firm as if it had no debt, i.e., by discounting the expected free cash flow to the firm at the unlevered cost of equity. The general model of the value of the unlevered firm is given as:

  $$\text{Value of the unlevered firm} = \frac{FCFE_0(1+g)}{k_{ue} - g}$$

  (Here, we assume that the growth rates in the cash flows of the firm are constant and perpetual).

  Where,

  $FCFE_0$ = Current after tax operating cash flow to the firm

  $g$ = Expected growth rate

  $k_{ue}$ = Unlevered cost of equity

  The unlevered cost of equity is estimated from the unlevered beta of the firm which is given as:

  $$\beta_{unlevered} = \frac{\beta_{current}}{1+(1-t)\frac{D}{E}}$$

  Where,

  $\beta_{unlevered}$ = Unlevered beta of the firm

  $\beta_{current}$ = Current equity beta of the firm

  $t$ = Tax rate for the firm

  $D/E$ = Current debt/Equity ratio

  Thus, the unlevered beta can be used to calculate the unlevered cost of equity.

- **Expected Tax Benefit from Debt:** The second step in the adjusted present value approach is to calculate the value of the expected tax benefits from the given level of debt. In most countries interest payments made by a company

are deductible for tax purposes. Hence, the overall taxes paid by a company are lower, if the company employs debt in its capital structure.

The tax benefit depends on the tax rate of the firm. Such a benefit accrued is discounted at the cost of debt to reflect the riskiness of this cash flow.

Value of tax benefits when the tax savings are viewed as perpetuity

$$= \frac{(\text{Tax rate})(\text{Cost of debt})(\text{Debt})}{\text{Cost of debt}}$$

$$= \text{Tax rate x Debt}$$

$$= t_c D$$

The firm's marginal tax rate which is assumed to be constant overtime is used as the tax rate.

- **Estimating the Expected Bankruptcy Costs:** The third step is to evaluate the effect of the given level of debt on the default risk of the firm and on expected bankruptcy costs. Hence, the probability of default with additional debt and the direct and indirect cost of bankruptcy are calculated. The probability of bankruptcy costs can be estimated from the bond ratings given by different agencies at each level of debt or by using the observed approximation of default probabilities for each rating or the statistical approaches to estimate the value of default based upon the firm's characteristic at each level of debt. The bankruptcy costs can be estimated from various studies that have looked at the magnitude of this cost in actual bankruptcies.

  The present value of the expected bankruptcy costs is estimated as:

  PV of expected bankruptcy costs = $P_a$ (BC)

  Where,

  $P_a$ = Probability of default after the additional debt

  BC = Present value of bankruptcy costs

- **Estimation of Value of the Firm:** The value of the levered firm is obtained by adding the net effect of debt to the unlevered firm value. It is given as:

  $$\text{Value of the levered firm} = \frac{FCFE_0(1+g)}{k_{ue} - g} + t_c D - P_a BC$$

- **Advantages and Limitations of the Adjusted Present Value Approach:** Since the cash flows used in this method are the cash flows prior to the debt payments, this approach is more suitable when there is significant leverage or when leverage changes overtime (though the weighted average cost of capital used to discount cash flows to the firm, has to be adjusted for changes in leverage).

One of the benefits of the APV approach is that it separates the effects of debt into different components and allows the analyst to use different discount rates for each component.

However, the adjusted present value approach to valuation also has its own disadvantages. Estimating the probabilities of default and the cost of bankruptcy is a very complicated issue. Many analysts ignore the bankruptcy costs leading to a conclusion that the firm value increases with increase in the level of debt.

### 13.6.3 Applicability and Limitations of DCF Valuation

The discounted cash flow approach is a perfect model, which can be used when a firm has positive future cash flows. The expected cash flows can be reliably estimated and there exists a proxy for risk which is required in computation of discount rates. However, in real life situation the valuer faces some practical challenges. These limitations become apparent in the following cases:

- **Asset Rich Firms:** DCF valuation reflects the value of all the assets, which produce cash flows. The firm may have some assets, which do not produce any cash flows. For example, surplus land, unutilized floor space in factory buildings, staff quarters, etc. The value of such assets will not be reflected in the DCF valuation. The same limitation also applies, to a lesser extent, to underutilized assets, as their values will be understated in the DCF model.
- **Firms in Distress:** The firms in financial distress may have negative current and future cash flows. The present value of such firms will be a negative figure under the DCF method. Further such firms have a high probability of going bankrupt.

  This violates the basic premise of the DCF approach, which views a firm as a going concern.
- **Mergers/Takeovers:** A key driver in several merger/takeover transactions is the expected synergy between the two firms. The challenge involved in such a valuation exercise is understanding the nature and form of the synergy and estimating its value in financial terms to compute its impact on the expected cash flows. The second challenge involves estimating the effect of the resultant change in management (due to the merger or the takeover) on the discount rates due to the change in the risk profile of the firm. This limitation is more pronounced when the transaction involves a hostile takeover.
- **Cyclical Firms:** The cash flows of cyclical firms tend to shadow the performance of the economy. The earnings and cash flows are high during the boom periods and are low during recessionary periods. The valuations can be misleading if the explicit forecast period does not cover the entire

economic cycle. However, this is an onerous task and the resulting valuation can be highly subjective depending on the valuer's assumptions about the timing and the duration of the phases of the economic cycle.

- **Firms with Product Options:** Firms often have unutilized product options which do not generate any current cash flows. For example, for companies involved in oil exploration, winning the right to drill oil and gas in a particular region represents a product option. Similarly, firms may also have unutilized intellectual property rights like patents and copyrights. If DCF model is applied to such valuations, the firm will be grossly undervalued. Some practitioners have overcome this limitation either by obtaining the market value of such options or by applying the option pricing model for their valuation. The resultant value of the option is added to the value obtained from DCF valuation to arrive at the true value of the firm.
- **Firms in the Process of Restructuring:** Firms in the process of restructuring are often involved in activities like selling assets, acquiring other assets, changing the capital structure, dividend policy etc., Similarly some firms may also change from publicly traded to private firms. Such changes make the estimation of future cash flows more difficult and affect the riskiness of the firm.
- **Valuation – Other Approaches:** In practice, a wide variety of valuation approaches are employed, but the data considered in various approaches differ to a great extent. The various methods might provide different business values. In the previous section, we have discussed the widely used discounted cash approach to valuation. Now, we will discuss some of the other methods namely, the comparable company approach, adjusted book value approach and the option pricing model approach.

**Activity 13.2**

a. There are two models that determine the value of equity. Discuss.

……

……

b. Consider the following information pertaining to a firm:

| | |
|---|---|
| Net Operating Income | = ₹ 28,000 |
| Investment Rate | = 50% |
| Cost of capital | = 18% |
| Tax Rate | = 40% |
| Constant Growth rate of Post-tax NOI | = 8% |

Compute the value of the firm.

……

……

## 13.7 Comparable Company Approach

The objective in the discounted cash flow approach to valuation is to value the assets based on their cash flows, growth and risk characteristics whereas the objective in the comparable company approach is to value assets based on how similar assets are priced in the market place. It is also termed as relative valuation. There has been a widespread usage of this approach to valuation in recent years.

**Basis of Relative Valuation**

The relative valuation or the comparable company approach to valuation is based on the principle of substitution which states that "one will pay no more for an item than the cost of acquiring an equally desirable substitute". In this approach, the value of a firm is derived from the value of comparable firms, based on a set of common variables like earnings, sales, cash flows, book value etc.

As a first step to relative valuation, prices are standardized to form multiples and then these multiples are compared with firms that are comparable. Prices can be standardized based upon earnings, book value, revenues or sector-specific variables.

**Advantages of Relative Valuation**

i. Valuation based on multiples and comparable firms can be done with fewer assumptions and at a faster rate than the discounted cash flow valuation.

ii. The relative valuation is simple and easy to understand and present to clients than the discounted cash flow valuation.

iii. The relative valuation measures the relative value of the asset rather than the intrinsic value and hence it reflects the current atmosphere of the market.

The valuation process applying to the relative valuation approach is a four staged exercise.

i. Analysis of a firm

ii. Identification of comparable firms

iii. Comparison and analysis

iv. Selection of valuation multiples

v. Valuation of the firm.

i. **Analysis of the Firm:** As a first step in relative valuation a valuer is required to make an in depth analysis of the firm to get rich insights into the financial and operational aspects.

   The profitability of the firm may be analyzed by looking at the operating profit margins and the net profit margins. Further, analysis may be made by analyzing the return on capital employed and the return on net worth. The liquidity position may be analyzed from the current ratio and quick ratio. The interest coverage and the debt service coverage ratio would provide

indicators to the solvency position. The efficiency of the operations can be captured from the ratios like inventory turnover, fixed assets turnover, debtors' turnover, etc. The cash flows of the firm need to be carefully studied and a sensitivity analysis may be conducted. The capital structure of the firm also needs to be analyzed. The qualitative analysis includes assessing the position of the firm in the industry, market share, competitive advantage (if any) etc.

ii. **Identification of Comparable Firms**

A comparable firm is one with cash flows, growth potential and risk similar to the firm being valued. It is ideal that price multiples used in a comparable firm analysis be those for firms with similar operating and financial characteristics. Firms within the same industry are the most suitable. The process begins with a thorough analysis of the industry in which the firm operates. The valuer has to carefully assess the general profile of the industry, competitive structure, demand-supply position, installed capacities, pricing system, availability of inputs, government policies and regulatory framework, etc.

The next step involves identification of firms with comparable profile. The parameters for identification of such firms include product profile, scale of operations, markets served, cost structures, geographical location, technology, etc.

However, even within narrowly defined industries, it is often difficult to find multiples for similar firms. Firms within the same industry frequently have different strategies, growth opportunities and profitability, creating comparability problems. One way of dealing with these issues is to average across all the firms in the industry. This way the various sources of non-comparability cancel out so that the firm being valued is comparable to a typical industry member. Another approach is to focus only on those firms, which are most similar in the industry.

Once the potential comparable firms are identified, each of the firm is analyzed based on the predetermined parameters. From the firms which are identified three to five specific firms, which bear a close similarity with the firm being valued, are selected.

iii. **Comparison and Analysis:** The historical financial statements (balance sheet, profit & loss account and cash flow/funds flow statement) of the firm being valued and the comparable firms are to be analyzed, so as to identify the dissimilarities between them. The dissimilarities essentially arise due to variations in accounting policies. Some of the common areas of dissimilarities are method of inventory valuation, depreciation policies, valuation of intangible assets, treatment of off balance sheet items, etc. Once

such dissimilarities are identified appropriate adjustments are to be made to make the firms comparable.

The next step involves computation of a set of valuation multiples for the comparable firms.

iv. **Selection of Valuation Multiples:** The price of a stock is a function of both the value of the equity in a company and the number of shares outstanding in the firm. Since stock prices are determined by the number of units of equity in a firm, they cannot be compared across different firms. To compare the values of "similar" firms in the market, you need to standardize the values in some way. Values can be standardized relative to the earnings firms generate, to the book value or replacement value of the firms, to the revenues that firms generate or to measures that are specific to firms in a sector.

Many different market multiples are used. Some are quiet popular and are widely used and accepted in a specific industry, while some use the same one or two multiples in every appraisal. Since multiples of different levels of operating performance or financial position disclose different information about the firm being valued, care should be taken to select valuation multiples.

- **Earnings Multiples:** Earnings multiples are the most commonly used measures of relative valuation. Among the earnings multiples the most commonly used multiple is the price earnings ratio. Other multiples used are the price earnings growth ratio, the relative P/E etc. Let us examine each of these multiples.
- **P/E:** The simplicity of the P/E ratio makes it the most widely used valuation multiples. It is defined as the ratio of the market price of the share to the earnings per share.

  PE = Market price per share/Earnings per share

  This multiple is more appropriate for most profitable companies with a stable capital structure that is consistent with the capital structure of the selected companies.
- **PEG Ratio:** The PEG ratio is defined to be the price earnings ratio divided by the expected growth rate in earnings per share.

  PEG ratio = Price earnings ratio/Expected growth rate in earnings.

  If the expected growth rate in earnings per share here in the above equation is based upon earnings in the most recent year (current earnings), the PE ratio that should be used is the current PE ratio. If it based upon past earnings, the PE ratio used should be the past PE ratio. The forward PE ratio should never be used in this computation, since it may result in a double counting of growth.

- **Relative PE Ratio:** Relative price earnings ratios measure a firm's PE ratio relative to the market average. It is obtained by dividing a firm's current PE ratio by the average for the market.

  Relative PE = Current $PE_{Firm}$ / Current $PE_{Market}$

- **Book Value Multiples:** The price-book value ratios are quiet useful in investment analysis primarily because book value provides a relatively stable spontaneous measure of value that can be compared to the market price. For investors who suspect the accuracy of the discounted cash flow estimates of value, the book value is a much simple benchmark for comparison. Secondly, given reasonably consistent accounting standards across firms, price-book value ratios can be compared across similar firms for signs of under or over valuation. Finally, even firms with negative earnings, which cannot be valued, using price-earnings ratios, can be evaluated using price-book value ratios. There are far fewer firms with negative book value than there are firms with negative earnings.

- **Price to Book Ratios:** The price to book ratio is computed by dividing the market price per share by the current book value of equity per share.

  Price to book ratio = Market price per share/Book value of equity per share.

- **Value to Book Ratios:** Instead of relating the market value of equity to the book value of equity, the value to book ratio relates the firm value to the book value of the firm's capital.

  Consequently, it can be viewed as the firm value analogos to the price to book ratio.

  The value to book ratio is obtained by dividing the market value of both debt and equity by the book value of capital invested in a firm.

  Value to Book Ratio = (Market value of equity + Market value of debt)/(Book value of debt + Book value of equity).

- **Tobin's Q: Market Value/Replacement Cost:** James Tobin presented an alternative to traditional financial measures of value by comparing the market value of an asset to its replacement cost. His measure, called Tobin's Q, has several supporters in academic world, but is not yet used in the practical world because of informational problems.

  Tobin's Q is estimated by dividing the market value of a firm's assets by the replacement cost of these assets.

  Tobin's Q = Market value of assets in place/Replacement costs of assets in place.

- **Revenue Multiples:** A revenue multiple measures the value of the equity or a business relative to the revenues that it generates. Other things remaining equal, firms that trade at low multiples of revenues are viewed as cheap relative to firms that trade at high multiples of revenues.

  Revenue multiples have proved to be attractive to analysts for a number of reasons.

  Revenue multiples are available even for the most troubled firms and for very young firms unlike earnings and book value ratios which become negative for some firms. Thus, the potential for bias created by eliminating firms in the sample is far lower. Second, unlike earnings and book value, which are heavily influenced by accounting decisions on depreciation, inventory, R&D, acquisition accounting and extraordinary charges, revenue is relatively difficult to manipulate. Third, revenue multiples are not as unstable as earnings multiples and hence are less likely to be affected by year-to-year swings in firm's fortune. For example, the price-earnings ratio of a cyclical firm changes much more than its price-sales ratios, because earnings are much more sensitive to economic changes than revenues.

  There are two basic revenue multiples in use. For equity investors, the revenue multiple ratio is the price/sales ratio, where the market value per share is divided by the revenues generated per share.

  Price to sales ratio = Market price per share/Revenue per share

  For firm value, this ratio can be modified as the value/sales ratio, where the numerator becomes the total value of the firm. This ratio, again, varies widely across sectors, largely as a function of the profit margins in each.

  Value/Sales ratio = Total value of the firm/Total revenues

- **Sector-specific Multiples:** While earnings, book value and revenue multiples are multiples that can be computed for firms in any sector and across the entire market, there are some multiples that are specific to a particular sector. While there are certain conditions under which sector-specific multiples can be justified, they are dangerous for two reasons. First, since they cannot be computed for other sectors or for the entire market, sector-specific multiples can result in persistent over or under valuations of sectors relative to the rest of the market. Second, it is more difficult to relate sector specific multiples to fundamentals, which is an essential ingredient to using multiples well. The result will not only vary from company to company, but will also be difficult to estimate.

The measurement of sector specific multiples varies from sector to sector though they share some general characteristics. They are similar in the following characteristics. The numerator is usually enterprise value – the market values of both debt and equity netted out against cash and marketable securities. The denominator is defined in terms of the operating units that generate revenues and profits for the firm.

For commodity companies such as oil refineries and gold mining companies, where revenue is generated by selling units of the commodity, the market value of the commodity can be standardized by dividing the value with the reserves that these companies have.

Value per commodity unit = (Market value of equity + Market value of debt)/Number of units of commodity in reserves.

For manufacturing firms that produce a homogeneous product (in terms of quality and units), the market value can be standardized by dividing by the number of units of the product that the firm produces or has the capacity to produce.

Value per unit product = (Market value of equity + Market value of debt)/ Number of units produced

For subscription-based firms such as cable companies, internet service providers and information providers (such as TheStreet.com), revenues come from the number of subscribers to the base service provided. Here, the value of a firm can be stated in terms of the number of subscribers.

Value per subscriber = (Market value of equity + Market value of debt)/Number of subscribers

v. **Valuation of the Firm:** The final step involves valuing the firm in relation to the comparable firm. This requires applying the multiples identified to the firm being valued. This is a highly subjective process. This process may provide several different values depending on the multiple applied. In such possibility, average value may be computed based on the values depending on the multiple applied. In case the valuer believes that a particular multiple(s) is/are more important, weighted arithmetic average may be used by assigning appropriate weightages that reflect the comparative importance of each multiple.

Despite the fact that the use of multiples is simple, there are four steps in using them soundly. First, the multiple consistently is defined and uniformly measured across the firms being compared. Second, there should be a sense of how the multiple varies across firms in the market. In other words, a high value, a low value and a typical value of the multiple in question should be

identified. Third, the fundamental variables that determine each multiple and how changes in these fundamentals affect the value of the multiple is identified. Finally, the actual comparable firms are found out and adjusted for differences between the firms on fundamental characteristics.

**Illustration 12**

Compute the value of Sigma Ltd. with the help of the comparable firms approach using the following information:

| | |
|---|---|
| Sales | ₹ 100 cr. |
| Profit after tax | ₹ 15 cr. |
| Book value | ₹ 60 cr. |

The valuer feels that 50% weightage should be given to earnings in the valuation process. Sales and book value may be given equal weightages. The valuer has identified three firms which are comparable to the operations of Sigma Ltd.

*(₹ in crore)*

| Particulars | Alpha Ltd. | Beta Ltd. | Gamma Ltd. |
|---|---|---|---|
| Sales | 80 | 120 | 150 |
| Profit After Tax | 12 | 18 | 25 |
| Book Value | 40 | 90 | 100 |
| Market Value | 120 | 150 | 240 |

**Solution**

The valuation multiples of the comparable firms are as follows:

| Particulars | Alpha | Beta | Gamma | Avg. |
|---|---|---|---|---|
| Price/Sales Ratio | 1.50 | 1.25 | 1.60 | 1.45 |
| Price/Earnings Ratio | 10.00 | 8.33 | 9.60 | 9.31 |
| Price/Book Value Ratio | 3.00 | 1.66 | 2.40 | 2.35 |

Applying the above multiples, the value of Sigma is as follows:

| Particulars | Multiple | Parameters | Value |
|---|---|---|---|
| Price/Sales | 1.45 | 100 | 145.00 |
| Price/Earnings | 9.31 | 15 | 139.65 |
| Price/Book Value | 2.35 | 60 | 141.00 |

The weightages to P/S ratio, P/E ratio and the P/BV ratio are 1, 2 and 1 respectively. Thus the weighted average value will be:

= [(145 x 1) + (139.65 x 2) + (141 x 1)]/4 = ₹ 141.32 cr.

The value of Sigma Ltd., using the comparable firms approach, is ₹ 141.32 cr.

**Disadvantages of Relative Valuation**

Though relative valuation has its own strengths compared to the discounted cash flow valuation, these strengths might sometimes prove to be weaknesses:

i. Relative valuation sometimes leads to inconsistent estimates of value because key variables like risk, growth and cash flows are ignored.

ii. The fact that multiples reflect the market mood also implies that using relative valuation to estimate the value of an asset can result in values that are too high, when the market is over valuing comparable firms, or too low, when it is under valuing these firms.

iii. The lack of transparency regarding the underlying assumptions in relative valuation makes them particularly vulnerable to manipulation.

**Relative and Discounted Cash Flow Valuations**

Discounted cash flow valuation and relative valuation generally yield different estimates of value for the same firm. Even within relative valuation, different estimates of value are obtained depending upon which multiple is used and on what firms the valuation is based on.

The reason for the differences in value between discounted cash flow valuation and relative valuation is the different views of market efficiency, or in particular, market inefficiency. In discounted cash flow valuation, it is assumed that the markets make mistakes and that these mistakes are corrected over time. These mistakes can often occur across entire sectors or even the entire market. In relative valuation, it is assumed that while markets make mistakes on individual stocks, they are corrected on average. Thus, a stock may be over valued on a discounted cash flow basis but under valued on a relative basis, if the firms used in the relative valuation are all overpriced by the market. The reverse would occur, if an entire sector or market were under priced.

**Adjusted Book Value Method**

All firms cannot be evaluated using the discounted cash flow method or the comparable company method. Some firms which are underperforming usually generate no cash flows and therefore they do not have general intangible value. The value of such firms can be obtained from the hypothetical sale price of its assets. Thus, the primary circumstance where the asset approach (also called the cost approach) would be used is to value a firm whose value is limited to the total of specific tangible assets, because it fails to generate any intangible value.

Asset or cost methods are conducted under either a going concern or a liquidation principle. When the valuation is conducted based on the going concern assumption it is called, 'the adjusted book value approach' and when it is conducted based on the liquidation principle it is termed as, 'the liquidation value approach'.

Adjusted book value approach to valuation is an asset approach where the valuation is done by estimating the market value of the assets and liabilities of the firm as a going concern. The going concern principle is based on the assumption that the business will continue to operate and the appraisal of assets is done at their value "in use".

The liquidation value method is based on the principle of liquidation. It is based on the assumption that the operations of the business will cease and liquidation will occur. The costs involved to liquidate the business must be considered and subtracted in determining the net proceeds.

From the above, it is clear that the asset approach is different from the conventional book value method. The conventional approach relies on the historical book value of assets and liabilities while in the asset approach the valuation of assets and liabilities is done based on their fair market value.

This is because book value of assets cannot be an indication of market value since it typically reflects only the historical cost of assets. There is no attempt in the depreciation process to report assets at what they are actually worth. Since it is not wise to assume that specific assets are worth the amount at which they are carried in the company's books, the market value is a better choice. The market value of an asset is dependent on many factors, including the market of available substitutes, technological changes and inflation. Some assets depreciate in market value over the years, but some like real estate appreciates.

**Method of Valuation**

Whether we determine the fair market value or the liquidation value, the common procedure under asset approach is to adjust the company's balance sheet accounts from book values based on accounting computations to market value. The approach begins with valuation of all the assets of the firm. The adjustments are made as follows:

**Valuation of Tangible Assets**

- **Current Assets:** Current assets constitute a major block on the asset side of the balance sheet. Current assets usually include cash, inventory, accounts receivable, etc.
- **Cash:** Cash generally does not require any adjustment unless the cash position is either excessive or deficient.
- **Accounts Receivable:** Debtors or accounts receivable are generally valued at their book value. However, allowances should be made for any doubtful debts. The uncollectible debts should be removed based on the primary considerations like the company's history of collections as a percentage of total receivable, a state of economy, the state of the company's industry, customers, etc.
- **Inventory:** Depending upon the industry – retail, wholesale or manufacturing the composition of inventory will vary. Inventory is valued depending on its nature.

- **Raw Material:** Raw material is valued under last-in-first-out method or first-in-first-out method or average cost method and may need to be adjusted to reflect shrinkage, obsolescence or similar factors.
- **Work-in-progress:** Work-in-progress can be valued either based on the cost, i.e., cost of materials plus processing costs incurred or based on the sales price, i.e., sale price of the finished product less cost incurred to convert the work-in-progress into sales.
- **Finished Goods:** Finished goods are valued at current realizable sale value after deducting provisions for packing, transportation, selling costs, etc.
- **Prepaid Expenses:** The prepaid account generally does not require any adjustment as long as the buyer can acquire the benefits of the item purchased or receive a refund for the advance payment.
- **Other Assets:** Some of the assets which usually require adjustment are marketable securities, other non-operating assets, bill receivable, etc. If these items are not used in the company's operations, they should be removed from the balance sheet. Other items should be removed from the balance sheet. Other assets should be converted to market value based on the benefit that they provide to the company.
- **Fixed Assets:** Fixed assets constitute substantial portion of the asset side of the balance sheet in capital intensive companies. Land is valued at its current market price. Buildings are normally valued at replacement costs. However, appropriate allowances are to be made for depreciation and deterioration in its conditions. Similarly, plant and machinery, capital equipments, furniture, fixtures, etc., are to be valued at fixed costs net of depreciation and allowances for deterioration in conditions. An alternative method of valuing plant and machinery involves estimation of the prevailing market price of similar used machinery plus the cost of transportation and erection.

**Example: Tangible Assets Approach of Valuation**

Valuation of tangible assets of Maruti Suzuki and Tata Motors as on March 2022 is given hereunder:

*(₹ in crore)*

| Particulars of Assets | Maruti Suzuki | Tata Motors |
|---|---|---|
| Fixed assets (Net) | 16,646 | 15,543 |
| Investments | 36.663 | 29,256 |
| Other non-current assets | 3,323 | 3,481 |
| **Current Assets** | | |

*Contd. ……*

| | | |
|---|---|---|
| Inventory (RM, SFG & FG) | 3,533 | 3.718 |
| Cash and Bank balance | 3,036 | 2,605 |
| Receivables (Less bad debts) | 2,030 | 2,112 |
| Other assets (Loans & advances & investments etc.) | 8,182 | 7,183 |
| **Total** | **74,813** | **63,898** |

The common procedure under asset approach begins with valuation of all the assets of the firm based on the financial statement of two comparable firms as one can observe from the above two companies.

*Sources: (i) https://www.moneycontrol.com/financials/marutisuzukiindia/balance-sheetVI/MS24, 2022. Accessed on 28th June, 2022*
*(ii) https://www.moneycontrol.com/financials/tatamotors/balance-sheetVI/TM03, 2022. Accessed on 28th June, 2022*

- **Intangible Assets:** The valuation of intangible assets like brands, goodwill, patents, trademarks and copyrights, distribution channel, etc., is a controversial area of valuation. Several major companies (consumer goods in particular) believe that brands are its most valuable assets. The idea of intangibles as financial assets emerged in the mid-eighties. As intangibles have significant financial value, their absence from the valuation distorts the true financial position of a company. Hence, to ensure that the valuation of a company is reflective of its true intrinsic worth, it has become necessary for companies to determine the values of their brands.

However, there is a large element of subjectivity in the process of valuation of intangibles. The two popular methods of valuing intangibles are given below:

i. **Earnings Valuation Method:** This method of valuation is widely accepted in most markets around the world. The value of an intangible like any other asset is equal to the present value of the future earnings attributable to it. This is a two-staged process involving:

   - Determining the future earnings attributable to the intangible asset; and
   - Applying an appropriate multiplier to determine its present value.

   The main drawback of this approach is that the future projections of the earnings may be optimistic. Further, the process of determining the multiplier is highly subjective. Due care has to be taken for the above factors, failing which the intangible asset may be overvalued. Unscrupulous companies may possibly overvalue the intangibles and use brand values as a tool for window dressing.

ii. **Cost Method:** This method involves stating the value of the intangible asset at its cost to the company. This is relatively easy when the intangible asset is acquired. The money paid to buy the brands can be directly stated. (For

example, Coca-Cola paid ₹ 170 cr. to acquire the soft drinks brands of Parle). It is more difficult to value the brand when the intangible asset has been developed in-house by the company. The methodology involves determining the cost incurred in developing the intangible asset. The process of identification of the costs incurred is characterized by a great degree of subjectivity. This may have a significant impact on the final valuation.

**Liabilities**

The valuation of liabilities is relatively simple. It must be noted that share capital, reserves and surpluses are not included in the valuation. Only liabilities owed to outsiders are to be considered. All long-term debt like loans, bonds, etc., are to be valued at their present value, using the standard bond valuation model. This involves computing the present value of the debt servicing (both principal and interest payments) by applying an appropriate discount rate. Current liabilities include amount due to creditors, short-term borrowings, provision for taxes, accrued expenses, advance payment received, etc. Normally such current liabilities and provisions are taken at their book value.

**Non-recurring or Non-operating Assets and Liabilities**

Items or activities, which are not expected to recur are called non-operating. Non-operating assets are assets not needed to maintain the anticipated level of business activity. For example, gains or losses on sales of assets, marketable securities, investments or interest paid on non-operating debt.

While assessing the value of the firm, non-operating assets are usually added to the operating value of the firm to arrive at the total value.

- **Off Balance Sheet Assets:**
  - ***Asset related liabilities:*** Liabilities related to assets that were adjusted also may require adjustment.
  - ***Interest bearing debt:*** If the interest charged on a bill payable is a fixed rate that is significantly different from the market rate on the valuation date, the debt should be adjusted.
  - ***Deferred taxes:*** A deferred tax liability may be appropriate based on the amount of deferred tax due on assets written up from book to market value.
- **Off Balance Sheet Liabilities:**

  There are always some common unrecorded items like the guarantee and warranty obligations, pending litigation or other disputes like taxes and employee claims or environmental or other regulatory issues. Such liabilities should be quantified and deducted while estimating the firm value.

### Valuation of the Firm

The ownership value of a firm is the difference between the value of the assets (both tangible and intangible) and the value of the liabilities. Normally, no premium is added for control as assets and liabilities are taken at their economic values. On the other hand, a discount may be necessary to factor in the marketability element. The market for some of the assets may be illiquid or may fetch a slightly lesser price, if the buyer does not perceive as much value of the asset to his business. Hence, a discount factor may be applied.

Asset intensive companies or underperforming businesses that lack operating value because they generate inadequate returns are often valued by the asset approach. This approach is more appropriate for appraisal of controlling interests that possess the authority to cause the sale that creates the cash benefit to shareholders. Whether using the adjusted book value method to determine the value of the assets in use or liquidation value to determine their worth in liquidation conditions, the asset approach involves adjusting balance sheet accounts to market value. The adjustments are made to reflect the value of non-operating assets or asset surpluses or shortages that may exist in companies whose operating value is determined by income or market approach.

## 13.8 Option Pricing Method

Traditionally, the discounted cash flow technique has been widely used in the valuation of investment decisions. Investments were made in projects with a positive net present values. The limitation of this technique, which analyzes projects on the basis of expected cash flows and discount rates, is that it fails to consider fully the various other options that are usually associated with many investments.

Over the past decade, theoretical and computational advances have allowed financial practitioners to adapt financial option pricing technique for the valuation of investment decisions. Option pricing models are superior to the traditional DCF methods because they clearly capture the value of flexibility.

Assets with two specific characteristics can be valued using the option pricing models. They are:

i. Assets which derive their value from the value of other assets.

ii. Assets whose cash flows are contingent on the occurrence of specific events.

These assets are called options and the present value of the expected cash flows on these assets will understate their true value. In this section, we will describe the cash flow characteristics of options, consider the factors that determine their value and examine how best to value them.

An option gives the right (but not the obligation) to buy or sell an asset at a predetermined price (called the strike or the exercise price) for a predetermined

period of time (called the life of the option). This right to take an action is the flexibility associated with the investment decision. There are two types of options – call options and put options.

- ***Call Option:*** The call option gives the holder of the option the right to buy the underlying asset at the predetermined price against the payment of upfront nominal premium. If at the expiration date the value of the asset is less than the strike price, the option is not exercised and expires. On the other hand, if the value of the asset is greater than the strike price, then the option is exercised. The holder of the option can buy the asset at the strike price and get a gross profit on the investment. The difference between the asset value and the exercise price is the gross profit on investment.
- ***Put Option:*** The put option gives the holder of the option the right to sell the underlying asset at the predetermined price against the payment of upfront nominal premium. If the price of the underlying asset is greater than the strike price, the option will not be exercised and will expire. On the other hand, if the price of the underlying asset is less than the strike price, the holder of the option will exercise the option and sell the asset at the strike price. The difference between the strike price and the market value of the asset is the gross profit.

The value of an option is determined by six variables:

i. The current market value of the underlying asset,
ii. The standard Deviation in this value,
iii. The strike or the exercise price of the option,
iv. The life of the option,
v. The risk-free rate of interest, and
vi. The expected dividends from the asset.

i. **Market Value of the Underlying Asset:** Changes in the value of the underlying asset affect the value of the option on that asset. Since a call option provides the right to buy the underlying asset at a fixed price, an increase in the value of the asset will increase the value of the call option. Similarly, the value of the put option decreases as the value of the asset increases.

ii. **Variance in Value of the Underlying Asset:** The higher the variance in the value of the underlying asset, the higher the value of the option for both put and call options.

The buyer of an option acquires the right to buy or sell the underlying asset at a fixed price. The higher the variance in the value of the underlying asset, the greater will be the value of the option. This is true for both calls and puts. While it may seem counter-intuitive that an increase in a risk measure (variance) should increase value, options are different from other securities since buyers of options can never lose more than the price they pay for them;

in fact, they have the potential to earn significant returns from large price movements.

iii. **The Strike Price of the Option:** The predetermined price at which the holder of the call/put option can buy/sell the underlying asset is called the strike or the exercise price. Strike price is the key characteristic used to describe an option. In the call option, where the holder has the right to buy the asset at a fixed price, the value of the call decreases as the strike price increases. Similarly, in the put option where the holder acquires the right to sell the asset at a fixed price, the value of the put decreases as the strike price decreases and vice versa.

iv. **Life of the Option:** The longer the time to expiration, the more valuable are the options (both put and call), because the longer time provides more time for the value of the underlying asset to move, increasing the value of both type of options. Moreover, in the case of a call, where the buyer has to pay a fixed price at expiration, the present value of this fixed price decreases as the life of the option increases, increasing the value of the call.

v. **The Risk-free Rate of Interest:** Since the buyer of an option pays the price of the option upfront, an opportunity cost is involved. This cost will depend upon the level of interest rates and the time to expiration on the option. Also, increase in the interest rates will increase the value of a call option and reduce the value of a put option since the exercise price does not have to be paid until the expiration in case of call option and received till expiration in case of a put option.

iv. **Dividends Paid on the Underlying Asset:** The value of the underlying asset can be expected to decrease if dividend payments are made on the asset during the life of the option. Consequently, the value of a call on the asset is a decreasing function of the size of expected dividend payments and the value of a put is an increasing function of expected dividend payments.

Let us look at how the value of the call and the put options vary under the influence of the above conditions.

| | Value of call option | Value of put option |
|---|---|---|
| Increase in the value of the underlying asset | Increases | Decreases |
| Increase in strike price | Decreases | Increases |
| Increase in time to expiration | Increases | Increases |
| Increase in interest rates | Increases | Decreases |
| Increase in dividends paid | Decreases | Increases |
| Increase in variance of underlying asset | Increases | Increases |

**Option Pricing Models**

Binomial and Black-Scholes models are used to value options by replicating portfolios composed of underlying asset and risk less lending and borrowing. These models are used to value assets that have option like characteristics.

**Binomial Model**

The binomial model is based on the simple formulation for the asset price process in which the asset, in any time period can move to one of two possible prices. A replicating portfolio is created to use the combination of risk-free borrowing/lending and the underlying asset to create the same cash flows as the option being valued. The principle of arbitrage applies here and the value of the option must be equal to the value of the replicating portfolio. It is assumed that stock prices which follow the binomial move up to $S_u$ with probability p and move down to $S_d$ with probability 1 – p in any time period. The replicating portfolio for the call with strike price k will involve borrowing ₹ X. and acquiring Δ of the underlying asset where,

$$\Delta = \frac{C_u - C_d}{S_u - S_d}$$

Where,

Δ = Number of units of underlying asset bought,

$C_u$ = Value of the call if the stock price is $S_u$, and

$C_d$ = Value of the call if the stock price is $S_d$.

In case of a multi-period binomial process, the valuation has to be done iteratively, starting with the last time period and moving backward in time until the current point of time is reached. The portfolios replicating the option are created at each step and valued, providing the values for the option at that time period. The final output from the binomial option pricing model is a statement of the value of the option in terms of replicating portfolio, composed of Δ shares of the underlying asset and risk-free borrowing and lending.

**Black-Scholes Model**

The binomial model requires a large number of inputs, in terms of expected future prices at each node. The Black-Scholes model is not very different from the binomial model, but it reduces the informational requirement to a large extent. The Black-Scholes model applies when the limiting distribution is a normal distribution and it explicitly assumes that the price process is continuous and that there are no jumps in asset prices.

Black and Scholes designed the model, basically to value European options which were dividend protected. Hence, the value of the option in this model is not affected by the possibility of early exercise or the payment of dividends.

The value of the call option in the Black-Scholes model can be written as a function of the following characteristics.

S = Current value of the underlying asset

K = Strike price of the option

t = Life of the expiration of the option

r = Riskless interest rate

σ = Standard deviation in the value of underlying assets

N = Cumulative standard normal distribution

e = Exponential term

The model can be given as:

$$\text{Value of call} = SN(d_1) - Ke^{-rt} N(d_2)$$

Where, $$d_1 = \frac{\ln\left(\frac{S}{K}\right) + \left(r + \frac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}}$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

Here, ln = Natural logarithm.

**Applicability of Option Pricing Models to Valuation**

It is the general perception to associate option pricing theory only with financial assets and not with real assets. The option pricing method discussed above has an important role to play in valuation. The option pricing models can also capture the value of the flexibility associated with the real assets. The theory provides a very different viewpoint that can be used in analyzing firms in distress, firms depending on natural resources, firms with high technology, etc.

The option pricing models can be used to value the assets, which have the characteristics of an option. In many cases, the options being valued are not on financially traded assets such as stocks or commodities, but are real options such as projects and natural reserves. The options we encounter in investment analysis or valuation are often on real assets rather than financial assets, thus leading them to be categorized as real options, which can take much more complicated forms. In this section, we will consider some of these variations.

**Taxonomy of Options**

The various options associated with real assets can be classified into five mutually exclusive categories (i) the option to delay (ii) the option to expand (iii) the option to abandon (iv) the option to extend or shorten and (v) the option to scope up or down.

The asset options are important not only because they affect the values of the companies that have them, but also because they provide a clear measure for deciding when operations should be started, closed or abandoned.

Let us look at each of the option in detail.

i. **Option to Delay:** A project, which has a negative net present value now may have a positive net present value in the future. In a competitive environment, where individual firms have no special advantages over their competitors, in taking the projects the option may not be significant. However, in the environment where a project can be taken up by only one firm the changes in the project's value over time give it the characteristics of a call option. Assume that a project needs an initial investment of ₹ I and the present value of cash inflows computed now is P. The net present value of the project will be:

NPV = P – I

Also, we assume that the firm has exclusive rights in the project for the next n years and the present value of the cash inflows may change over that time because of changes in either the cash flows or discount rate. Hence, the project may have a negative net present value now, but may still be a good project if the firm delays the project. If V is the present value of cash flows, then the firm's decision rules can be summarized as:

If V > I  The project has positive NPV

If V < I  The project has negative NPV

The option to delay the project has the characteristics of a call option. The project is the underlying asset; the investment needed to take up the project is the strike price and the period for which the firm has rights to the project is the life of the option. The present value of the cash flows on this project and the expected variance in this present value represent the value of the underlying asset.

ii. **Option to Expand:** There is an option to expand for firms, which intend to take up projects in order to enter other markets in the future. In such cases, the initial projects are options, which allow the firm to take other projects and the firm should therefore be willing to pay a price for such projects. The firm may accept a negative net present value on the initial project because of the possibility of high positive net present values on future projects.

Assume that the total investment needed to take up the new project is I and the present value of expected cash flows from entering into new market or taking the new project is V and the firm has a fixed time period at the end of which it has to decide whether to take the advantage of the opportunity or

not. The firm cannot move forward on this opportunity, if it does not take up the initial project. Here, the decision rules of the firm can be summarized as:

If V > I The project has positive NPV;

If V < I The project has negative NPV.

The firm will take up the new project if the present value of the expected cash flows at the time of the expiration exceeds the cost of entering the market. The option to expand the project takes the characteristics of a call option as in the option to delay the project.

iii. **Option to Abandon a Project:** A project can be abandoned when the cash flows generated from the project do not meet the expectations. Having the option to abandon a project generally increases the value of the project and makes it more acceptable. Let us assume that V is the remaining value of the project, if it continues to the end of its life and L is the liquidation value of the project, if the project is abandoned at that point of time. If the life of the project is n years, the value of continuing the project for the entire life can be compared to the liquidation value. The decision rules for such firms can be summarized as:

If V > L Continue the project

If V < L Consider abandonment.

When the continuing value of the project is higher than the abandonment value the holder of the option can continue the project and when it is lower the holder of the option can consider abandoning the project. The option to abandon the project has the characteristics of a put option.

iv. **Option to Extend or Shorten:** Sometimes, it is possible to extend the life of the asset or a project if it generates cash flows for an extended period beyond the expected period. On the other hand, it is also possible to shorten the life of the project when it does not generate cash flows for the expected number of years. The option to extend the life of the project or the asset is a call and the option to shorten the life is a put.

v. **Option to Scope up or Scope Down:** The number of projects covered in a project is the scope of the project. It is sometimes possible to choose among a wide range of alternatives based on the cash flows generated. Having an option to have a greater scope takes the characteristics of a call.

The following section describes some of the areas where option pricing can be applied to valuation:

i. For valuing equity as an option,

ii. For valuing natural resource assets/firms as options, and

iii. For valuing patent as an option on a product.

While the option pricing models are applied to financial assets conveniently, their application to real assets is not so easy due to the differences in the characteristics of real assets and the financial assets. The real options differ from the financial assets in the following characteristics:

- **The Underlying Asset is not Traded:** The option pricing models as discussed above are based on the premise that a replicating portfolio can be created using the underlying asset and risk-less lending and borrowing. Although this is justifiable in the context of listed options on the traded stocks, it is not very convincing when the underlying asset is not traded and therefore arbitrage is not possible. Since the real options are not traded, the value from option pricing models has to be deduced carefully.
- **The Price of the Asset Follows a Continuous Process:** The Black-Scholes model is based on the premise that the underlying price of the asset is continuous and that there are no price jumps. Real options violate this assumption and hence the values of deep out of the money options are underestimated. Option pricing models that explicitly allow for price jumps can be used, though the inputs to these models are difficult to be estimated.
- **Variance is Known and Remains Constant in Perpetuity:** Another assumption made by the option pricing models described in this book is that the variance is known and that it remains constant over the life of the option. The variance for long-term real options is difficult to be estimated and also is unlikely to remain constant over the extended periods of life.
- **Immediate Exercise:** The option pricing model is based on the premise that the exercise of the option is immediate. In case of real options, the exercise of the option may require the building of a plant or the construction of a mine etc., which are unlikely to happen immediately. Hence, the true life of the real option tends to be less than the expected life.

**Valuing Equity as an Option**

Discounted cash flow and valuation and comparable company methods of valuation provides an estimate of the value of equity based on the present value of the forecasted cash flows and by looking at the comparable firms and adjusting the differences between them respectively. Option pricing model is an alternative method used in the valuation of equity.

The equity shareholders have a claim to only those cash flows, which are left over after other financial claimholders (debt holders, preference shareholders) have been satisfied.

Also, on liquidation the equity shareholders receive only that part, which is left over in the firm after all outstanding debts and other financial claims have been paid off. However, at the time of liquidation, if the value of the firm is less than

the value of the outstanding debt, the equity holders cannot lose more than their actual investment in the firm.

Let us assume that V is the value of the firm, D is the face value of the outstanding debt and other external claims then the pay-off to the equity investors on liquidation can be written as:

$V - D$ if $V > D$ and 0 if $V \leq D$.

Similarly, the pay-off price on exercise of a call option with an asset value of S and a strike price of K can be given as:

$S - K$ when $S > K$ and 0 when $S \leq K$.

Equity can thus be viewed as a call option for the firm. Valuation of equity is done based on the Black-Scholes model, described earlier.

Equity, normally, will have value even if the value of the firm falls well below the face value of the outstanding debt. Even when firms are viewed as firms in distress by investors, analysts and accountants, the equity is not worthless. The equity in the firm will command value because of the time premium on the option and the possibility that the value of the assets may increase above the face value of debt before they come due.

**Illustration 13**

Soft Ltd. is a software development firm. The firm's assets are currently traded at ₹ 120 lakh. The standard deviation in the asset value would be 35%. The face value of the zero coupon debt with ten years maturity is ₹ 90 lakh. The interest rate on the 10 year G-Security is 10%. Estimate the value of equity.

Solution

Let us calculate the value of equity using the Black-Scholes model.

The value of the call option in the Black-Scholes model can be written as a function of the following characteristics:

| | | |
|---|---|---|
| S | = | Current value of the underlying asset |
| | = | Value of the firm = ₹ 120 lakh |
| K | = | Strike price of the option |
| | = | Value of debt = ₹ 90 lakh |
| t | = | Life of the expiration of the option = 10 years |
| r | = | Riskless interest rate corresponding to the life of the option = 10% |
| $\sigma^2$ | = | Variance in the ln (Value) of the underlying asset = $0.35^2 = 0.1225$ |

The model can be given as:

$$\text{Value of call} = SN(d_1) - Ke^{-rt} N(d_2)$$

Where, $d_1 = \dfrac{\ln\left(\dfrac{S}{K}\right)+\left(r+\dfrac{\sigma^2}{2}\right)t}{\sigma\sqrt{t}}$

$d_2 = d_1 - \sigma\sqrt{t}$

Here, ln = Natural logarithm

$$d_1 = \frac{\left(\frac{120}{90}\right)+\left(0.1+\frac{0.1225}{2}\right)10}{0.35\sqrt{10}}$$

$$= \frac{0.2876+1.6125}{1.1068} = 1.7167$$

$d_2 = d_1 - \sigma\sqrt{t}$

$= 1.7167 - 0.35\sqrt{10} = 0.6099$

$N(d_1) = 0.957$

$N(d_2) = 0.7291$

Value of equity $= SN(d_1) - Ke^{-rt}N(d_2)$

Value of equity $= 120\ (0.957) - 90 \text{ x } (2.7183)^{-0.10 \text{ x } 10}\ (0.7291)$

$= 114.84 - 90 \text{ x } (1 / 2.7183)\ (0.7291)$

$= 114.84 - 24.14$

$= ₹.90.7$ lakh

Value of the debt = ₹ 120 lakh – ₹ 90.7 lakh = ₹ 29.3 lakh

**Valuing Natural Resource Firms as Options**

The firms, which make investments in natural resources may have the option to leave the investments untouched, when the price of the resource declines and exploit the investment to the maximum if the price rises. Option pricing theories can be used to value investments in natural resources and also natural resource firms like the oil companies and the coal mines.

The underlying asset in the natural resource firm will be the natural resource itself and the value of this asset depends on the quantity of the resource and the price of the assets. There is a cost associated with developing the resource which becomes the exercise price of the natural resource and the difference between the value of the asset and the cost of development is the return which the owner gets. The pay-off on the natural resource investment is given as:

$V - X$ if $V > X$ and 0 if $V \leq X$

Where,

V = Value of the resource, and

X = Cost of development.

From the above, it is clear that the natural resource option has a pay-off function similar to that of the call option.

**Inputs for Valuing Natural Resource Option**

- *Reserves of the Resource:* The available reserves cannot be estimated with certainty and hence has to be assumed taking into consideration the opinion of specialists.
- *Cost of Development:* A reasonable measure of development costs is estimated by using the past costs and the specifics of investments.
- *Time to Expiration:* The life can be defined in two ways. If the ownership has to be surrendered at the end of a fixed period of time, then this period is considered the life of the option. The next method is based on the quantity of the resource and the capacity of production. The life of the resource is estimated as the number of years it would take to exhaust the resource completely.
- *Variance:* The variance in the value of the underlying asset can be determined by two factors – the variability of the price of the resource and the variability in the estimate of available reserves.
- *Yield:* The production of natural resource on an annual basis reduces the value of the underlying natural resource asset and provides a cash flow on the asset. The net revenue from production as a percentage of the market value of the resource is treated in the same way as the dividend yield, while calculating the option values.

Since the natural resource cannot be extracted immediately, a time lag has to be allowed between the decision to extract the resources and the actual extraction. This lag can be adjusted by discounting the present value of the developed reserve based on the length of the lag. For example, for a two year lag in development, the current value of the developed reserve is discounted back to two years at the ratio of the cash flow/asset value (Dividend Yield).

Natural Resource Firms can be valued by treating the entire firm as an option. Here, the value of accumulated estimated reserves of the resource owned by the firm discounted back the length of the development lag at the dividend yield will be the value of the underlying asset. The exercise price is the accumulated cost of developing estimated reserves. The average surrendering period of all the reserves owned by the firm or the estimate of when the reserves will be exhausted (given the current production rates) will be the time to expiration. The riskless rate corresponding to the life of the option will be the riskless rate. Variance in

the price of the natural resource will be the variance in the value of the asset. Finally, the estimated annual net production revenue as a percentage of the value of the reserve will be the dividend yield on the asset.

**Valuing Product Patents as Options**

Application of option pricing theory can also be made in the valuation of assets, which are expected to generate cash flows neither currently nor in the near future, but have the potential to produce value to the firm. A firm with unutilized but valuable product patents can produce significant cash flows later and tend to be undervalued when valuation is done using traditional techniques. Using the option, pricing models can provide an insight into the value, the patents add to the firm.

The product patent provides the firm, the right to develop the product and market it. The firm will develop and market the product only if the present value of the expected cash flows from the sales exceeds the cost of production. If it is less, then the firm has the option to defer the patent and not incur any costs. The pay-offs associated from owning a product patent can be given as:

$V - Y$ if $V > Y$ and 0 if $V \leq Y$

Where,

V = Present value of the expected cash flows, and

Y = Present value of the cost of development of the product.

Here, the product patent has the pay-off similar to the call option and hence, it can be treated as a call option.

**Illustration 14**

A pharmaceutical firm has the patent rights for the next 20 years to a product that requires an initial investment of ₹ 1.4 crore to develop. However, the present value of the cash inflows for the product is only ₹ 80 lakh. Due to technological advancement, there is a possibility that the project would become a valuable project in the future. The simulation of the project under a variety of technological and competitive scenarios yields a variance in the present value of inflows of 0.05. The rate of the 10-year Government security is 10%. Estimate the value of the product patent.

**Solution**

Since the product patent has the features of the call option, its value can be calculated using the Black-Scholes Option Pricing model.

S = Present value of the underlying asset

= Present value of inflows = ₹ 80 lakh

K = Exercise price = Present value of the cost of development = ₹ 1.4 crore

t = Time to expiration = Life of the patent = 20 years

Variance in the underlying asset = Variance in PV of inflows = 0.05

r = Riskless rate of return = 10%

Based on the inputs, $d_1$ and $d_2$ in the Black-Scholes model can be calculated as follows:

$$d_1 = \frac{\ln\left(\frac{0.8}{1.4}\right)+\left(0.1+\frac{0.05}{2}\right)20}{0.224\sqrt{20}}$$

$$= \frac{-0.5596+2.5}{1.002} = 1.936$$

$$d_2 = d_1 - \sigma\sqrt{t}$$

$$= 1.936 - 0.224\sqrt{20} = 0.934$$

$N(d_1) = 0.9768$

$N(d_2) = 0.8248$

Value of call $= SN(d_1) - Ke^{-rt}N(d_2)$

$= 0.8\ (0.968) - 1.4 \text{ x } (2.7183)^{-0.10 \text{ x } 20}\ (0.8248)$

$= 0.7744 - (1 / 7.389)\ (0.8248)$

$= 0.7744 - 0.1116$

$= 0.6628$ or ₹ 66.28 lakh

From the above, we can conclude that though the product has a negative net present value currently, it is a valuable product when viewed as an option. This is a more realistic measure of value than traditional discounted cash flow techniques because it reflects the underlying uncertainty in the technology and in competition.

**Choice of Methods**

Firms or assets can be valued using any of the four methods of valuation, they being – discounted cash flow valuation approaches that discount cash flows to arrive at a value of equity or value of the firm, relative valuation approaches that base value upon multiples, asset based valuation approaches that estimate what the assets owned by a firm are worth currently and option pricing approaches that use contingent claim valuation. Selection of the right model for valuation is critical to arrive at a reasonable value. Matching the valuation model to the asset or firm being valued is as important a part of valuation as understanding the models and having the right inputs.

In the discounted cash flow valuation, cash flows to equity are discounted at the cost of equity to arrive at a value of equity or cash flows to the firm are discounted

at the cost of capital to arrive at the value for the firm. The cash flows to equity themselves can be defined in the strictest sense as dividends or in a wider sense as free cash flows to equity. These models can be further categorized on the basis of assumptions of growth into stable growth, two-stage and three-stage models.

In the relative valuation model, either equity or firm value are used as the measure of value and are related to a number of firm-specific variables – earnings, book value and sales. The multiples can be estimated by using comparable firms in the same business or from cross-sectional regressions that use firms from a broader range.

There are two ways to determine the value of a firm using asset based valuation techniques can be determined. One is liquidation value, where the value of the firm is arrived as the value which the market will be willing to pay for its assets, if the assets were liquidated today. The other is replacement cost, where we evaluate how much it would cost to replicate or replace the assets that a firm has in place today.

Contingent claim models can also be used in a wide range of circumstances. When the option to delay making an investment decision is considered, we can value the patent or the undeveloped natural resource as an option. The option to expand may make young firms with potentially large markets trade at a premium on their discounted cash flow values. Finally, equity investors may derive value from the option to liquidate troubled firms with substantial debt.

The values obtained from the various approaches as described above can be very different and choosing which one to use is an important issue. This choice of an appropriate method depends upon several factors described as under:

**Business Characteristics**

The appropriate approach to valuation depends on the firm or the asset being valued. The marketability of the firm/asset is an important character. Estimation of liquidation valuation and replacement cost valuation are easiest for firms that have separable and marketable assets. For instance, the liquidation value for a real estate company can be estimated because its properties can be sold individually and the value of each property can be calculated easily. For mature businesses and businesses, which are separable and marketable, liquidation and replacement method are more suitable. For firms, which are growing and are neither separable nor marketable, the other methods are more appropriate.

**Time Period**

In discounted cash flow valuation we consider a firm as a going concern that may last into perpetuity. On the other hand, in liquidation valuation, we estimate value by assuming that the firm will cease its operations today.

In relative valuation and contingent claim valuation, we take an intermediate position between the two. Based on these assumptions, we can conclude that the discounted cash flow valuation, is used if the time horizon is longer, and relative valuation can be used, if we have a shorter time horizon. This explains why discounted cash flow valuation is more prevalent in valuing a firm for an acquisition and relative valuation is more common in equity research and portfolio management.

**Beliefs about Markets**

Every approach to valuation assumes about markets and how they work or fail to work. In a discounted cash flow valuation, we assume that market prices deviate from intrinsic value but they correct themselves over long periods. In relative valuation, we assume that markets are on average right and that while individual firms in a sector or market may be mispriced, the sector or overall market is fairly priced. In asset-based valuation models, we assume that the markets for real and financial assets can deviate and that you can take advantage of these differences. Finally, in option pricing models, we assume that markets are not very efficient at assessing the value of flexibility that firms have and that option pricing models will therefore give an advantage. In each and every one of these cases, though, we assume that markets will eventually recognize their mistakes and correct them.

**Reasons for doing Valuation**

The valuation approach used will vary depending on the reason for which valuation is done. For example, relative valuation can be used when valuation is done to find out the most under or over priced firm in the sector. If valuation is done to purchase a company, the intrinsic value of the company has to be found out and hence the discounted cash flow approach to valuation is more suitable.

**Cash flow generating capacity**

Based on their capacity to generate cash flows, assets can be categorized into three groups – assets that are either generating cash flows currently or are expected to do so in the near future, assets that are not generating cash flows currently but could in the future in the event of a contingency and assets that will never generate cash flows.

The first category, which consists of assets that are either generate cash flows currently and are expected to do so in the near future include mostly the publicly traded companies and these firms can be valued using discounted cash flow models. Here, there is no distinction drawn between negative and positive cash flows and hence young, start-up companies that generate negative cash flow can also be valued using discounted cash flow models.

The second group includes assets such as drug patents, undeveloped oil or mining reserves and undeveloped land. These assets may generate no cash flows

currently, but could generate large cash flows in the future under favorable conditions. While expected values using discounted cash flow models can be estimated by assigning probabilities to these events, there is a possibility that the value of the assets be understated. We can value these assets using option pricing models.

Assets that are never expected to generate cash flows like a residential house (which is not fetching any rent) can only be valued using relative valuation models.

**Uniqueness**

In a market where hundreds of stocks are traded and thousands of assets are bought and sold every day, it may be difficult to think about an asset or a firm that is so unique without having any comparable assets. For assets, which are a part of a large group of similar assets with no or very small difference, the relative valuation can be used since assembling comparable assets (firms) and controlling for a difference is simple. For businesses that are truly unique, discounted cash flow valuation will give a better estimate of value.

Once the approach is decided, there are further choices to make within a particular approach like – whether to use equity or firm valuation in the context of discounted cash flow valuation, which multiple should be used to value firms or equity in the context of relative valuation and what type of option is embedded in a firm in the context of option pricing models.

## 13.9 Choosing the Right Valuation Method

**Choosing the Right Discounted Cash Flow Method**

The model used in valuation should be modified to match the characteristics of the asset being valued, rather than making an asset fit the pre-specified valuation model. There is no one 'best' model. The appropriate model to use in a particular setting will depend upon a number of the characteristics of the asset or firm being valued.

i. **Choosing the Right Cash Flow:** When the assumptions to value a firm under the firm approach and the equity approach are consistent, then the value obtained under both the approaches will be the same. For firms with stable leverage, i.e., firms that have debt ratios that are not expected to change during the period of valuation, there is not much to choose between models in terms of inputs needed for valuation. The debt ratio is used to estimate the free cash flows to equity in the equity valuation model and to estimate the cost of capital in the firm valuation model. Any model, which the analyst is comfortable with can be used in such circumstances.

   For firms that have too much or too little leverage, i.e., unstable leverage and, which want to move towards their optimal or target debt ratio during

the period of valuation, the firm valuation approach is much simpler to use, because it does not require cash flow projections from interest and principal payments and is much less sensitive to errors in estimating leverage changes. The calculation of the cost of capital requires an estimate of the debt ratio, but the cost of capital itself does not change as much as a consequence of changing leverage as the cost of equity.

The dividend discount model is used when the free cash flow to equity cannot be estimated because of insufficient information about the debt payments and reinvestments or, because there is difficulty in defining what comprises debt. Also, when the only cash flow a shareholder is expected to get from the equity investments is the dividends, because there are significant restrictions on stock buy-backs and other forms of cash return and the shareholders have very little or no control over the management of a firm, the dividend discount model is used.

ii. **Using Current or Normalized Earnings:** Usually, the earnings reported in the current financial statements of the firm are used as the base for projections. However, for some firms, which report negative earnings or abnormally high earnings in the current year, the current year earnings cannot be taken as the base as they do not reflect the firm's own history of earnings.

Therefore, when current earnings are negative or abnormal for a short period, they can be replaced with a normalized value, which is estimated by looking at the company's history or industry averages and value the firm based on these normalized earnings. For some firms the negative earnings are unlikely to disappear. This tendency may threaten the survival of the firm. For such firms, if current earnings are replaced by normalized earnings, we tend to over value the firm.

If the firm is likely to go bankrupt, then the option pricing model (if financial leverage is high) or a model based on liquidation value (if there is no leverage) provide meaningful values. If, on the other hand, the firm is unlikely to go bankrupt, the operating margins over time have to be adjusted to better levels and value the firm based on the expected cash flows.

**Example: Normalized Earnings Approach**

For the companies which report negative earnings or abnormally high earnings in the current year, the current year earnings cannot be taken as the base as they do not reflect the firm's own history of earnings and in such cases normalized value can be taken based on past performance as illustrated in the case of Omega Industrial Products Pvt Ltd.

*Contd. ……*

*(₹ in lakhs)*

| Particulars | March 2020 | March 2021 | March 2022 | March 2023 |
|---|---|---|---|---|
| Total earnings | 750.35 | 900.50 | 635.50 | 764.30 |
| PAT | 105.04 | 128.25 | (12.37) | 107.00 |

**Assumptions**

The firm normally registers a 20% growth in top line and around 14% of the turnover as bottom line which can be seen in the financials of 2021. However, in 2022, there was an abnormality both in top and bottom lines as well which do not reflect the past performances. Based on the performance of 2022, the estimates for 2023 were assessed with 20% and 14% growth in both the top and bottom lines with 2022 as base figure.

*Source: ICFAI Research Center*

iii. **Growth Pattern:** While valuing firms, several assumptions are made about the growth rate in earnings and revenues. Various factors are considered while taking decisions about the growth of the firm. The pattern of growth will influence the level of current growth in earnings and revenues.

Stable growth firms report earnings and revenues growing at below the nominal growth rate in the economy they operate in. For such firms, the constant growth discounted cash flow provides a good estimate of value. Moderate firms report earnings and revenues growing at a rate moderately higher than the nominal growth rate in the economy. For such firms the two-stage discounted cash flow model is used for valuation since it provides enough flexibility in terms of capturing changes in the underlying characteristics of the firm. High growth firms, report earnings and revenues growing at a rate much higher than the nominal growth rate in the economy. For such firms, the three-stage discounted cash flow model is used to capture the longer transition to stable growth that is natural in high growth firms.

The competitive advantage enjoyed by a firm over other firms also acts as a source of growth. The expected growth rates for firms, which have specific sources of competitive advantage (i.e., those which are likely to disappear suddenly) is likely to follow the two-stage process where growth is high for a certain period and drops abruptly after that to a stable rate. The expected growth rate for firms that have general sources of growth (advantage which is more likely to erode overtime) is more likely to follow the three-stage discounted cash flow model.

**Choosing the Right Relative Valuation Model**

The various multiples used in relative valuation model are based either on earnings or book values or on revenues. In determining multiples, we use current

values or forward values or forecasted values. Since the values we obtain are likely to be different using different multiples, deciding which multiple to use can make a big difference to the estimate of value. The multiples to be used can be determined by using any of the following methods:

Multiples which best fit the firm should be used. Depending on the objective for which valuation is done the appropriate multiple has to be selected. For example, if a firm has to be sold, a multiple which gives the highest value for the company is selected. The management of the firm should also play an active role in deciding which multiple to use to value a company and what firms will be viewed as comparable firms. Theoretically defined, comparable firms are those firms, which not only operate in the business in which the firm operates, but also are similar in terms of the size or the market served. However, in practice it is very difficult to find a comparable firm and the firms that are finally identified as comparable firms are often firms with different business mixes and significantly different from the firm being valued in risk and growth characteristics.

If there are a large number of firms similar to the one being valued in existence and if these are traded in the financial markets then the approach is acceptable. But if the firm is unique and there are not many firms listed in the market, it is more appropriate to use a cross sectional regression to estimate the multiple. It is a regression analysis where the observations are measured at the same point in time or over the same time period but differ along another dimension. For example, an analyst may regress stock returns for different companies measured over the same period against differences in the companies' yields for the period. Such a regression can use all the firms in the universe and control for the differences in the underlying asset.

The approach to use for relative valuation depends upon what the task is defined to be. If the objective is to stay on a particular sector and make judgments on which stocks are under or over valued, sector based relative valuation should be used. If there is more scope and the objective is to find under or overvalued stocks across the market, a second approach in addition to the first should be used.

**Choosing the Option Pricing Model**

The following points have to be kept in mind while firm or an asset is valued using the option pricing methods.

i. The usage of options has to be restricted to the firms or assets, which make the biggest difference in valuation. Option will affect value the most for smaller firms that derive a large part of their value from assets that resemble options.

ii. Opportunities should not be mistaken to be options. A firm with a growth potential is often assumed to have valuable options rooted within it. This is just an opportunity and for it to become an option there should be some

degree of uniqueness for the firm. This can come from legal restrictions on competition or a significant competitive edge.

**Activity 13.3**

a. What is relative valuation and also discuss the advantages of relative valuation.

……

……

b. Hamsa Biotech Limited is experiencing a constant growth rate of 8% in its equity earnings. Its cost of equity is 18%. The market value of its debt is ₹ 108 lakh. Compute the total value of the firm is ₹ 260 lakh. The free cash flow to equity for the current year.

……

……

## Check Your Progress

1. The intrinsic value of the stocks are the estimates of EPS and P/E multiple. Which of the following would you consider the best indicator of an undervalued firm?

   (a) A firm with a P/E ratio lower than the market average

   (b) A firm with a P/E ratio lower than the average P/E ratio for the firm's peer group

   (c) A firm with a lower P/E ratio, a lower expected growth rate and lower risk than its peer group

   (d) A firm with a lower P/E ratio, a higher expected growth rate and higher risk than its peer group

   (e) A firm with a lower P/E ratio, a higher expected growth rate and lower risk than its peer group.

2. Which of the following statements is false with respect to the two-stage dividend discount model?

   (a) It is difficult to specify the supernormal growth period with precision

   (b) The model suffers with the limitation of the change of high supernormal growth to a lower stable growth rate at the end of the supernormal growth period

   (c) The terminal price calculated in this model is derived from Gordon model

   (d) This model is best suited to those firms which have a high growth rate in the beginning and a gradual decline in the growth rate over a period of time

(e) This model assumes high-growth period and stable-growth period for valuing a stock.

3. The relationship between the price and the book value has often helped the investors in parking their funds. Which of the following statement(s) is/are false with respect to Price to Book Value (P/BV) ratio?

   I. P/BV ratio can be calculated even for firms with negative earnings.

   II. If a firm has continuous negative earnings, the book value of equity can become negative leading to a negative P/BV ratio.

   III. When the required rate of return is high the P/BV ratio goes up.

   (a) Only (I) above
   (b) Only (III) above
   (c) Both (I) and (II) above
   (d) Both (I) and (III) above
   (e) All (I), (II) and (III) above.

4. 4. According to Dividend Discount Model (DDM) of valuation, the difference between required rate of return and growth rate in the earnings of a stock is equal to

   (a) Payout ratio
   (b) Sustainable growth rate
   (c) Retention ratio
   (d) Dividend yield
   (e) Turnover ratio.

## 13.10 Summary

- Every asset whether real or financial has value. Value is the worth of something. Understanding the value and the source of value of an asset is important to invest in assets and also to manage them successfully. Every asset can be valued, but some assets are easier to value than others and the input for valuation varies depending on the asset.
- There are various approaches to valuation. The most commonly used method is the discounted cash flow valuation. In this method, the value of the asset is estimated by calculating the present value of the expected cash flows on that asset, discounted at the rate that reflects the risk of the cash flows.
- The second is the relative valuation where the value of an asset or the firm is computed relative to how similar assets are priced in the market. The adjusted book value approach involves estimation of the market value of the

assets and liabilities of the firm as a going concern. Option pricing models are used to value assets which have option like features.

- Selection of the right model for valuation is critical to arrive at a reasonable value. It is not only important to match the valuation model to the asset or firm being valued but understanding a particular model and having the right inputs is also very important.
- The first problem faced in analyzing a potential merger involves determining the value of the acquired firm. M&As, restructuring and corporate control in their proper perspective, are all various forms of capital budgeting activities. Investment decisions and their evaluation by capital budgeting analysis are important for the firm as the consequences of the decision will continue for a number of years. Besides, the asset expansion requires substantial outlays, which must be arranged in advance. Hence, a proper valuation method has to be adopted to estimate the value of the target firm.

## 13.11 Glossary

**Beta:** The measure of a systematic risk of the asset.

**Book Value:** The value at which the asset is carried in the company's balance sheet.

**Capitalization:** Term used to describe a company's permanent capital, long-term debt and equity.

**Capital Asset Pricing Model:** An element of modern portfolio theory. A mathematical model showing an "appropriate" price, based on relative risk combined with the return on risk-free assets.

**Cash Flow:** The excess of sources of cash over uses of cash.

**Capitalization Ratio:** It is the measurement of the company's debt component. Measures the extent of debt used in relation to the company's permanent capital. Determined by dividing long-term debt by long-term debt plus equity.

**Common Shares Outstanding:** The number of common shares of stock outstanding at the end of the year, including stock held by the company in its treasury.

**Common Stock:** A security that represents a share of ownership in a corporation.

**Exercise Price:** The price at which an option may be exercised. This is also known as the strike price.

**Free Cash Flow:** Cash available for distribution after taxes but before the effects of financing. Calculated as net income plus depreciation less expenditure required for working capital and capital items adjusted to remove effects of financing.

**Present Value:** The value today of a future payment or stream of payments, discounted at some appropriate compound interest (discount) rates.

## 13.12 Suggested Readings / Reference Material


1. Richard Brealey and Stewart Myers and Franklin Allen and Alex Edmans (2023). Principles of Corporate Finance. 14th Edition, McGraw Hill India
2. Hubbard & Obrien (2022). Money, Banking and Financial System. 4th edition, Pearson Education
3. Sheeba Kapil (2021). Financial Valuation and Modelling. Wiley
4. Prasanna Chandra (2020). Strategic Financial Management: Managing for value creation. 2nd edition, McGraw Hill
5. Rick Mann & David Tarrant (2020). Strategic Finance for Strategic Leaders: The First Five Tools. Clarion strategy publishing
6. Kalyani Karna (2019). Strategic Financial Management. 1st edition. Corporate Plus Publications Private Limited
7. Edward I Altman (2019). Corporate Financial Distress, Restructuring and Bankruptcy. 4th edition, Wiley
8. Stephen A. Ross, Randolph Westerfield (Author), & Jordon (2018). Fundamentals of Corporate Finance. 12th edition, McGraw Hill College


## 13.13 Answers to Check Your Progress Questions

**1. (e) A firm with a lower P/E ratio, a higher expected growth rate and lower risk than its peer group.**

The best indicator of an undervalued firm is a firm with a lower P/E ratio, a higher expected growth rate and lower risk than its peer group.

**2. (a) It is difficult to specify the supernormal growth period with precision.**

This is one of the limitations of two stage model.

**3. (b) Only (III) above**

When the required rate of return is high, the P/BV ratio may or may not go up.

**4. (a) Payout ratio**

The difference between required rate of return and growth rate in the earnings of a stock is equal to payout ratio, according to Dividend Discount Model (DDM) of valuation.

# Strategic Finance and Corporate Restructuring

## Course Structure

| | |
|---|---|
| **Block 1: Strategic Financial Management** | |
| Unit 1 | Strategic Financial Management: An Overview |
| Unit 2 | Capital Structure |
| Unit 3 | Dividend Policy |
| Unit 4 | Allocating Capital and Corporate Strategy |
| **Block 2: Advanced Corporate Finance** | |
| Unit 5 | Decision Support Models |
| Unit 6 | Financial Distress and Restructuring |
| Unit 7 | Real Options |
| Unit 8 | Working Capital Management |
| Unit 9 | Strategic Cost Management |
| **Block 3: Mergers and Acquisitions** | |
| Unit 10 | Mergers and Acquisitions: An Overview |
| Unit 11 | Mergers and Acquisitions: Different Forms |
| Unit 12 | Theories of Mergers |
| Unit 13 | Methods of Valuation of Firms |
| **Block 4: Techniques of Corporate Restructuring** | |
| Unit 14 | Sell Offs and Divestitures |
| Unit 15 | Joint Ventures |
| Unit 16 | Going Private and Leveraged Buyouts |
| Unit 17 | ESOPs and MLPs |
| Unit 18 | Buy-back of Shares and Exchange Offers |
| Unit 19 | Takeover Defenses |