Chapter 1 Introduction to Finance

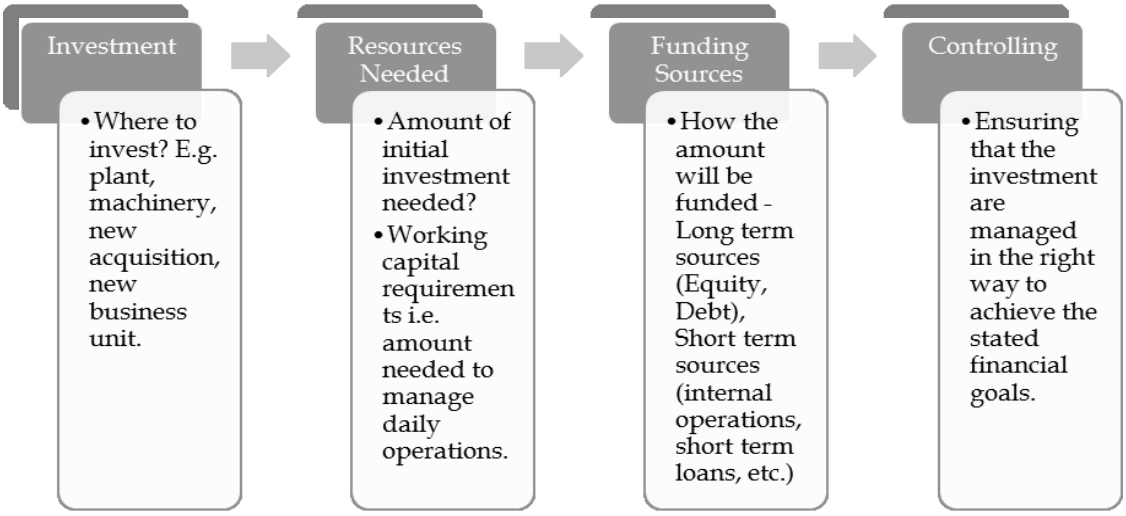
Introduction

The financial goal of any firm is to maximise the shareholder's wealth by maximising the value of the firm. The objective of finance manager is to increase or maximise the wealth of the owners by increasing the firm's value. The increase in value of the firm is reflected mostly in the market value of the firm.

Financial Management deals with the planning and controlling of a firm's financial resources, mainly funds. The key areas where a finance manager takes decisions include:

- Control over the use of Funds
- Funds Mobilization
- Funds Deployment
- Balancing the risk-return trade-off

In other words, the key decisions taken by a Manager (Finance) revolve around the following:



In brief, the functions of a finance manager can be categorized as:

- Decision regarding Capital Structure – debt-equity mix
- Cash management – working capital, liquidity, ensure there is no excessive cash
- Investment decision – careful analysis, capital budgeting, returns should be greater than costs

- Financial negotiation – with banks, financial institutions for loans etc.
- Estimating the requirement of funds – both long term and short term
- Dividend decision – how much to retain and how much to pay as dividend
- Evaluating financial performance – returns, quarterly performance etc.
- Keeping in touch with the stock exchange – compliance with corporate laws, SEBI etc.

Basic Concepts of Finance

Time Value of Money (TVM)

It is one of the fundamental principles of finance which state that an amount of money is worth more now than same amount will be at future because of its earning potential. This earning potential refers to the possibility of the money being invested and interest earned upon. TVM is also known as 'present discounted value'.

Stated below are the relevance of Time Value of Money:

- **Inflation-** The money that is not in the hands of a person at present, carries the risk of losing value and purchasing power due to rise in inflation in the future.
- **Preference for consumption-** A person is likely to accept receiving money in present so that he can start using the money for his regular consumption as well as for routine business expenses.
- **Uncertainty-** Let assume that a person chooses to receive money from a colleague/ friend or an agency in future, rather accepting the money at present. There is always an uncertainty that the money is not coming to the person in future (uncertainty) if the financial situation of the colleague or agency changes adversely in future.
- **Available investment opportunities-** It is possible to earn some interest over the money invested in any bank or other investment avenues.

Basic Time Value of money formula

One of the most basic TVM formula looks like under:

$$FV = PV*[1+ (i/n)] (n*t)$$

Where the variables are as follows:

- FV = Future value of money (after earning interest)
- PV = Present value of money
- i = interest rate
- n = number of compounding period per year (investment period / loan period)
- t = number of years (the time period for which money is held)

TVM Example

Suppose a person accepts INR 1,00,000 at present and invests it for a period of 1 year at 10% interest. In such case, the Future Value of money is calculated as:

FV = 1,00,000*(1+10%) = INR 1,10,000

Compounding and Discounting

Alike TVM, it is all about the present value and future value of money. The two different methods to ascertain the money's worth at different points in time are compounding and discounting.

Compounding is a method used to compute the future value of current money, to get clarity on the future values of cash flow at the end of a specific period, at a fixed rate. This method uses compound interest rates and helps to determine the amount you will get at a future date for some amount of money invested at present. Formula for compounding (based on the TVM formula discussed above):

$$FV=PV*(1+r)^n$$

Where,

- r = Interest Rate
- n = Number of years

On the other hand, discounting is a method used to know the present value of future money, to get clarity on the current value of future cash flow, at a specific rate. This method uses discount rates and helps to determine the amount one need to invest today, to earn a particular amount in future. Formula for discounting (based on TVM formula discussed above):

$$PV=FV/(1+r)^n$$

Where

- r = Discount rate
- n = Future years

Capital Budgeting

Capital Budgeting plays a very crucial role in every business, especially regarding investment decisions. It refers to the process of making long term investment decision – deciding whether to invest in a particular project or whether the investment possibilities are rewarding.

Apparently, the investment decisions take into consideration the future value of money invested, or the time period it will take for the investment to give some returns.

As a capital budget project will take some period of time to yield returns (from the investment made), businesses approach this process using a systematic approach towards:

- Identifying the long term objectives of the business.

- Detailed search and recognition of fresh investment opportunities.
- Estimation as well as forecast of present and future cash flows.
- Establishment of control over expenses and effective monitoring of critical aspects of projected execution.
- Having a stable administrative framework possessing the capability to transfer necessary information to the decision level.

Capital Budgeting involves use of TVM (Time Value of Money) concept to compute present value of future investment that needs to be done today. This involves the application on various techniques like Net Present Value, IRR (Internal Rate of Return), and Risk- Return Traded off, which will be discussed later.

In other words, capital budgeting comprises of:

- **Evaluating proposals** for an investment project that is strategic to overall objective of business.
- **Estimating and evaluating cash flows** for each of the investment proposals using techniques such as NPV, IRR, ARR, etc.
- Selection of the investment proposal that **maximises the return to the investors.**

Commonly used capital budgeting techniques

Commonly used Capital Budgeting techniques include:

- Net Present Value (NPV)
- Internal Rate of Return (IRR)
- Payback Period
- Profitability Index
- Discounting Payback Period

Portfolios and diversification

As investment portfolio comprises of a collection of investments, which are invested in a way to achieve certain degree of diversification and helps the investor fulfil its investment objectives. An investment portfolio represents a combination of various asset classes like bonds, stocks, as well as cash. These asset classes can be sub-divided as:

- Bonds into foreign bonds, short term bonds, intermediate term bonds, and tax-exempt municipal bonds.
- Stocks into international stocks, large cap stocks, mid cap stocks, and small cap stocks.

Net Present Value (NPV)

For any business, this value represents to the present value of all the cash flows that are bound to be incurred during the life span of a project. Net Present Value is the difference between a present value of all the cash inflows and present value of all the cash outflows expected to occur over a period of time for a project. It is used during capital budgeting or taking investment decisions to be able to do effective analysis of the profitability of an investment project.

NPV = Discounted Cash Inflows – Discounted Cash Outflows

If the NPV of the project is positive, then it denotes that the discounted present value of all cash flows of the project will be positive, hence attractive. Positive NPV indicates that the estimated (projected) earnings generated through a project (investment) is more than the estimated costs. Assuming that any investment with positive NPV is a financially profitable, while any investment (project) with a negative NPV is a loss-making project.

Steps of NPV

1. Determine the initial investment needed.
2. Determine a time period for the project.
3. Estimate the cash inflows for the each period.
4. Determine an appropriate discount rate.
5. Discount all the cash inflows.
6. Adding the discounted cash flows and subtract the initial investment from it.
7. Determine whether to invest on the project.

Example 1:

A business is likely to decide about an investment to be made, against the returns it expects to earn over a period of time. Suppose a company is confirmed with a situation where it can invest INR 5,00,000 today and earn 10% over it after a year's time, which equates to receiving an amount of INR 5,50,000 after a year.

The business would decide to go ahead with this investment today if the investment avenue is reliable and if there is no other investment it can do with that amount (of INR 5,00,000) today hat could fetch it more than 10% returns within the same time period of 1 year. This decision on the future capability of earning a particular percentage of returns is the key to any investments that a company makes. The percentage of returns (10% in this example) can be considered as 'discount rate' that varies depending on the investor.

For example, one business may find this 10% to be enough (and more than anything else it could earn from the same investment amount), while some other business may feel that it could potentially earn say 12% from another reliable investment avenue within the same period of time. For the second business, the discount rate is 12%.

Thus, the discount rate is determined by a business considering the expected return of other possible investment projects carrying a similar risk level or the cost of borrowing funds required for financing that project. So, a business may decide not to go for a period (investment) that is likely to return 10% over a 1-year time period if another project (investment opportunity) is expected to provide 12% returns in the same time period. At the same time, a business may also avoid the project (expected to give 10% return in 1 year) if the cost of borrowing money is more than 10% for financing the project.

Example 2:

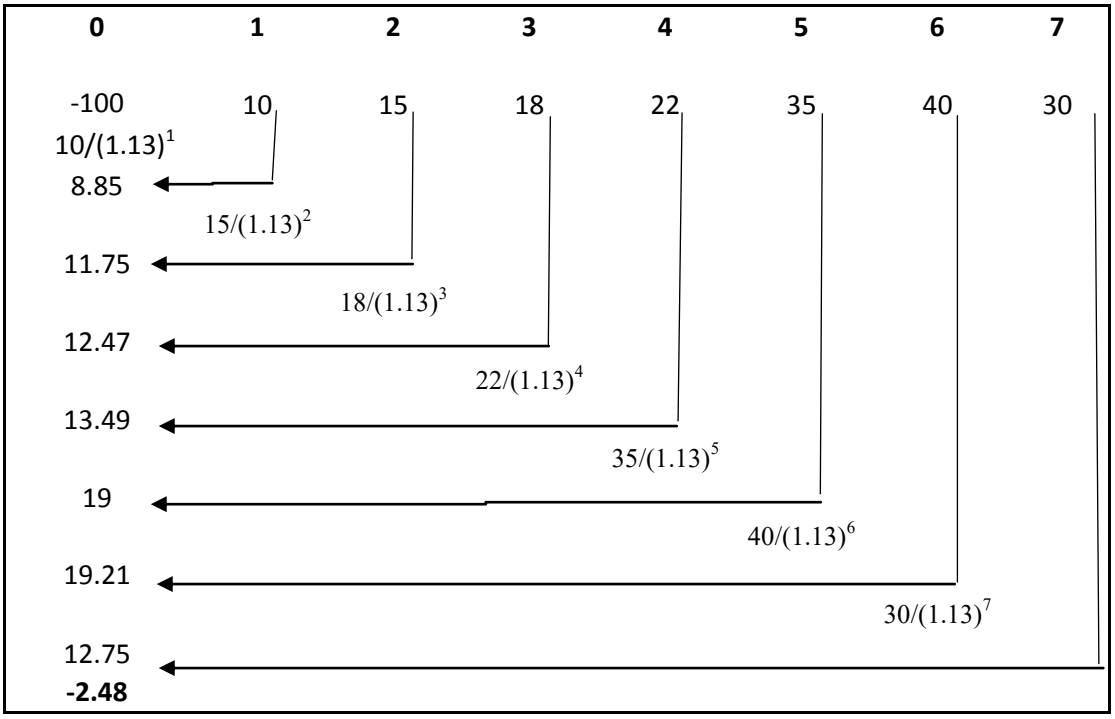
KD Ltd is considering to invest in a project which would require an investment of INR 100 Lakhs. The project is expected to yield following cash flows over the life of the project.

Year	0	1	2	3	4	5	6	7
Cash Flow	-100	10	15	18	22	35	40	30

Considering the investment is INR 100 Lakhs and cash flows over the life of the project is INR 170 Lakhs, it may appear that investment in the project is feasible.

The problem is that these cash flows will accrue over 7 years where the expectation of the lenders of funds is 13%.

Solution: Let's put the Cash Flows in a timeline



Advantages of NPV

- Considers time value of money.
- Measure of true profitability.
- Shareholder value.

Limitation of using NPV

- Different projects are not comparable.
- Difficult to estimate discount rate, cash flow and investment costs.
- Room for error/inaccuracy as it relies on several estimations and assumptions.
- Difficult to account for unforeseen expenses required by a project.

Internal Rate of Return (IRR)

IRR is the benchmark used in financial analysis to estimate the profitability of an investment. IRR is the discount rate in which NPV equals to zero for all the cash flows from a project. IRR is used to estimate the profitability of possible investment opportunities in capital budgeting. IRR implies that the discounted cash inflows are equal to the discounted cash outflows – thereby, making NPV = 0.

Internal Rate of Return helps to compare projects with different life spans as well as projects with different capital requirements for investment. Therefore, IRR can be utilized to compare the expected profitability of a project spanning three years and which requires an investment of INR 2,00,000 with a project planning spanning five years and that requires an investment of INR 90,000.

Steps of IRR

1. Select two estimated discount rates.
2. Calculate the NPV
3. Calculate the IRR as follows:

$$\mathbf{IRR = R1 + [\{NPV1 * (R2-R1)\} / (NPV1-NPV2)]}$$

Where,

- R1 = Lower discount rate
- R2 = Higher discount rate
- NPV1 = Higher NPV
- NPV2 = Lower NPV

Net Present Value (NPV)	Internal Rate of Return (IRR)
Determines surplus of the project.	Determine the break-even point with no profit and no loss
Accept a project with positive NPV	Accept a project with IRR greater than required rate of return (cut-off rate)
Reject a project with negative NPV	Reject a project with required rate of return (cut-off rate) higher than IRR
Calculation of NPV is in absolute terms	Calculation of IRR is in percentage terms

In comparison to NPV, IRR is considered to make way too many assumptions with regards reinvestment risk as well as capital allocation. So, it is advisable to not use IRR alone and it should always be used in conjunction with Net Present Value (NPV).

Payback Period

Payback period is one of the techniques for implementation of capital budgeting. It refers to the time required for recovering the initial cost of an investment made – the number of years required to receive back the initial investment that an investor would have made. It shows how long it takes to recoup an investment for a business.

As a method for implementing capital budgeting, payback period helps to compare various projects, and determine the number of years it would take for each of them to get back the initial investment amount. This ultimately assists to select the project which takes minimum number of years to retrieve back the amount initially invested.

Case 1: If annual cash inflows after taxes are same

(a) Calculate the annual expected cash flows after taxes

(b) PBP = Initial cash outflow / Annual expected cash flows after taxes

Example 3:

A project costs INR 50 lacs and yields annually cash flows of INR 5 lacs (after tax). Calculate the PBP.

Payback Period = 50/5 = 10 years

Case 2: If the annual expected cash flows after tax are different

Example 4:

KP Ltd is considering a project which would require an initial investment of INR 100 lacs and the annual cash flows from 1st year would be same as follows. Calculate the Payback Period.

Year	0	1	2	3	4	5	6	7
Cash Flow	-100	10	15	18	22	35	40	30

Solution: When cash flows are non-linear, we need to calculate the cumulative cash flow.

Year	0	1	2	3	4	5	6	7
Cash Flow	-100	10	15	18	22	35	40	30
Cumulative Cash Flow	**-100**	**-90**	**-75**	**-57**	**-35**	**0**	**40**	**70**

Since the initial cash outflows of INR 100 lacs are recovered at the end of 5th year, so PBP is 5 years.

Merits and Demerits of Payback Period

Merits	Demerits
Easy to compute and understand.	Ignores time value of money.
Provides a quick estimate of the time needed to recoup the investment.	Fails to consider an investment's total profitability.
Helps in assessing project's estimated risk - higher the duration, higher the risk.	Only considers cash flows from the initiation of the project until its payback period and ignores cash flows after the payback period.
	May entice organizations to invest in too many short term projects, thereby, ignoring the need to invest in long-term projects.

Profitability Index (PI)

Profitability Index is a measure used to evaluate the investment projects for their viability or profitability or attractiveness. Discounted Cash flow technique is used in arriving at the profitability index. It is also known as a benefit-cost ratio, Value investment ratio or profit investment ratio.

$$\text{PI} = \frac{\text{Present Value of Cash Inflows}}{\text{Present Value of Cash Outflows}}$$

Decision Criteria: Choose the projects whose PI>1

Example 5:

KP Ltd has the following mutually exclusive investment opportunities:

Option I – Investment of INR 10 lacs with return of INR 4 lacs p.a. for 4 years

Option II – Investment of INR 1.5 lacs with return of INR 0.8 lacs p.a. for 3 years

Considering cost of capital of 10%, which of the above option should be considered by KP Ltd?

Solution:

Year	Option I			Option II		
	Cash flows (INR)	PV factor @10%	PV of cash flows (INR)	Cash flows (INR)	PV factor @10%	PV of cash flows (INR)
0	(1,000,000)	100	(1,000,000)	(150,000)	100	(150,000)
1	400,000	0.9091	363,636	80,000	0.9091	72,727
2	400,000	0.8264	330,579	80,000	0.8264	66,116
3	400,000	0.7513	300,526	80,000	0.7513	60,105
4	400,000	0.6830	273,205	-	-	-
Net Present Value			**267,946**			**48,948**
Profitability Index			**1.27**			**1.33**

Merits and Demerits of Profitability Index (PI)

Merits	Demerits
Takes into account the time value of money.	Difficult to understand interest rates or discount rates.
Considers the whole stream of cash flows.	Does not help in ascertaining the value added to shareholder's wealth.
Gives higher priority to profitability of the projects.	
Helps in comparing projects of unequal sizes.	

Discounted Payback Period (DPBP)

Discounted payback period is a capital budgeting technique used to determine the attractiveness of a project. It is an modified version of Payback period which consider time value of money. It overcomes the limitation of Payback period in terms of time value of money.

Decision Criteria: Choose the projects with lower PBP

Discounted Payback Period = A + B/C

Where,

- A = Last period with a negative discounted cumulative cash flow.
- B = Absolute (or mod) value of discounted cumulative cash flow at the end of period A.
- C = Discounted cash flow during the period after A

Example 6:

KC Ltd is considering a project which would require an initial investment of INR 100 lacs and the annual cash flows from 1st year would be as follows. Calculate the Payback period at 13% discount rate.

Year	0	1	2	3	4	5	6	7	8
Cash Flow	-100	10	15	18	22	35	40	30	50

Solution: We need to calculate the present value of the cumulative cash flows

Year	0	1	2	3	4	5	6	7	8
Cash Flow	-100	10	15	18	22	35	40	30	50
PV of Cash Flows		8.85	11.75	12.47	13.49	19	19.21	70	18.81
PV of Cum. Cash Flow	-100	-91.15	-79.4	-66.94	-53.44	-34.44	-15.23	-2.47	16.33

Discounted payback period would be 7+[2.47/8.8] = 7.13 years

Example 7:

Initial cash outflow of a project is INR 35,000 and its cash flows after tax are INR 10,000, INR 20,000 and INR 30,000 with discount rate of 10%. Calculate discounted payback period.

Solution:

Year	Cash Flow (INR)	PV Factor @10%	Present Value (INR)	Cumulative Present Value (INR)
1	10,000	0.9091	9,091	9,090
2	20,000	0.8264	16,520	25,610
3	30,000	0.7513	22,530	48,140

Discounted PBP = 2+ [(35,000-25,610) / {48,140-25,610)] = 2.41 years (approx.)

Risk-return trade-off

Any investment decision is based on the two major factors – risk and return. A higher risk is often associated with an investment expected to give higher returns, whereas a lower risk is associated with an investment expected to provide considerably lower returns. Such a trade-off between risk and return as faced by a business (or individual investor) while making investment decisions is referred to as the 'risk-return trade-off'.

It is the relationship between amount of risk taken for an investment and the amount of return gained on an investment and the amount of risk undertaken in that investment. It indicates that the investing business (or individual investor) should be ready to accept a higher probability of loss, if it is willing to earn higher profits.

But, there is no guarantee here. So, higher risk doesn't always equate to higher returns. It is just that it gives the investor a probability of earning higher returns in future.

Decisions in Finance

Typically, the decisions that a finance manager has to take are categorized into three broad heads.

Investment Decision

A finance manager has to select the assets or investment opportunities in which funds will be deployed by the entity. The asset of the entity includes long term assets (fixed assets) and short term assets (current assets). Long term assets are expected to yield a return over a long period of time in future whereas short term assets are those assets which are easily convertible into cash within a year. The long term investment decision is known as Capital Budgeting. The short term investment decision is also known as Working Capital Management.

There are two types of investment decisions:

i. **Capital Budgeting –** It is a process of selecting assets which will give return over a long period. This involves large sums of money. The impact is critical as it may be acquire a new machine or to set up a new plant.

ii. **Working Capital Management –** It deals with the management of current assets of the company that are highly liquid in nature. It is a more routine or schedule form of decision. Examples are determination of the amount of inventories, cash and account receivables to hold within a certain period.

Financing Decision

An entity needs funds for long term requirements and working capital. Financing decisions are relating to the financing–mix of an entity. These funds are raised though different sources both short term and long term. The long term funds required by an entity are mobilized through owner's funds (equity share, preference shares and retained earnings) and long term debt (debentures, loans and bonds). A mix of various long term sources of funds employed by an entity is called capital structure. Its objective is to ensure an optimum capital structure i.e. a balanced mix of equity and debts to ensure the trade-off between the risk and return to the shareholders.

Dividend Decision

Dividend policy decisions are concerned with the distribution of profits of a firm to the shareholders. How much of the profits should be paid as dividend, i.e. dividend pay-out ratio is crucial for the shareholders to stay invested in the entity or not. The optimum dividend decision is when the wealth of the shareholders increases with the increase in share value.

Financial Statements

Financial Statements are the written records conveying the financial performance of an entity. Financial statements are statements that summarise the financial position and results of an entity. These statements help the users of the financial statements to take the informed decisions about the business.

For example, if you're considering to buy shares of a company, you would typically look at the financial statements of the company to assess whether or not you should buy the shares of the company.

Financial statements include:

- Balance sheet
- Income statement
- Cash flow statement

Balance Sheet

Balance Sheet assists a person to understand the financial position of the business at any point of time. It consists of Assets, Liabilities and a resultant equity.

Assets are resources that provide benefits to the equity in terms of economic value belonging to the entity. The IFRS Framework defines an Asset as "any resource that is controlled by that entity as a result of past events and for which future economic benefits are expected to flow to the entity." Examples of assets include Land and Building, Cash, Accounts Receivable.

The assets can be categorized into two parts:

Current Assets

Non-Current Assets

Liability refers to the debt and obligations that an entity owes to people other than the owners of the entity. According to IFRS Framework, "A Liability is present obligation of the entity arising from the past events, the settlement of which is expected to result in an outflow of resources to embodying economic benefits." Examples of liabilities include loans taken, salaries due but not paid, payments outstanding to vendors.

The liabilities can be categorized into two parts:

i. Current Liabilities
ii. Non-Current Liabilities

Equity represents the residual interest in the assets of the entity after deducting all liabilities. It is the amount that the owners of the entity can claim from the entity when all the liabilities are paid off from the assets.

Equity = Total Assets- Total Liabilities

Generally, Equity consists of various types of Capital and Reserves and is also known as "Shareholders' Equity" or "Shareholders' Funds".

Income Statement

Income Statement (also known as Statement of Operations, or Profit & Loss Statement) – tells about the financial results of the business during the period and consists of Revenues and Expenses.

Revenue is the total amount of income generated by the sale of goods or services related to the entity's primary operations. Revenue is often referred to as the top line because it sits at the top of the Income Statement. It is the income an entity earns before any expenses are taken out.

Expenses, which is what the entity incurs or spends on its operational activities. On other words, Expense is the total amount of money spent in an entity's efforts to generate revenue.

Since the objective of the profit and loss statement is to assess the financial performance of the entity during a period, this financial performance is measures as profit or loss. In case the revenues exceed expenses, it's a profit. But in case the expenses exceed revenues, it's a loss. Therefore,

Profit = Total Revenue – Total Expenses

Cash Flow Statement

Cash flow statement contains important information about the movement of cash during the period. It tells how cash has been generated and used during the period. A cash flow statement typically breaks out a company's cash sources and uses for the period into three categories:

- Cash flow from operating activities,
- Cash flow from investing activities, and
- Cash flow from financing activities.

One should also look at the Notes to accounts which contain important information about the financial statements.

Financial Markets and Securities Market

In the economic system, there are people with surplus funds (e.g. households) and there are people with deficit of funds (e.g. corporate organisations). A financial system functions as an intermediary and facilities the flow of funds from surplus areas to deficit areas. The financial markets play an important role in the efficient function of the financial system. The main types of financial markets are:

- Money Market
- Credit Market
- Capital Market
- Forex Market

The financial markets are further sub-divided into

- Primary Market and
- Secondary Market

The primary market is where the securities are generated. It serves the purpose of raising funds in the form of new securities such as Initial Public Offering (IPO) of shares, issue of bonds or debentures in the market. In this market, the issuer of securities (the company, government, any entity) comes in close contact with the buyer of securities.

The secondary market facilitates trading of existing securities among investors. For example, when a person buys shares of a company on the stock exchange, he is basically dealing in the secondary market. The secondary market aims to see that the investors should be able to dispose the stock at most competitive prices. It should provide liquidity to the investors with minimum resulting transaction costs e.g. National Stock Exchange (NSE) and Bombay Stock Exchange (BSE).

Risk and Return

The objective of any investor is to maximise return from the investments, subject to various constraints, primarily risk.

Return

Return may be realised or expected. The rate of return is total return the investor receives during the holding period stated as a percentage of the purchase price of the investment at the beginning of the holding period.

The general equation for calculating the rate of return is as follows:

$$\mathbf{R = [D_t + (P_t - P_{t-1})] / [P_{t-1}]}$$

- R = rate of return, P_t = Price of security during the holding period
- P_{t-1}= Price of security at the beginning of the holding period (purchase price)
- D_t= income or cash flows from the security during the holding period

The *expected rate of return* for any asset is the weighted average rate of return using the probability of each return as the weight.

Expected rate of return = sum of **probability of occurrence of all outcomes (Pi) X Rate of return (Ki)**

$$\mathbf{K' = \Sigma Pi\ Ki}$$

Risk

Risk can be defined as the chance that the actual outcome from an investment will differ from the expected outcome. Risk and return go hand in hand considering investments and finance. Risk and return are directly related to each other. Higher the risk, higher is the expected return.

A commonly accepted measure of risk is volatility and is usually measured in terms of Standard Deviation (σ). An asset whose value fluctuates significantly or more frequently is said to have a higher risk.

The SD of the investment can be calculated as follows:

$$\textbf{SD} = \sqrt{\textbf{variance}}$$

$$= \sqrt{\Sigma \textbf{Pi} / (\textbf{Ki} - \textbf{k'})^2}$$

Diversification of Risk

One of the most frequent methods of reducing risk is by diversification i.e. investing in a group of securities rather than a specific stock. In an 'efficient market' a risk averse investor can achieve a more secured in a combination of securities of different companies, preferably of different industries. However, the diversification benefit of reducing risk in such portfolios depends on the correlation (r) between the expected return among the individual investment. Hence, in order to reduce risk investors hold a diversified portfolio which might include equity, bonds, saving accounts, real estate, bullion and so on i.e. an investor should not keep all eggs in one basket.

Types of risk

- **Interest Rate Risk** – viability in security's return due to changes in the interest rates.
- **Market Risk –** variations in return due to fluctuations in the securities market.
- **Inflation Risk –** risk due to changes in prices of all commodities.
- **Business Risk –** risk associated with the different activities undertaken by the enterprise.
- **Financial Risk –** risk resulting from the existence of debt in the capital structure of the company.
- **Liquidity Risk –** risk associated with the secondary market in which the security is traded
- **Systematic Risk –** Systematic risk is the risk that affects the entire market and hence, the firm too. It is also called non-diversifiable risk. It is measures as follows:

$$\text{Systematic Risk} = \beta^2 \sigma^2 = (r^2 \sigma_s^2 m_m^2)/(\sigma_m^2) = r^2 \sigma_s^2$$

- **Unsystematic Risk =** Unsystematic Risk is the variability in the security's return on account of the firm specific risk factors. It is also called diversifiable risk. It is measured as follows:

$$\text{Unsystematic Risk} = \text{Total Risk} - \text{Systematic Risk} = \sigma_s^2 - \beta^2 \sigma_m^2$$

Beta

If a portfolio is well diversified, the systematic risk gets almost eliminated. The systematic risk arising from the wide movements of security prices in the market is very important to an investor. The modern portfolio theory defines the riskiness of a security as its vulnerability to its market risk. This vulnerability is measured by the sensitivity of the return of the security to the market return and is called Beta.

Thus, Beta measures non-diversifiable (systematic) risk. If the prices of a security return is 20% and return from a particular investment moves up or down by 15%, then beta of the investment with respect to market is 15%/20% = 0.15 / 0.25 = 0.75

Computation of Beta

There are various methods of measuring beta. Some of them are:

-*Scatter Diagram*- draw a scatter diagram over a period of time correlating the percentage movements in the market prices (index) with that of the selected share price.

-Least Squares Method

- *Characteristics Line* – $Ks = a_s + \beta_s K_m + e_s$ where *a* is the movement in the share prices even when no movement takes place in the market.

-Mathematically,

$$\text{Beta } (\beta) = [\text{Cov } (R_m R_s)] / [\delta^2 m]$$

Beta can be easily calculated in Excel as follows:

	A	B	C	D	E	F
1	Week	Market (M)	Return (M)	Stock Close Price (S)	Returns (S)	
2	1	3800		100		
3	2	3900	2.63%	101	1.00%	D3/D2-1
4	3	4160	6.67%	105	3.96%	
5	4	4012	-3.56%	103	-1.90%	
6	5	3800	-5.28%	101	-1.94%	
7	6	3800	0.00%	100	-0.99%	
8	7	3700	-2.63%	102	2.00%	
9	8	3890	5.14%	101	-0.98%	
10	9	4000	2.83%	103	1.98%	
11	10	4050	1.25%	105	1.94%	
12	11	4100	1.23%	106	0.95%	
13	12	4010	-2.20%	107	0.94%	
14	13	3947	-1.57%	101	-5.61%	
15	14	4092	3.67%	102	0.99%	
16	15	4444	8.60%	102	0.00%	
17	16	4240	-4.59%	101	-0.98%	
18	17	4477	5.59%	103	1.98%	
19	18	4434	-0.96%	101	-1.94%	
20	19	4312	-2.75%	103	1.98%	
21	20	4332	0.46%	105	1.94%	
22						
23	Beta	23%	COVAR(C3:C21,E3:E21)/VARP(C3:C21)			
24						
25			Input Cell			
26			Formulated Cell			

Limitations of Beta

1. It is based on historical values.
2. Betas of individual securities have a tendency to move towards the market (or industry) Beta.

Chapter 2 Overview of Valuation

Introduction

Justifying the value of businesses has grown more complex and challenging as valuation is not an exact science and depends upon several factors such as purpose, stage of business, financial performance, industry characteristics and trends, management and promoters' strengths, etc. Professional experience of a valuer has a significant role in choosing and applying different methodologies and concluding value.

Capital markets reward companies whose managements practise good corporate governance in true spirit and which focus on creating long-term value for their stakeholders. Such companies have higher brand value and also contribute to building of the economy.

Every day, most of us attempt to assess "What's an asset worth?" The asset could be either a business or business undertaking, equity shares, preference shares, redeemable shares, intangible or tangible rights. Valuation is often the first point of negotiations and plays a critical role in any transaction. Though price is readily known (at least for marketable assets), value means different to different people as their purpose of valuation differs. This leads to the choice of different valuation approaches and methodologies for valuing assets by different people at same or different points of time. Moreover, value adjustments (discounts and premiums) often play a crucial rule in valuation which are based on the purpose, person, time and perception.

Besides the purpose of valuation and stage of business (covered later), valuation depends on the following factors:

- **Time horizon: Short term versus long term**

  Each one of us may have a different perspective on valuation. For example, for those who are looking at valuation of equity shares for short-term purpose, relative valuations by benchmarking valuation of peer companies may be considered sufficient. However, if the objective is to assess the fundamental value of an asset, it is necessary to perform a detailed valuation exercise including review and analysis of the financial forecasts of business and industry and applying different valuation methodologies as applicable before concluding value.

- **Type of shareholders: Minority versus control**

  Minority shareholders (small investors)

  If an investor is considering to take a minority stake in a business, his value assessment could be based on the likely returns he would get from this investment. Minority shareholder may have no special rights, he may consider performing valuation assessment based on comparable company's market multiples method subject to appropriate adjustments.