Managerial economics (meaning and nature)

Managerial economics is economics applied in decision making. It is the branch of economics which serves as a link between abstract theory and managerial practice.

It is based on the economic analysis for identifying problems, organizing information and evaluating alternatives.

DEFINITIONS OF MANAGERIAL ECONOMICS

—Managerial economics is the of economic modes of thought to analyse business situation

-Mc.Nair and Meriam

—Managerial economics is the integration of economic theory with business practice for the purpose of facilitating decision making and forward planning by the management.

NATURE OF MANAGERIAL ECONOMICS

1. It is microeconomic in character as it concentrate only on the study of the firm not on the working of the economy

2. It takes help from the macroeconomics to understand the environment in which the firm operates

3. It is normative rather than positive i.e., it gives answer for the question what ought to be than what is

4. It is both conceptual and metrical.

5. It focuses mainly on the theory of the firm than on distribution

6. Knowledge of managerial economics helps in making wise choices i.e., choices among scarcity of resources.

7. It is goal oriented i.e., aims at achievement of objectives.
SIGNIFICANCE OF MANAGERIAL ECONOMICS

1. It helps in decision making
2. Decision making means a balance between simplification of analysis to be manageable and complicated factors in hand
3. It helps the manager to become a more competent builder
4. It helps in providing most of the concepts that are needed for the analysis of business problems, the concepts such as elasticity of demand, fixed, variable cost, SR and LR costs, opportunity costs, NPV etc.,
5. It helps in making decisions in the following.
   - What should be the product mix?
   - Which is the production technique?
   - What is the input mix at least cost?
   - What should be the level of output and price?
   - How to take investment decisions?
   - How much should the firm advertise

Meaning and Definition of Managerial Economics

The terms ‘Managerial Economics’ and ‘Business Economics’ are often synonyms and used interchangeably in managerial studies. It is also known as ‘Economics for Managers’. Basically, Managerial Economics is an Applied Economics in the sphere of business management. It is an application of economic theory and methodology to decision-making problems faced by the business firms. Thus, it is the economics of business or managerial decisions or it is the process of application of principles, concepts and techniques, and tools of economics to solve the managerial problems of business organizations. Some important definitions of Managerial Economics are given below:

“Managerial Economics is economics applied in decision-making. It is a special branch of economics bridging the gap between the economic theory and managerial practice. Its stress is on the use of the tools of economic analysis in clarifying problems in organizing and evaluating information and in comparing alternative courses of action.” -W. W. Haynes

“Managerial Economics is the integration of economic theory with business practice for the purpose of facilitating decision-making and forward planning by management.”

- Spencer & Siegelman
“The purpose of Managerial Economics is to show how economic analysis can be used in formulating business policies.” — Joel Dean

By analyzing the various definitions of managerial economics given above, we come to the conclusion that managerial economics is the study of economic theories, logic, concepts and tools of economic analysis that are used in the process of business decision-making by the business managers in taking rational, correct and timely decisions. Managerial Economics is that part of economic theory which, in general, is concerned with business activities and in particular, concerned with providing solutions to problems arising in decision-making of business organizations. Indeed, it is an integration of economic theory and business practices. Therefore, Managerial economics lies on the borderline of Economics and Business Management act as complementarity and bridge between Economics and Management. From this point of view, managerial economics is that branch of knowledge in which the concepts, methods and tools of economic analysis are used for analyzing and solving the practical managerial problems with the purpose of formulating rational and appropriate business policies. Basically managerial economics concentrates on decision process, decision models and decision variables. This can be explained by the following schematic chart:

Characteristics of Managerial Economics

Prof. D. M. Mithani has mentioned the following broad salient features of Managerial Economics as a specialized discipline:

(b) It involves an application of Economic theory – especially, micro economic analysis to practical problem solving in real business life. It is essentially applied micro economics.

(c) It is a science as well as art facilitating better managerial discipline. It explores and enhances economic mindfulness and awareness of business problems and managerial decisions.

(d) It is concerned with firm’s behaviour in optimum allocation of resources. It provides tools to help in identifying the best course among the alternatives and competing activities in any productive sector whether private or public.

For the sake of clear understanding of the nature and subject matter of managerial economics, the point-wise analysis of main characteristics of managerial economics is given below:

(e) Micro economic analysis: The main part of the study of managerial economics is the behaviour of business firm/s, which is micro economic unit. Therefore, managerial economics is essentially a micro economic analysis. Under the study of managerial economics, the problems of firm are analyzed and solved through the application of economic methods and tools. It does not study the whole economy.

(f) Economics of the firm: According to Norman F. Dufty, Managerial Economics includes, that
portion of “Economics known as the theory of firm, a body of the theory which can be of considerable assistance to the businessman in his decision-making”. For instance, the study of managerial economics includes the study of the cost and revenue analysis, price and output determination, profit planning, demand analysis and demand forecasting of a firm. As already stated earlier, the another name of managerial economics is ‘Economics of the Firm.’

(g) **Acceptance of use & utility of macro economic variables:** In understanding the overall economic environment of an economy and its influence on a particular firm, the study and knowledge of macro economic variables or macro economics is a must. For example, the study of Monetary, Fiscal, Industrial, Labor and Employment and EXIM policy, National Income, Inflation etc. is done in managerial economics as to know the influences of these on the business of a firm. The study of macro economic variables helps in understanding the influence of exogenous factors on business activities of a firm. Without the study of important macro economic variables, proper **environmental scanning** is not possible.

(h) **Normative approach:** Managerial Economics is basically concerned with value judgment, which focusses on ‘what ought to be’. It is **determinative rather than descriptive** in its approach as it examines any decision of a firm from the point of view of its good and bad impact on it. It means that a firm takes only those decisions which are favourable to it and avoids those which are unfavourable to it. The emphasis is on ‘**Prescriptive**’ models rather than on ‘**Descriptive**’ models.

(i) **Emphasis on case study:** In place of purely theoretical and academic exercise, managerial economics lays more emphasis on case study method. Hence, it is a practical and useful discipline for a business firm. It diagnoses and solves the business problems. Therefore, it **serves as lamp post of knowledge** and guidance to business professionals / organizations in arriving at optimum solutions.

(j) **Sophisticated and developing discipline:** Managerial Economics is more refined and sophisticated discipline as compared to Economics because it uses **modern scientific methods of statistics and mathematics**. Not only this, the **methods of Operational Research** and Computers are also used in it for building scientific and practical models for analyzing and solving the real business problems.

**Business Economics:** Managerial Economics is an application of economics into business practices and decision-making process; therefore, it is an applied economics/business economics.

The concepts of economic theory that are widely used in managerial economics are the following:

- Demand and Elasticity of demand
- Demand forecasting
- Production Theory
- Cost Analysis
- Revenue Analysis
- Price determination under different market conditions/structures
- Pricing methods in actual practice
Basic concepts of Managerial Economics/Economic concepts applied to business analysis

- Marginalism / Marginal Principle
- Incrementalism / Incremental Principle
- Equi-Marginalism / Equi-Marginal Principle
- Discounting Principle
- Opportunity Cost principle
- Risk and uncertainty
- Profits
- Firm, Industry and Market
- Economic and Econometric Models

Study of business environment: Business environment in present world has not only become more complex, but also more dynamic. In a very complex and rapidly changing environment, making correct and timely decisions is a tedious task. Managerial Economics helps in understanding the business environment of firm/s.

Nature of Managerial Economics

Generally, it is believed that Managerial Economics is a blend of science and art because on one hand, it is a systematic study of economic concepts, principles, methods & tools, which are used in business decision-making process and on the other hand, it is the study of how these are used and applied in best possible manner in analyzing and solving business problems. In fact, science is a knowledge acquiring discipline, whereas arts is a knowledge applying discipline.

The following basic questions arise about the nature of Managerial Economics:

- Whether managerial economics is a science or an art or both; and
- If it is a science- then it is a positive science or a normative science or both

We would examine these issues systematically one by one in the coming paragraphs.

Managerial Economics is both knowledge acquiring and knowledge applying discipline. Thus, it can be concluded that managerial economics is science and arts both.

The best method of doing a work is an art and managerial economics is also an art as it helps us in choosing the best alternative from among the many available alternatives. Not only this, it also implement best alternative with best possible method.

After knowing the answer of first question, we would examine whether the managerial economics is a positive science or a normative science or a blend of both. Before knowing the answer of this question, we should understand the meaning of positive and normative science.

Positive Science is a systematic knowledge of a particular subject wherein we study the cause and effect of an event. In other words, it explains the phenomenon as: What is, what was and what
will be. Under the study of positive science, principles are formulated and they are tested on the yardstick of truth. Forecasts are made on the basis of them. From this point of view, managerial economics is also a positive science as it has its own principles/theories/laws by which cause and effect analysis of business events/activities is done, forecasts are made and their validities are also examined. For instance, on the basis of various methods of forecasting, demand forecasts of a product is made in managerial economics and the element of truth in forecast is also examined/tested.

Normative Science studies things as they ought to be. Ethics, for example, is a normative science. The focus of study is ‘What should be’. In other words, it involves value judgment or good and bad aspects of an event. Therefore, normative science is perspective rather than descriptive. It cannot not be neutral between ends.

Managerial economics is also a normative science as it suggests the best course of an action after comparing pros and cons of various alternatives available to a firm. It also helps in formulating business policies after considering all positives and negatives, all good and bad and all favours and a disfavours. Besides conceptual/theoretical study of business problems, practical useful solutions are also found. For instance, if a firm wants to raise 10% price of its product, it will examine the consequences of it before raising its price. The hike in price will be made only after ascertaining that 10% rise in price will not have any adverse impact on the sale of the firm.

On the basis of the above arguments and facts, it can be said that managerial economics is a blending of positive science with normative science. It is positive when it is confined to statements about causes and effects and to functional relationships of economic variables. It is normative when it involves norms and standards, mixing them with cause and effect analysis. Managerial economics is not only a tool making, but also a tool using science. It not only studies facts of an economic problem, but also suggests its optimum solution.

Business ethics forms the core of managerial economics as cultural values, social customs and religious sentiments of the people coin the normative aspect of business activities. These things matter in designing production pattern and planning of the business in a country/area. For instance, a modern multinational corporation has to consider the socio-cultural and religious moods / sentiments of the people before launching its product. The main purpose is not to hurt the sentiments of the people but to promote the well-being of the people along with business. Thus, we can conclude by saying:

Managerial economics is a science as well as an art.
Managerial economics a positive and normative science both.

Being of the determinative/perspective nature, the focus is on what should be or business decisions are based an value judgment considering the beneficial and harmful aspects of such decisions.
Scope of Managerial Economics

Economics has two major branches namely Microeconomics and Macroeconomics and both are applied to business analysis and decision-making directly or indirectly. Managerial economics comprises all those economic concepts, theories, and tools of analysis which can be used to analyze the business environment and to find solutions to practical business problems. In other words, managerial economics is applied economics.

The areas of business issues to which economic theories can be applied may be broadly divided into the following two categories:

• Operational or Internal issues; and
• Environmental or External issues

Micro Economics Applied to Operational Issues

Operational problems are of internal nature. They arise within the business organization and fall within the purview and control of the management. Some of the important ones are:

• Choice of business and nature of product, i.e., what to produce;
• Choice of the size of the firm, i.e., how much to produce;
• Choice of technology, i.e., choosing the factor combination;
• Choice of price, i.e. ,how to price the commodity;
• How to promote sales, i.e., sales promotion measures;
• How to face price competition;
• How to decide on new investment;
• How to manage profit and capital;
• How to manage inventory, i.e., stock of both finished goods and raw material

The above mentioned issues fall within the ambit of micro economics, therefore, the following constitute the scope of managerial economics:

Theory of demand

• Consumer behaviour- maximization of satisfaction
• Utility analysis
• Indifference curve analysis
• Demand analysis and elasticity of demand
• Demand forecasting and its techniques/methods

Theory of production and production decisions

Production function [Inputs and output relationship] in short-run and long-run
Cost and output relationship in short-run and long-run
Economies and diseconomies of scale
Optimum size of firm and determining the size of firm.
Deployment of resources [labor and capital] for having optimum combination of factors of production.

Analysis of market structure and pricing theory

Determination of price under different market conditions
Price discrimination
Multiple pricing policy

CIVIL-IV
Advertising in competitive markets
Different pricing policies and practices

**Profit analysis and profit management**

Nature and types of profit
Profit planning and policies
Different theories of profit

**Theory of capital and investment decisions**

Cost of capital and return on capital-choice of investment projects
Assessing the efficiency of capital
Most efficient allocation of capital
Capital budgeting

**Macro Economics Applied to Business Environment**

Environmental issues relate to the general environment in which business operates. They are related to the overall economic, social, and political environment of the country. The following are the **main ingredients of economic environment** of a country:

- The type of economic system - capitalist, socialist or mixed economic system.
- General trends in production, employment, income, prices, saving and investment.
- Volume, composition and direction of foreign trade.
- Structure and trends in the working of financial institutions - Banks, NBFCs, insurance companies and other financial institutions.
- Trends in labour and capital market.
- Economic policies of the government - Fiscal policy, Monetary policy, EXIM-policy, Industrial policy, Price policy etc.
- Social factors - value system, property rights, customs and habits.
- Social organizations - Trade unions, consumer unions, and consumer co-operatives and producers unions.
- Political environment is constituted of the following factors:
  - Political system - democratic, socialist, communist, authoritarian or any other type.
  - State’s attitude towards private sector.
  - Policy, role and working of public sector.
  - Political stability.
- The degree of openness of the economy and the influence of MNCs on domestic markets - Integrations of nation’s economy with rest of the world (Policy of globalization).

The environmental factors have a far-reaching influence on the functioning and performance of firms. Therefore, business managers have to consider the changing economic, social, and political environment before taking any decision. Managerial economics is however, concerned with only the economic environment and in particular with those which form the business climate. The study of social and political factors falls out of the purview of managerial economics. It should, however, be borne in mind that economic, social, and political factors are inter-dependent and interactive.

The environmental issues mentioned above fall within fourwalls of macro economics, therefore the following constitute the scope of managerial economics:
Issues related to Macro Variables

• General trends in economic activities of the country
• Investment climate
• Trends in output
• Trends in price - level (state of inflation)
• Consumption level and its pattern
• Profitability in business expansion

Issues related to Foreign Trade

• Trade relation with other countries
• Sector and firms dealing in exports and imports
• Exchange rate fluctuations
• Inflow and outflow of capital
• Trends in international trade- volume, composition, and direction
• Trends in international prices of various goods and services
• International monetary mechanism
• Rules, regulations and policies of WTO

Issues related to Government Policies

• Regulation and control of economic activities of private sector business enterprises
• Enforcing the government rules and regulations for imposing of social responsibility
• Striking balance between firm’s objective of profit maximization and society’s interest
• Policy and regulatory measure for reducing social costs in terms of environmental pollution, congestion and slums in cities, basic amenities of life such as means of transportation and communication, water, electricity supply etc.

Managerial Economics related with other disciplines

Managerial Economics and Traditional Economics

Economics and Managerial economics both are facing identical problems, i.e., problem of scarcity and resource allocation. Since labour and capital are always limited it must find way for effective utilizing of these resources.

MANAGERIAL ECONOMICS AND OPERATIONS RESEARCH

Both operations research and managerial economics are concerned with taking effective decisions, managerial economics is a fundamental academic subject which seeks to understand and to analyse the problems of business decision making while OR is an activity carried out by functional specialist within the firm to help the manager to do his job of solving decision problems.

ITS MAIN CONTRIBUTION TO MANAGERIAL ECONOMICS

OR models like queuing, linear programming etc., are widely used in managerial economics Model building, economic models are more general and confined to broad economic decision making
MANAGERIAL ECONOMICS AND MATHEMATICS

Mathematics is closely related to managerial because managerial economics, being conceptual but also metrical. Its metrical property is used to estimate and predict the relevant economic factors for decision making and forward planning.

ITS MAIN CONTRIBUTION TO MANAGERIAL ECONOMICS

Geometry, algebra, and calculus

Logarithms and exponential, vectors and determinants, input-output tables etc.,
Even OR can be included as a part of mathematical exercise.

Statistics is widely used in managerial economics. It is mainly needed for a correct judgement and decision making.

ITS MAIN CONTRIBUTION TO MANAGERIAL ECONOMICS

To handle the unforeseen circumstances the theory of probability is mainly used.

MANAGERIAL ECONOMICS AND THE THEORY OF DECISION MAKING

The theory of decision making is relatively a new subject that has significance for managerial economics. Much of economic theory is based on the single goal MAXIMISATION OF PROFIT, but theory of decision making recognizes the multiplicity of goals and the pervasiveness of uncertainty.

ROLE OF MANAGERIAL ECONOMIST IN BUSINESS

The task of organizing and processing information and then making an intelligent decision based upon two general forms

Task of making Specific decisions

Task of making General decisions

Specific decisions include

Production scheduling

Demand forecasting

Market research

Economic analysis of the industry

Investment appraisal

Security management appraisal

CIVIL-IV
Advice on trade
Advice on foreign exchange management
Pricing and related decisions

**General decisions** include

- Analysing the general economic condition of the economy
- Analyzing the demand for the product
- Analysing the general market condition of the economy

**Law of Diminishing Marginal Utility**

Utility refers to the amount of satisfaction a person gets from consumption of a certain item, and marginal utility refers to the addition made to total utility, we get after consuming one more unit.

An individual's wants are unlimited in number yet each individual's want is satiable. Because of this, the more we have a commodity, the less we want to have more of it. This law states that as the amount consumed of a commodity increases, the utility derived by the consumer from the additional units, i.e., marginal utility goes on decreasing.

**The law of diminishing marginal utility explains the downward sloping demand curve**

**Definition**

According to Marshall, “The additional benefit a person derives from a given increase of his stock of a thing diminishes with every increase in the stock that he already has”

**Assumptions:**

- All the units of a commodity must be same in all respects
- The unit of the good must be standard
- There should be no change in taste during the process of consumption
- There must be continuity in consumption
- There should be no change in the price of the substitute goods

**Explanation:**

As more and more quantity of a commodity is consumed, the intensity of desire decreases and also the utility derived from the additional unit.

Suppose a person eats Bread, and 1st unit of bread gives him maximum satisfaction. When he will eat 2nd bread his total satisfaction would increase. But the utility added by 2nd bread (MU) is less than the 1st bread. His Total utility and marginal utility can be put in the form of a following schedule.
Here, from the MU curve we can see that MU is declining as the consumer consumes more of the commodity.

When TU is maximum, MU is Zero.

After that, TU starts declining and MU becomes negative.

Exceptions:

- Money
- Hobbies and Rare Things
- Liquor and Music
- Things of Display

Importance:

- Basis of Law of Demand
- Basis of Consumption Expenditure
- The basis of Progressive Taxation
Definition of Economies of Scale
Economies of scale occur when its Long Run Average Costs fall with increasing output. Therefore increasing production leads to increasing returns to scale and there is greater efficiency.

Diagram of Economies of Scale

Increasing output from Q2 to Q1, we see a decrease in long run average costs

Economies of Scale occur for various reasons.

1. Specialization and division of labour:
In large scale operations workers can do more specific tasks. With little training they can become very proficient in their task, this enables greater efficiency. A good example is an assembly line with many different jobs.

2. Technical.
Some production processes require high fixed costs e.g. building a large factory. If a car factory was then only used on a small scale it would be very inefficient to run. By using the factory to full capacity average costs will be lower.
3. **Bulk buying:**
If you buy a large quantity then the average costs will be lower. This is because of lower transport costs and less packaging. This is why supermarkets get lower prices from suppliers than local corner shops.

4. **Spreading overheads.**
If a firm merged it could rationalise its operational centres. E.g. it could have one head office rather than two.

5. **Risk Bearing economies.**
Some investments are very expensive and perhaps risky, therefore only a large firm will be able and willing to undertake the necessary investment. E.g. pharmaceutical industry needs to take risks in developing new drugs.

6. **Marketing Economies of scale.**
There is little point a small firm advertising on a national TV campaign because the return will not cover the high sunk costs.

7. **The container principle.**
To increase capacity 8 fold it is necessary to increase surface area only 4 fold.

8. **Financial economies.**
A bigger firm can get a better rate of interest than small firms.

9. **External economies of scale:**
This occurs when firms benefit from the whole industry getting bigger. E.g. firms will benefit from better infrastructure, access to specialized labour and good supply networks. E.g. micro chip producers often set up in Silicon valley.

Internal Economies of Scale.
Most of the above economies of scale are internal. It means the economies benefit the firm when it grows in size.
FACTORS PRODUCTION:

Production is a co-operative process and not a job of any single factor.

<table>
<thead>
<tr>
<th>Sr. No</th>
<th>Name of Factor</th>
<th>Owner of Factor</th>
<th>Reward of Factor</th>
<th>Nature of Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>Land</td>
<td>Landlord</td>
<td>Rent</td>
<td>Natural or primary or original factor</td>
</tr>
<tr>
<td>(2)</td>
<td>Labour</td>
<td>Labourer</td>
<td>Wages</td>
<td>Natural factor or primary or human factor</td>
</tr>
<tr>
<td>(3)</td>
<td>Capital</td>
<td>Money lender</td>
<td>Interest</td>
<td>Man-made factor</td>
</tr>
<tr>
<td>(4)</td>
<td>Enterprise</td>
<td>Entrepreneur</td>
<td>Profit</td>
<td>Man-made factor</td>
</tr>
</tbody>
</table>
Definition of demand

The amount of a particular economic good or service that a consumer or group of consumers will want to purchase at a given price.

The demand curve is usually downward sloping, since consumers will want to buy more as price decreases. Demand for a good or service is determined by many different factors other than price, such as the price of substitute goods and complementary goods. In extreme cases, demand may be completely unrelated to price, or nearly infinite at a given price.

Along with supply, demand is one of the two key determinants of the market price.

Meaning of Demand

Demand: The term ‘demand’ is defined as the desire for a commodity which is backed by willingness to buy and ability to pay for it.

The Law of Demand

The law of demand states that, if all other factors remain equal, the higher the price of a good, the less people will demand that good.

In other words, the higher the price, the lower the quantity demanded. The amount of a good that buyers purchase at a higher price is less because as the price of a good goes up, so does the opportunity cost of buying that good.

As a result, people will naturally avoid buying a product that will force them to forgo the consumption of something else they value more. The chart below shows that the curve is a downward slope.
Determinants of demand

General factors

• Change in the number of buyers

• Change in consumer incomes

• Change in consumer tastes
  • Change in the prices of complementary and substitute goods

Additional factors related to luxury goods and durables

• Change in consumer expectations in future income
  • Change in consumer expectations of future prices

Additional factors related to market demand

Population

Social, economic and demographic factors

Price of the commodity

The consumer will buy more of a commodity when its price declines and vice versa, because it increases his purchasing power. He can therefore buy more of it. Price and the Demand vary inversely.

Income of the consumer

The consumer will buy more of a commodity when his income increases and vice versa. Both demand and income of the consumer move in the same direction. It may be reverse for inferior goods here demand will increase with decrease in the income and vice-versa.

Price of the related goods

When a change in the price of one commodity influences the demand of the other commodity and so the commodities are interrelated. These related commodities are of two types: substitutes and complements.

When the price of one commodity and the quantity demanded of other commodity are move in same direction, it is called as substitutes

When the price of one commodity and the quantity demanded of other commodity are move in opposite direction, it is called as complementary

Taste and preferences

If the consumer taste and preferences are favour of a commodity results in greater demand, And if it against the commodity it results in smaller demand for the commodity.

Additional factors such as expectation in income and prices
In case the consumer expects a higher income in future, he spends more at present and thereby the demand for the good increases and vice versa.

Similarly if the consumer expects future prices of the good to increase he would rather like to buy the commodity now more than on later. This will increase the demand for the commodity.

FUNCTIONS OF DEMAND

Demand function -- a behavioral relationship between quantity consumed and a person's maximum willingness to pay for incremental increases in quantity. It is usually an inverse relationship where at higher (lower) prices, less (more) quantity is consumed. Other factors which influence willingness-to-pay are income, tastes and preferences, and price of substitutes.

**Individual Demand function**

\[
Q_{dx} = f(P_x, Y, P_1, T, A, E_y, E_p, u)
\]

Where

- \(Q_{dx}\) = qty demanded for the product \(X\)
- \(P_x\) = price of the product
- \(Y\) = level of household income
- \(P_1, \ldots, P_{n-1}\) = price of all the other related products
- \(T\) = tastes of the consumer
- \(A\) = advertising
- \(E_y\) = consumer’s expected future income
- \(E_p\) = consumer’s expected future price
- \(U\) = all those determinants that are not covered in the list determinants

**Market Demand function**

\[
Q_{dx} = f(P_x, Y, P_1, \ldots, P_{n-1}, T, A, E_y, E_p, P, D, u)
\]

\(Q_{dx}, P_x, Y, P_1, \ldots, P_{n-1}, T, A, E_y, E_p, U\) are the same as the individual demand function

- \(P\) = population
- \(D\) = distribution of consumers in various categories such as income, age, sex etc.,

**ELASTICITY OF DEMAND**

If price rises by 10% - what happens to demand?
We know demand will fall

By more than 10%?

By less than 10%?

Elasticity measures the extent to which demand will change

Elasticity is the ratio of the percent change in one variable to the percent change in another variable. It is a tool for measuring the responsiveness of a function to changes in parameters in a unit-less way. Frequently used elasticities include price elasticity of demand, price elasticity of supply, income elasticity of demand, elasticity of substitution between factors of production and elasticity of intertemporal substitution.

**PRICE ELASTICITY OF DEMAND**

Price elasticity of demand measures the percentage change in quantity demanded caused by a percent change in price. As such, it measures the extent of movement along the demand curve. This elasticity is almost always negative and is usually expressed in terms of absolute value. If the elasticity is greater than 1 demand is said to be elastic; between zero and one demand is inelastic and if it equals one, demand is unit-elastic. (Represented by 'PED')

\[
E = \frac{\text{Proportionate change in qty demanded of good}}{\text{Proportionate change in price of good}}
\]

Calculating the Percentage Change in Quantity Demanded

The formula used to calculate the percentage change in quantity demanded is:

\[
\frac{Q_{\text{Demand(NEW)}} - Q_{\text{Demand(OLD)}}}{Q_{\text{Demand(OLD)}}}
\]

Calculating the Percentage Change in Price

Similar to before, the formula used to calculate the percentage change in price is:

\[
\frac{\text{Price(NEW)} - \text{Price(OLD)}}{\text{Price(OLD)}}
\]

**PEoD = (% Change in Quantity Demanded)/(% Change in Price)**

ELASTIC DEMAND - a change in price, results in a greater than proportional change in the quantity demanded ED>1.

INELASTIC DEMAND - a change in price results in a less than proportional change ED<1.
UNITARY DEMAND - a change in price results in n equal proportional change $\text{ED}=1$.

PERFECTLY ELASTIC DEMAND - demand changes even when price remains unchanged. $\text{ED}=\infty$.

PERFECTLY INELASTIC DEMAND - change in price does not result in any change. $\text{ED}=0$.

**Income elasticity of demand**

Income elasticity of demand measures the percentage change in demand caused by a percent change in income. A change in income causes the demand curve to shift reflecting the change in demand. YED is a measurement of how far the curve shifts horizontally along the X-axis. Income elasticity can be used to classify goods as normal or inferior. With a normal good demand varies in the same direction as income. With an inferior good demand and income move in opposite directions. (Represented by 'YED') [2]

The Income Elasticity of Demand: responsiveness of demand to changes in incomes

A positive sign denotes a normal good

A negative sign denotes an inferior good

**MEASURING THE INCOME ELASTICITY**

Income elasticity of demand (Yed) measures the relationship between a change in quantity demanded and a change in real income

\[
\text{Yed} = \frac{\% \text{ change in demand}}{\% \text{ change in income}}
\]

**TYPES OF INCOME ELASTICITY**

**POSITIVE INCOME ELASTICITY**

A rise in income will cause a rise in demand

A fall in income will cause a fall in demand

**NEGATIVE INCOME ELASTICITY**

An increase in income will result in a decrease in demand.

A decrease in income will result in a rise in demand.

ALSO known as INFERIOR GOODS

Diagram of negative income elasticity
Therefore income elasticities can be of For normal goods (Low income elasticity) i.e., relative change in quantity demanded is less change in income that is \( E < 1 \) BETWEEN 0 & 1

\[ +0.5 +0 \]

For luxury goods (high income elasticity) MORE THAN 1

\[ +2, +5, +27 \]

For inferior goods (Negative income elasticity)

CAN BE A DECIMAL OR A VALUE LESS THAN 1

**ZERO INCOME ELASTICITIES**

This occurs when a change in income has NO effect on the demand for goods.

A rise of 5% income in a rich country will leave the Demand for toothpaste unchanged

A RELATIONSHIP BETWEEN QTY DEMANDED AND INCOME

CIVIL-IV
Cross price elasticity of demand
Cross price elasticity of demand measures the percentage change in demand for a particular good caused by a percent change in the price of another good. Goods can be complements, substitutes or unrelated. A change in the price of a related good causes the demand curve to shift reflecting a change in demand for the original good. Cross price elasticity is a measurement of how far, and in which direction, the curve shifts horizontally along the x-axis. A positive cross-price elasticity means that the goods are substitute goods. (Represented by 'XED')

Cross Elasticity:
The responsiveness of demand of one good to changes in the price of a related good—either a substitute or a complement
In economics, the cross elasticity of demand or cross-price elasticity of demand measures the responsiveness of the demand for a good to a change in the price of another good.

It is measured as the percentage change in demand for the first good that occurs in response to a percentage change in price of the second good. For example, if, in response to a 10% increase in the price of fuel, the demand of new cars that are fuel inefficient decreased by 20%, the cross elasticity of demand would be $\frac{-20\%}{10\%} = -2$.

INFINITE Substitution elasticity
Where the two goods are substitutes the cross elasticity of demand will be positive, so that as the price of one goes up the demand of the other will increase. For example, in response to an increase in the price of carbonated soft drinks, the demand for non-carbonated soft drinks will rise. In the case of perfect substitutes, the cross elasticity of demand is equal to positive infinity.

ZERO SUBSTITUTION ELASTICITY
Where the two goods are independent, the cross elasticity of demand will be zero: as the price of one good changes, there will be no change in demand for the other good.

DEMAND FORECASTING METHODS
There are several assumptions about forecasting:
2. There is no way to state what the future will be with complete certainty. Regardless of the methods that we use there will always be an element of uncertainty until the forecast horizon has come to pass.
3. There will always be blind spots in forecasts. We cannot, for example, forecast completely new technologies for which there are no existing paradigms.
4. Providing forecasts to policy-makers will help them formulate social policy. The new social policy, in turn, will affect the future, thus changing the accuracy of the forecast.

OPINION POLLING METHODS
EXPERTS OPINION METHOD
Genius forecasting - This method is based on a combination of intuition, insight, and luck. Psychics and crystal ball readers are the most extreme case of genius forecasting. Their forecasts are based
exclusively on intuition. Science fiction writers have sometimes described new technologies with uncanny accuracy

**CONSUMER ‘S SURVEY METHOD**

In this method consumer’s are contacted personally to disclose their future plans so that we can able to forecast the future because they are ultimate targeters/buyers

**COMPLETE ENUMERATION SURVEY**

Here all the units of consumers are taken into account without any cutshorts

So here large number of consumers will be there to get the unbiased information. The main Advantage of this method is its accuracy and its main drawback is it is time consuming one.

**SURVEY METHOD**

Here from the total population certain number of units will be selected as sample units, then the opinion collection will be made. This method is less tedious and less costly than the above method.

**STATISTICAL METHODS**

Fitting trend line by observation

This method of estimating trend is elementary, easy and quick. It involves merely plotting of annual sales on graph and then estimating just by observation where the trend line lies.

**Trend extrapolation** - These methods examine trends and cycles in historical data, and then use mathematical techniques to extrapolate to the future. The assumption of all these techniques is that the forces responsible for creating the past, will continue to operate in the future. This is often a valid assumption when forecasting short term horizons, but it falls short when creating medium and long term forecasts. The further out we attempt to forecast, the less certain we become of the forecast

**Simulation methods** - Simulation methods involve using analogs to model complex systems. These analogs can take on several forms. A mechanical analog might be a wind tunnel for modeling aircraft performance. An equation to predict an economic measure would be a mathematical analog. A metaphorical analog could involve using the growth of a bacteria colony to describe human population growth. Game analogs are used where the interactions of the players are symbolic of social interactions

**Trend Analysis:** Uses linear and nonlinear regression with time as the explanatory variable, it is used where pattern over time have a long-term trend. Unlike most time-series forecasting techniques, the Trend Analysis does not assume the condition of equally spaced time series.

Nonlinear regression does not assume a linear relationship between variables. It is frequently used when time is the independent variable.

**Simple Moving Averages:** The best-known forecasting methods is the moving averages or simply takes a certain number of past periods and add them together; then divide by the number of periods. Simple Moving Averages (MA) is effective and efficient approach provided the time series is stationary in both mean and variance. The following formula is used in finding the moving average of order n, MA(n) for a period t+1,
Exponential Smoothing Techniques: One of the most successful forecasting methods is the exponential smoothing (ES) techniques. Moreover, it can be modified efficiently to use effectively for time series with seasonal patterns. It is also easy to adjust for past errors—easy to prepare follow-on forecasts, ideal for situations where many forecasts must be prepared, several different forms are used depending on presence of trend or cyclical variations. In short, an ES is an averaging technique that uses unequal weights; however, the weights applied to past observations decline in an exponential manner.

Smoothing techniques are used to reduce irregularities (random fluctuations) in time series data. They provide a clearer view of the true underlying behavior of the series. Moving averages rank among the most popular techniques for the preprocessing of time series. They are used to filter random "white noise" from the data, to make the time series smoother or even to emphasize certain informational components contained in the time series.

Exponential smoothing is a very popular scheme to produce a smoothed time series. Whereas in moving averages the past observations are weighted equally, Exponential Smoothing assigns exponentially decreasing weights as the observation get older. In other words, recent observations are given relatively more weight in forecasting than the older observations. Double exponential smoothing is better at handling trends. Triple Exponential Smoothing is better at handling parabola trends.

Least-Squares Method: To predict the mean y-value for a given x-value, we need a line which passes through the mean value of both x and y and which minimizes the sum of the distance between each of the points and the predictive line. Such an approach should result in a line which we can call a "best fit" to the sample data. The least-squares method achieves this result by calculating the minimum average squared deviations between the sample y points and the estimated line. A procedure is used for finding the values of a and b which reduces to the solution of simultaneous linear equations. Shortcut formulas have been developed as an alternative to the solution of simultaneous equations.

Regression and Moving Average: When a time series is not a straight line one may use the moving average (MA) and break-up the time series into several intervals with common straight line with positive trends to achieve linearity for the whole time series. The process involves transformation based on slope and then a moving average within that interval. For most business time series, one the following transformations might be effective.

ARIMA METHOD

A couple of notes on this model.

The Box-Jenkins model assumes that the time series is stationary. Box and Jenkins recommend differencing non-stationary series one or more times to achieve stationarity. Doing so produces an ARIMA model, with the "I" standing for "Integrated".

Some formulations transform the series by subtracting the mean of the series from each data point. This yields a series with a mean of zero. Whether you need to do this or not is dependent on the software you use to estimate the model.

Box-Jenkins models can be extended to include seasonal autoregressive and seasonal moving average CIVIL-IV
terms. Although this complicates the notation and mathematics of the model, the underlying concepts for seasonal autoregressive and seasonal moving average terms are similar to the non-seasonal autoregressive and moving average terms.

The most general Box-Jenkins model includes difference operators, autoregressive terms, moving average terms, seasonal difference operators, seasonal autoregressive terms, and seasonal moving average terms. As with modeling in general, however, only necessary terms should be included in the model.

There are five stages of analysis in this method:

- Removal of trend
- Model identification
- Parameter estimation
- Verification
- Forecasting

**MEANING OF SUPPLY**

What is Supply?
Supply is the quantity of a good or service a firm is willing to produce at all prices. What is the law of Supply?

If nothing else changes, firms are willing to supply a greater quantity of good or service at higher prices than lower.

**Determinants of Supply**

- Productivity (Improvements in machines and production processes of a good or service)
- Inputs (Change in the price of inputs required to produce the good or service)
- Government Actions (Subsidies, Taxes and Regulations)
- Technology (Improvements in machines and production processes of a good or service)
- Outputs (Price changes in other products produced by the firm)
- Expectations (outlook of future prices and profits)
- Size of Industry (Number of firms)
- Change in the number of suppliers

Any factor that increases the cost of production decreases supply. Any factor that decreases the cost of production increases supply.

**SUPPLY FUNCTION**

\[ S_x = f(P_x, P_y, P_z, \ldots, P_f, O, T) \]

\( S_x \) = Amount supplied of good \( x \)

\( P_x \) = Price of good \( X \)
Py, Pz = Prices of other goods in the market  

Pf = Prices of factors of production  

O = objective of the producer  

T = State of technology used by the producer to produce good x  

**Elasticity of supply**  

Responsiveness of producers to changes in the price of their goods or services. As a general rule, if prices rise so does the supply.  

Elasticity of supply is measured as the ratio of proportionate change in the quantity supplied to the proportionate change in price. High elasticity indicates the supply is sensitive to changes in prices, low elasticity indicates little sensitivity to price changes, and no elasticity means no relationship with price. Also called price elasticity of supply.  

Price elasticity of supply measures the relationship between change in quantity supplied and a change in price. The formula for price elasticity of supply is:  

\[
\text{Percentage change in quantity supplied / Percentage change in price}
\]

The value of elasticity of supply is positive, because an increase in price is likely to increase the quantity supplied to the market and vice versa.

![Price Elasticity of Supply](chart.png)

**FACTORS THAT DETERMINE ELASTICITY OF SUPPLY**  

The elasticity of supply depends on the following factors:

The value of price elasticity of supply is positive, because an increase in price is likely to increase the quantity supplied to the market and vice versa. The elasticity of supply depends on the following factors.
factors:
SPARE CAPACITY
How much spare capacity a firm has - if there is plenty of spare capacity, the firm should be able to increase output quite quickly without a rise in costs and therefore supply will be elastic
STOCKS
The level of stocks or inventories - if stocks of raw materials, components and finished products are high then the firm is able to respond to a change in demand quickly by supplying these stocks onto the market - supply will be elastic
EASE OF FACTOR SUBSTITUTION
Consider the sudden and dramatic increase in demand for petrol canisters during the recent fuel shortage. Could manufacturers of cool-boxes or producers of other types of canister have switched their production processes quickly and easily to meet the high demand for fuel containers?

If capital and labour resources are occupationally mobile then the elasticity of supply for a product is likely to be higher than if capital equipment and labour cannot easily be switched and the production process is fairly inflexible in response to changes in the pattern of demand for goods and services.

TIME PERIOD
Supply is likely to be more elastic, the longer the time period a firm has to adjust its production. In the short run, the firm may not be able to change its factor inputs. In some agricultural industries the supply is fixed and determined by planting decisions made months before, and climatic conditions, which affect the production, yield.

ILLUSTRATING PRICE ELASTICITY OF SUPPLY
When supply is perfectly inelastic, a shift in the demand curve has no effect on the equilibrium quantity supplied onto the market. Examples include the supply of tickets for sports or musical venues, and the short run supply of agricultural products (where the yield is fixed at harvest time) the elasticity of supply = zero when the supply curve is vertical.

When supply is perfectly elastic a firm can supply any amount at the same price. This occurs when the firm can supply at a constant cost per unit and has no capacity limits to its production. A change in demand alters the equilibrium quantity but not the market clearing price.

When supply is relatively inelastic a change in demand affects the price more than the quantity supplied. The reverse is the case when supply is relatively elastic. A change in demand can be met without a change in market price.

UNIT-III

ORGANISATION

MEANING OF FIRM

Definition of firm

A firm is the small business unit involved in producing the profit Business (company, enterprise or firm) is a legally recognized organization designed to provide goods or services, or both, to consumers, businesses and governmental entities.[1] Businesses are predominant in capitalist CIVIL-IV
economies. Most businesses are privately owned. A business is typically formed to earn profit that will increase the wealth of its owners and grow the business itself. The owners and operators of a business have as one of their main objectives the receipt or generation of a financial return in exchange for work and acceptance of risk. Notable exceptions include cooperative enterprises and state-owned enterprises. Businesses can also be formed not-for-profit or be state-owned.

The etymology of "business" relates to the state of being busy either as an individual or society as a whole, doing commercially viable and profitable work. The term "business" has at least three usages, depending on the scope — the singular usage (above) to mean a particular company or corporation, the generalized usage to refer to a particular market sector, such as "the music business" and compound forms such as agribusiness, or the broadest meaning to include all activity by the community of suppliers of goods and services. However, the exact definition of business, like much else in the philosophy of business, is a matter of debate and complexity of meanings.

Types of firms

Sole proprietorship:
A sole proprietorship is a business owned by one person. The owner may operate on his or her own or may employ others. The owner of the business has personal liability of the debts incurred by the business.

Partnership:
A partnership is a form of business in which two or more people operate for the common goal which is often making profit. In most forms of partnerships, each partner has personal liability of the debts incurred by the business. There are three typical classifications of partnerships: general partnerships, limited partnerships, and limited liability partnerships.

Corporation:
A corporation is either a limited or unlimited liability entity that has a separate legal personality from its members. A corporation can be organized for-profit or not-for-profit. A corporation is owned by multiple shareholders and is overseen by a board of directors, which hires the business's managerial staff. In addition to privately owned corporate models, there are state-owned corporate models.

Cooperative:
Often referred to as a "co-op", a cooperative is a limited liability entity that can organize for-profit or not-for-profit. A cooperative differs from a corporation in that it has members, as opposed to shareholders, who share decision-making authority. Cooperatives are typically classified as either consumer cooperatives or worker cooperatives. Cooperatives are fundamental to the ideology of economic democracy.

Conventional theory of firm assumes profit maximization is the sole objective of business firms. But recent researches on this issue reveal that the objectives the firms pursue are more than one. Some important objectives, other than profit maximization are:

(a) Maximization of the sales revenue
(k) Maximization of firm's growth rate
(l) Maximization of Managers utility function
(m) Making satisfactory rate of Profit
(n) Long run Survival of the firm
(o) Entry-prevention and risk-avoidance

CIVIL-IV
Profit Business Objectives:
Profit means different things to different people. To an accountant —Profit means the excess of revenue over all paid out costs including both manufacturing and overhead expenses. For all practical purpose, profit or business income means profit in accounting sense plus non-allowable expenses.

Economist’s concept of profit is of —Pure Profit called ‘economic profit’ or —Just profit. Pure profit is a return over and above opportunity cost, i.e. the income that a businessman might expect from the second best alternatives use of his resources.

Sales Revenue Maximisation:
The reason behind sales revenue maximisation objectives is the Dichotomy between ownership & management in large business corporations. This Dichotomy gives managers an opportunity to set their goal other than profits maximisation goal, which most-owner businessman pursue. Given the opportunity, managers choose to maximize their own utility function. The most plausible factor in manager’s utility functions is maximisation of the sales revenue.
The factors, which explain the pursuance of this goal by the managers are following:

First: Salary and others earnings of managers are more closely related to sales revenue than to profits
Second: Banks and financial corporations look at sales revenue while financing the corporation.
Third: Trend in sales revenue is a readily available indicator of the performance of the firm.

Maximisation of Firms Growth rate:
Managers maximize firm’s balance growth rate subject to managerial & financial constrains balance growth rate defined as:
\[ G = GD - GC \]
Where GD = Growth rate of demand of firm’s product & GC = growth rate of capital supply of capital to the firm.
In simple words, A firm growth rate is balanced when demand for its product & supply of capital to the firm increase at the same time.

Maximisation of Managerial Utility function:
The manager seek to maximize their own utility function subject to the minimum level of profit. Managers utility function is express as:
\[ U = f(S, M, ID) \]
Where S = additional expenditure of the staff
M = Managerial emoluments
ID = Discretionary Investments
The utility functions which manager seek to maximize include both quantifiable variables like salary and slack earnings; non-quantifiable variables such as prestige, power, status, Job security professional excellence etc.

Long run survival & market share:
According to some economist, the primary goal of the firm is long run survival. Some other economists have suggested that attainment & retention of constant market share is an additional objective of the firm’s. the firm may seek to maximize their profit in the long run through it is not certain.
Entry-prevention and risk-avoidance, yet another alternative objectives of the firms suggested by some economists is to prevent entry-prevention can be:
Profit maximisation in the long run

Securing a constant market share

Avoidance of risk caused by the unpredictable behavior of the new firms

Micro economist has a vital role to play in running of any business. Micro economists are concern with all the operational problems, which arise with in the business organization and fall in within the preview and control of the management. Some basic internal issues with which micro-economist are concerns:

i. Choice of business and nature of product i.e. what to produce
ii. Choice of size of the firm i.e how much to produce
iii. Choice of technology i.e. choosing the factor-combination
iv. Choose of price i.e. how to price the commodity
v. How to promote sales
vi. How to face price competition
vii. How to decide on new investments
viii. How to manage profit and capital
ix. How to manage inventory i.e. stock to both finished & raw material

Medium of exchange of goods.
A liquid form of store of value.
A measurement unit for values of goods, and savings and debts of economic units.
A discharge of debt, i.e. the final way to repay a loan.

Statistical definitions of money (ECB)

M1: **Currency** in circulation and overnight deposits. Currency = bank notes + coins.

M2: M1 + **deposits** with agreed maturity of up to 2 years, and deposits redeemable at a period of notice up to 3 **months**.

M3: M2 + **repurchase agreements, money market fund shares**, and units as well as **debt securities with a maturity of up to and including two years**.
Money and capital markets

- **Money market** treats financial assets with maturity less than a year.
- **Capital market** treats financial assets with maturity greater than one year.
- These two "markets" do not actually exist in the real world, because financial assets in both markets are traded by the same financial intermediaries.
- Money market instruments are, for example: *Cash, demand deposits, and Treasury bills*.
- Capital market instruments are, for example: *Loans, bonds, and equities*.
- **Instrument** means that financial assets can be used in changing the risk/return composition of a portfolio, because they have different risk/return-characteristics.
- **Portfolio**: The collection of assets of an investor.

Nonmonetary financial assets

**Shares of the common stocks** of corporations.

Government and corporate **bonds**.

**Loans**.
- **Time deposits** in banks.

If Sam gives a loan to Jane, Sam has a *claim* on Jane. Sam may also insist a document of the loan. This document is an *asset* for Sam, and a *liability* for Jane. Thus a monetary transaction (money from Sam to Jane) creates an asset for Sam and a liability for Jane (loan document from Jane to Sam). These nonmonetary assets can be transformed to money with different speed and rate of decrease in value; we call this **liquidity**.

Characteristics of financial assets

x. **Liquidity**: How fast and without value decrease a nonmonetary asset can be converted to cash.

xi. **Default risk**: Risk that the liability partner does not fulfill its obligations; pay interest of repay the capital.

xii. **Collateral**: Property offered by the borrower to the lender to assure his repayment. Anything of value can serve as collateral if the lender accepts.

xiii. **Mortgage**: Debt obligations (loans) secured by pieces of property. Typically the collateral of a house mortgage is the house.

xiv. **Interest rate risk of a fixed interest asset**: If the market interest rate increases, a fixed interest paying asset loses its relative profitability, and so has interest rate risk even though it pays a fixed interest rate.

xv. **Yield risk**: Shares of the common stock of a corporation give uncertain dividend yield and capital gains depending on the profitability of the corporation and its expected future success.
## Principal financial assets

<table>
<thead>
<tr>
<th>Asset</th>
<th>Issuer</th>
<th>Maturity</th>
<th>Risk of loss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1) Narrow money:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Currency</td>
<td>Central bank</td>
<td>0</td>
<td>None</td>
</tr>
<tr>
<td>Demand deposits</td>
<td>Banks</td>
<td>0</td>
<td>Little or none</td>
</tr>
<tr>
<td><strong>2) Time deposits</strong></td>
<td></td>
<td>0-3 years</td>
<td>Little or much</td>
</tr>
<tr>
<td><strong>3) Money-market instruments:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Federal funds</td>
<td>Banks</td>
<td>1-7 days</td>
<td>Very little</td>
</tr>
<tr>
<td>Treasury bills</td>
<td>Government</td>
<td>3-12 months</td>
<td>None</td>
</tr>
<tr>
<td>Bank CDs</td>
<td>Banks</td>
<td>1-12 months</td>
<td>Very little</td>
</tr>
<tr>
<td>Commercial papers</td>
<td>Corporations</td>
<td>1-6 months</td>
<td>Little</td>
</tr>
<tr>
<td><strong>4) Loans:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td>Firms</td>
<td>0-25 years</td>
<td>Little or much</td>
</tr>
<tr>
<td>Individual</td>
<td>Individuals</td>
<td>0-25 years</td>
<td>Little or much</td>
</tr>
<tr>
<td><strong>5) Bonds:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treasury bonds</td>
<td>Government</td>
<td>5-30 years</td>
<td>None</td>
</tr>
<tr>
<td>Municipals</td>
<td>Local governments</td>
<td>5-30 years</td>
<td>Little</td>
</tr>
<tr>
<td>Corporate bonds</td>
<td>Corporations</td>
<td>5-30 years</td>
<td>Little</td>
</tr>
<tr>
<td><strong>6) Stock (Equity)</strong></td>
<td>Corporations</td>
<td>Permanent</td>
<td>Not meaningful</td>
</tr>
</tbody>
</table>
Demand deposits are bank deposits that can be raised from the account any time.

Time deposits have a fixed maturity after which the deposits can be raised.

Federal funds are the money banks lend to each other at the federal funds market. Federal funds work as a wholesale money market for banks.

Treasury bills (T-bills) are non-interest bearing short-term government loans that can be resold at markets less than its maturity (face, nominal) value.

Banks’ Certificates of Deposit (CD) are short-term bank deposits with a fixed maturity, and they can be resold at markets.

Commercial papers are non-interest bearing short-term loans like T-bills, but issued by private firms.

Loans are debt obligations that are usually not traded in markets, but hold into maturity. A loan contract specifies the interest rate and maturity.

Bonds are debt obligations issued by firms and governments usually with maturities of 5-30 years that pay annual or semiannual interest (coupon rate) and repay the capital at the time of maturity. Bonds can be resold at markets.

Shares of common stocks of corporations are pieces of ownership of private corporations that give the holder the right for the profits and future income of the firms called dividend payments. Shares can be resold at stock markets.

Central Bank

Bank of banks: provides banking services for commercial banks and government.

Has a unanimous right to issue bank notes and is responsible for the monetary system and monetary policy of the union.

Controls the monetary base (and inflation).

In Euro-system, European Central Bank (ECB) consists of 16 central banks in member countries.

In US, the central bank called Federal Reserve (Fed) consists of 12 member banks around US.

Both ECB and Fed operate as a single unit even though they are separated to several local (central) banks.

Commercial Banks

Collect money in the form of deposits from customers and by issuing bank CDs and bonds.

Take care of their customers payment services.

Earn money by giving interest bearing loans to customers and by investing money in revenue giving assets.

Make long-term loans from several short-term deposits (maturity transformation).

Collect information of savers and borrovers and take care of their needs.

Sell and buy foreign currencies and financial instruments.

Investment companies

Accept funds from investors who hold shares of the company’s assets that consists of stocks, bonds, and other financial instruments.

Investments companies do not provide banking services for their customers, and they only invest the funds of their customers.

Small investors benefit of being a part of a large diversified portfolio managed by specialists, rather than having only one or a few kinds of assets.

Brokers buy and sell securities according to the instructions of their customers and charge a commission of that.

Dealers make markets for new securities by buying new securities from the issuer and selling them forward.

Insurance companies take care of their clients’ risks with an agreed price.
Balance sheets

**Balance sheet** is a list of an individual’s or a firm’s assets (what is owned) and liabilities (what is owed). **Net worth** is the difference between assets and liabilities.

An example of the balance sheet of a person

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash (C)</td>
<td>Loans to banks (L)</td>
</tr>
<tr>
<td>Bonds (B)</td>
<td>Net Worth (W)</td>
</tr>
<tr>
<td><strong>Total: C+B</strong></td>
<td><strong>Total: L+W</strong></td>
</tr>
</tbody>
</table>

Balance sheet of a firm and a bank

**A non-financial firm**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash (C)</td>
<td>Loans (L)</td>
</tr>
<tr>
<td>Buildings, equipments (B_E)</td>
<td>Net Worth (W)</td>
</tr>
<tr>
<td><strong>Total: C+B_E</strong></td>
<td><strong>Total: L+W</strong></td>
</tr>
</tbody>
</table>

**A commercial bank**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash reserves (C)</td>
<td>Deposits of customers (D)</td>
</tr>
<tr>
<td>Loans to customers (L_C)</td>
<td>Loans from other banks (L_B)</td>
</tr>
<tr>
<td>Buildings, equipments (B_E)</td>
<td>Loans from central bank (L_CB)</td>
</tr>
<tr>
<td></td>
<td>Net Worth (W)</td>
</tr>
<tr>
<td><strong>Total: C+L_C +B_E</strong></td>
<td><strong>Total: D+L_B +L_CB +W</strong></td>
</tr>
</tbody>
</table>
The net worth is thus the difference between assets and liabilities. This explains why the net worth is set on the liability side of balance sheets.

**Monetary base**

The balance sheet of European Central Bank (ECB)

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loans to euro area residents (L)</td>
<td>Currency in circulation (C)</td>
</tr>
<tr>
<td>Securities other than shares (S)</td>
<td>Deposits from euro area residents (D)</td>
</tr>
<tr>
<td>Money market fund shares (M)</td>
<td>External liabilities (E_L)</td>
</tr>
<tr>
<td>Shares and other equities (E)</td>
<td>Net Worth (W)</td>
</tr>
<tr>
<td>Fixed assets (F)</td>
<td></td>
</tr>
</tbody>
</table>

**Total:** \( L+S+M+E+F \)  
**Total:** \( C+D+E_L+W \)

**Financial transactions between economic units**

The figure shows two kind of financial transactions:

Money flows:
- Bank
- Customer

Documents of deposits (assets)
- Asset flows:
- Documents of loans (assets)
1) **Customer deposits money in the bank which gives a document of this to the customer.**
   
   **A)** The customer loses cash money (assets) and gains deposits (assets), and so the total of his balance sheet stays constant and only his asset composition changes.

   **B)** The bank’s cash reserves in the asset side increase by the deposited money, but deposits on the liability side increase by an equal amount. Thus the balance sheet balances at a higher total value (previous value +extra deposits) than before.

2) **The bank gives a loan to the customer, who gives a document of this to the bank, which is an asset for the bank.**

   **A:** The bank loses its cash reserves (assets) by the amount of the loan, but its "loans given" item increases by an equal amount. Thus the total of the balance sheet of the bank stays constant, but the composition of the asset side changes.

   **B:** The customer gets cash money which increases his assets, but the liabilities side of the balance sheet of the customer increases by an equal amount. Thus the total of the balance sheet increases by the amount of the loan taken.

**These operation affect the monetary base of the economy as follows:**

1) The cash reserves in the bank increase, but money in circulation decreases by an equal amount. Thus the monetary base stays constant.

2) The cash reserves in the bank decrease, but the customer gets cash money (money in circulation), and so the monetary base stays constant.

**Open market operations**

We call an open market operation a central bank’s purchases and sales of securities in a public (open) market. Let us suppose the following simplified situation.

**Central bank**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Securities: 100</td>
<td>Money in circulation: 50</td>
</tr>
<tr>
<td>Loans to banks: 100</td>
<td>Bank reserves: 50</td>
</tr>
<tr>
<td></td>
<td>Net Worth: 100</td>
</tr>
<tr>
<td><strong>Total:</strong> 200</td>
<td><strong>Total:</strong> 200</td>
</tr>
</tbody>
</table>

**Commercial bank**

<table>
<thead>
<tr>
<th>Assets</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash reserves: 10</td>
<td>Deposits of customers: 70</td>
</tr>
<tr>
<td>Loans to customers: 70</td>
<td>Loans from central bank: 10</td>
</tr>
</tbody>
</table>
Securities: 20  
Net Worth: 20  

**Total:** 100  

Now, suppose Central bank makes an open market operation by buying securities from the commercial bank.

<table>
<thead>
<tr>
<th>Central Bank</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td><strong>Liabilities</strong></td>
</tr>
<tr>
<td>Securities: 120</td>
<td>Money in circulation: 50</td>
</tr>
<tr>
<td>Loans to banks : 100</td>
<td>Bank reserves: 70</td>
</tr>
<tr>
<td></td>
<td>Net Worth: 100</td>
</tr>
<tr>
<td><strong>Total:</strong> 220</td>
<td><strong>Total:</strong> 220</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Commercial bank</th>
<th>Liabilities</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td><strong>Liabilities</strong></td>
</tr>
<tr>
<td>Cash reserves: 30</td>
<td>Deposits of customers: 70</td>
</tr>
<tr>
<td>Loans to customers: 70</td>
<td>Loans from central bank:</td>
</tr>
<tr>
<td>Securities: 0</td>
<td></td>
</tr>
<tr>
<td><strong>Total:</strong> 100</td>
<td><strong>Total:</strong> 100</td>
</tr>
</tbody>
</table>
Types of financing:
There are two main sources of finance:
- Equity Financing - money invested into your business in exchange for a share in its ownership.
- Debt Financing - usually in the form of a loan where the principal amount borrowed and interest accumulated on the loan needs to be paid.

There are a number of sources of equity finance available to business. This includes:
- Personal Savings: money that you personally invest into the business.
- Friends and Relatives: people that you personally know invest into the business to lend assistance.
- Angel Investors: wealthy individuals who lend their personal finances to a business in return for a share in its ownership.
- Venture Capital: applications to professionally managed third parties such as a superannuation fund who lend finance based on a good business plan.

There are also a range of opportunities to secure debt financing such as:
- Leasing: hiring out equipment for a regular fee for the duration of the lease term, with no outlay to actually purchase equipment.
- Term Loans: paid back to a financial institution over an agreed period.
- Credit Cards: easy to acquire financial institution loans that carry high interest rates.
- Bank Overdrafts: where you withdraw more than your account contains, with interest calculated on your outstanding balance.
- Commercial Bills: short term loans where the amount must be paid in full upon reaching expiry.
- Loan Programs: short term loans set up to assist small business with initial start up expenses.
- Trade Credit: deferred payment of goods and services purchased form a supplier.

What is Short-Term Debt?
Short-term obligations are any loan, negotiable note, time-bearing warrant or lease whose duration is 12 months or less, regardless of whether or not it extends across more than one (1) fiscal year. The measurement focus for government funds is the flow of current financial resources. When a school district issues short-term debt that is to be repaid from government funds, the liability is to be recorded in the liability section of the Statement of Net Assets of the fund responsible for the repayment of debt. Short term debt also includes any current portion of long term debt such as the amount of compensated absences or the current portion of lease payments that will be paid within twelve (12) months of the balance sheet date.
What is Long-Term Debt?

Long-term obligations are any loan, negotiable note, time-bearing warrant, bond or lease whose duration is more than 12 months. Prior to GASB 34 non-current obligations of a school that will be repaid from revenues of the governmental fund would have been recorded in the school district’s General Long-Term Debt Account Group. However, after the District has complied with GASB 34, the obligation is recorded on the Statement of Net Assets.

Long-term debt is not limited to liabilities from debt issuances. Long-term debt also includes the non-current portion of lease-purchase agreements, capital leases, operating leases with scheduled rent increases, compensated absences, claims and judgments, pensions and special termination benefits.

Bank Loans

A district can obtain financing for a project through traditional bank financing. In this method of financing, issuance costs are minimal. However, banks may be less flexible in terms of the maturity of the loan, prepayments and other terms. In the process of asset and liability management, a bank will attempt to match the loan maturity against certificates of deposit to ensure an interest rate spread or to otherwise hedge its position. Most banks will not fix loan rates beyond seven years. Banks are also limited in the amount they can lend to any one customer. This limit is determined by the individual bank’s financial condition. Small borrowings, generally under $1 million are the most viable candidates for bank loan financing.

Bond Anticipation Notes (BANS)

Bond Anticipation Notes (BANS) are notes with various maturities, which are issued with the anticipation of future bond sales. These are usually issued when the school is waiting for better interest rates or when it has additional projects, which would require financing through bond issuance. The school district must intend to refinance the BANS with long-term bonds, and the intent to refinance must be substantiated by either post-balance sheet issuance of long-term bonds or an execution of an acceptable financing agreement.

Demand Bonds

Demand Bonds are bonds, which are due on demand. The demand provision is referred to as a “put”. The demand provisions require the issuer to repurchase the bonds upon notice from the bondholder. Not many school districts participate in this form of debt.

Tax and Revenue Anticipation Notes (TRANS)

The Local Government Unit Debt Act authorizes school districts to issue Tax and Revenue Anticipation Notes (TRANS) to meet its immediate cash needs in anticipation of the receipt of current taxes and revenues. TRANS are a one (1) year general obligation notes, exempt from federal income taxes. The Debt Act limits the size of the tax and revenue anticipation notes to a percentage of taxes and revenues anticipated during the current fiscal year and sets forth the procedures and documents required in the issuance of the TRANS. The Internal Revenue Code of 1986 sets further limits on the size of the TRAN and the yield of the invested proceeds. Compliance with arbitrage rebate requirements under the Internal Revenue Code of 1986 is essential to maintaining the tax-exempt status of the borrowing. The interest earned on the investment of the TRAN proceeds in excess of the cost of borrowing must be rebated to the federal government. For more
information on the TRANS consult the PDE Accounting Manual, Chapter 12, Debt Management, Accounting, and Reporting.

**PROCEEDS FROM ISSUANCE OF DEBT**
When debt is issued and the proceeds are available to the General Fund, you should record the proceeds as part of “other financing sources.” These proceeds are reported in the General Fund on the Statement of Revenues and Expenditures, under the “Other Financing Sources” section of the statement. These proceeds should not be reported in the General Fund’s operating revenues.

If short-term debt is issued by the General Fund, i.e. debt to be paid off in one year or less, the debt liability is recorded in the General Fund because the payment of the debt will require current resources.

**General Fund**

<table>
<thead>
<tr>
<th>Machinery &amp; Equipment</th>
<th>$250,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lease Purchase Obligations (Principal)</td>
<td>$250,000</td>
</tr>
<tr>
<td>Payments are recorded:</td>
<td></td>
</tr>
<tr>
<td>Principal</td>
<td>$400</td>
</tr>
<tr>
<td>Interest expense</td>
<td>$600</td>
</tr>
<tr>
<td>Cash</td>
<td>$1,000</td>
</tr>
</tbody>
</table>

Leases are classified as either operating or capital leases. A capital lease is one (1) that transfers the benefits and risks of ownership of the leased asset to the lessee. This happens if any one of the following conditions is met:

1. The lease transfers ownership of the property to the lessee by the end of the lease term.
2. The lease contains a bargain purchase option.
3. The lease term is equal to seven (7) percent or more of the estimated life of the leased property.
4. The present value of the minimum lease payments exceeds 90 percent of the fair value of the leased asset at the start of the lease.

**INTERNAL GENERATION OF FUNDS**

Stakeholders who are involved in the financing of development can be identified at various levels, including global, national, district and sub-district (community) levels. They also play various roles.

**Examples of Stakeholders in Development Financing**

<table>
<thead>
<tr>
<th>Level</th>
<th>Categories of Stakeholders</th>
<th>Financing Roles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global/International</td>
<td>Multi-lateral Organizations — E.g. the World Bank; various agencies of the UN; the EU; etc</td>
<td>Grants and loans</td>
</tr>
<tr>
<td>Bi-lateral Organizations</td>
<td>Mainly grants</td>
<td></td>
</tr>
</tbody>
</table>
### Private and International Financial Institutions
- E.g. GTZ (now GIZ), JAICA, USAID, DFID, DANIDA, etc

- Mainly loans

### Transnational Corporations (TNCs)
- E.g. AngloGold, Uniliver, Vodafone

- Direct investments in profit-making ventures
  — Source of tax revenues, employment generation, etc

### International NGOs, Foundations, Religious Organizations, Philanthropists, etc
- E.g. World Vision, Plan, Ford Foundation, Rockefeller Foundation, etc

- Charity, direct project implementation, service delivery, advocacy, etc

### National

<table>
<thead>
<tr>
<th><strong>Parliament</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Approval of national budgets, taxes, government loans and other financial policies</td>
</tr>
<tr>
<td>Oversight—over spending by executive and other state agencies</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Executive (including MDAs)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulation, implementation and enforcement of financial policies</td>
</tr>
<tr>
<td>Revenue mobilization</td>
</tr>
<tr>
<td>Disbursement</td>
</tr>
<tr>
<td>Financial controls</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>The Private Sector</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct investments in profit-making ventures</td>
</tr>
<tr>
<td>— Source of tax revenues, employment generation, etc</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>National NGOs, Foundations/Funds, Religious Organizations, Philanthropists, etc</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Charity (social responsibilities)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sub-National (regional, district, sub-district, community, etc)</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource mobilization and disbursement of public funds</td>
</tr>
<tr>
<td>Enactment and enforcement of by-laws</td>
</tr>
<tr>
<td>Implementation of devt projects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>The District Assemblies</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Resource mobilization</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Sub-District Local Government Structures and</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>— Resource mobilization</td>
</tr>
<tr>
<td>Communities</td>
</tr>
<tr>
<td>-------------------------------------------------</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>The Private Sector</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Local NGOs, CBOs, Foundations/Funds, Religious Organizations, Philanthropists, etc</td>
</tr>
</tbody>
</table>

**Classification of Sources of Funding for Development**

**The Two Main Sources of Funding**

(p) Two main sources of funding for development can be identified at both national and local levels, namely:
- Internal Sources
- External Sources

**Internal Sources of Funding for Development**

*What are ‘Internal Sources’ of Funding for Development?*
xvi. Sources within the jurisdiction of a given government
- They are the sources of ‘Internally Generated Funds (IGFs)’
- Both central and local governments have internal sources

*What is the main difference between Internal and External Sources?*

**Examples of Internal Sources of Funding for Central Government**
- Various forms of taxes:
  - Investment revenue;
  - Loans:
    - Borrowing from banks, individuals, etc—bank loans, bonds/treasury bills, etc

**Examples of Internal Sources of Funding for Local Governments**
- Taxes and other Charges:
  - Taxes, user charges & fees, licences, fines, levies, etc
  - Investment revenue
  - Loans

**Taxation**

*What is a ‘Tax’?*
- A compulsory contribution made by individuals and organizations to the public purse (revenue) without any direct, personal claims (on the part of the taxpayer) to a good or service
- Imposed by government on personal incomes, business profits, assets, consumption of certain goods and services, imports and exports, etc

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Functions of Taxes

Allocation (Allocative Function):
— When taxes are used to provide goods and services
— Most taxes are meant for this purpose

Re-distribution (Redistributive Function):
— When taxation is used as a tool to redistribute wealth
— Benefits one receives from government is not proportional to one’s tax burden
— Sometimes, tax regimes are designed to take disproportionately more taxes from the rich and give disproportionately more benefits to the poor

Regulation:
— When taxation is used as a tool to regulate people’s behaviour
— E.g. special taxes imposed on certain goods (cigarettes, alcohol, certain imported goods, etc) with the aim of discouraging their consumption
— What is a ‘Sin Tax’?
  □ A tax intended to discourage certain activities

Common Examples of Taxes

Income Tax
— There are two main types of income tax, namely:
  1. Individual Income Tax: imposed (as a %) on wages and salaries, dividends, capital (equity) gains, interest on savings, gifts and other forms of personal incomes earned by individuals
  2. Corporate Income Tax (Company Tax): Imposed on profits earned by companies and other business entities

Social Insurance Tax:
— Imposed on residents (often on their wages and salaries) to provide certain welfare benefits to the population
— E.g. payments made by workers and/or companies towards Social Security (in many countries), Medicare (in the US), National Health Insurance (Ghana), Unemployment Insurance (mainly in the West), etc

Sales (or Service) Tax
— Imposed (as a %) on consumption of goods and services

Value-Added Tax (VAT):
— Similar to sales tax
— Imposed on the amount by which the value of a good or service has been increased at each stage of its production.
□ Note: ‘Production’ here includes distribution and all associated services before the product reaches the consumer.
— The consumer pays the tax while the producer/seller collects it on behalf of government

Property Tax:
— Tax imposed on land, buildings and other privately owned properties

Import, Export and Excise Duties:
— Import Duty
— Export Duty
— Excise Duty

Specific-Benefit Taxes (Service Charges/User Fees)***:
— Taxes imposed on users of certain publicly-provided goods and services
— E.g. road tolls, market tolls, bridge tolls,
— These are sometimes regarded as taxes

\textit{\textbf{Tax in lieu of charges}}
— Tax imposed on a good in lieu of the use of another (publicly-provided) good/service
— E.g. road tax imposed on consumption of petrol and diesel
— It’s a strategy to minimize the cost of collecting taxes directly from the users of the target good/service
Earmarked tax
— Special tax whose proceeds are specifically reserved or earmarked (usually by law) for a specific purpose
— E.g.: National Health Insurance Levy, GET Fund Levy, tolls and petroleum taxes collected for the Road Fund, etc

**Classification of Taxes: Direct and Indirect**

- **Direct Tax:**
  - A tax levied directly on the income, profit or property of the taxpayer
  - E.g. personal income tax

- **Indirect Tax:**

**Classification of Taxes: Based on Proportion of Income**

- **Progressive Tax:**
  - A tax for which people with higher incomes pay a higher proportion (%) of their income in tax than do people with lower incomes
  - What are examples of progressive taxes?

- **Proportional Tax:**
  - A tax for which people with lower incomes pay the same proportion (%) of their income in tax as do people with higher incomes
  - What are examples of proportional taxes?

- **Regressive Tax:**
  - A tax for which people with lower incomes pay a higher proportion (%) of their income in tax than do people with higher incomes
  - What are examples of regressive taxes?

**Criteria for Evaluating Taxes**

- The Benefit-Received Principle
- The Ability-To-Pay Principle
- The Horizontal-Equity Principle
- Effect on Economic Efficiency
- Attainment of Social Goals
- Incidence of Tax
- Administrative Cost
- Political Acceptability

**1. Benefit-Received Principle:**

- A person’s tax burden should be in accordance with the benefits he/she receives from government
  - From those who *receive* more, more should be collected; from those who *receive* less, less should be collected.

- However, in practice, the enjoyment of most public goods and services (e.g. security) is not explicitly based on how much one pays in taxes
  - Most applicable in the case of Specific-Benefit Taxes
2. Ability-to-Pay Principle:
- A person’s tax burden (i.e. contribution to government revenue) should be in accordance with his/her ability of the benefits produced from it.
  - From those who have more, more should be collected; from those who have less, less should be collected.
  - It is a measure of equal sacrifice rather than equal (quantum) contribution.
  - Also called Vertical Equity Principle

3. The Horizontal-Equity Principle
- People in the ‘same economic situation’ (not the same income) should be treated equally as far as taxation is concerned.
- Hard to apply because of difficulty in determining whether two people are in the ‘same economic situation’.

4. Effect on Economic Efficiency
- An efficient tax is one with a small Excess Burden on the economy relative to the tax revenue raised.
  - What is Excess Burden?
    - The efficiency loss to the economy that results from a tax causing a reduction in the quantity of a good produced.
    - That is, when an artificial increase in price (due to tax) causes consumers to cut down demand and producers to cut down supply; the effect is called Excess Burden.
    - Excess Burden is also known as Deadweight Loss.
  - The size of the Excess Burden depends on price elasticity of demand for the good or activity in question.

5. Attainment of Social Objectives
- A tax should have the efficacy to lead to the achievement of the social objective (public purpose) for which it is imposed.
  - E.g. a tax imposed to discourage smoking or alcohol consumption should be able to do that.

6. Tax Incidence
- It gives an indication of who actually bears the burden of a tax.
  - In the case of taxes on goods and services:
    - Tax incidence is the distribution of the tax burden between the seller and the buyer.
    - The % of a tax the seller can shift to the buyer is influenced by price-elasticity of both supply and demand.
    - When price-elasticity of demand is less than price-elasticity of supply, buyers bear most of the tax burden.
    - When price-elasticity of demand is greater than price-elasticity of supply, sellers tend to bear most of the tax.
  - Who bears the burden (incidence) of each of the following taxes?
    - VAT
    - Sales tax
    - Personal income tax
    - Corporate income tax
    - Property tax on owner-occupied housing
    - Property tax on rented properties
    - Petroleum tax

7. Administrative Cost

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This refers to the cost of collecting a given tax relative to the proceeds (revenue) accruing from it — Proceeds – Cost = Yield

Based on this principle, a tax is not worth collecting if the administrative cost exceeds the proceeds

8. Political Acceptability

Taxes usually require approval by a political authority (e.g. parliament, local government, etc)

A politically unpopular tax may not be approved or, if approved at all, may not be difficult to collect
• Commercial Bank Loans: in the form of term loans from banks outside India
• Buyer's Credit
• Supplier's Credit
• Securitised instruments such as Floating Rate Notes (FRNs), Fixed Rate Bonds (FRBs), Syndicated Loans
• Credit from official export credit agencies
• Commercial borrowings from the private sector window of multilateral financial institutions such as IFIs (Washington), ADB, AFIC, CDC,
• Loan from foreign collaborator/equity holder, etc and corporate/institutions with a good credit rating agency
• Lines of Credit from foreign banks and financial institutions
• Financial Leases
• Import Loans
• Investment by Foreign Institutional Investors (FIIs) in dedicated debt funds
• External assistance, NRI deposits, short-term credit and Rupee debt
• Foreign Currency Convertible Bonds
• Non convertible or optionally convertible or partially convertible debentures
• Redeemable preference shares are considered as part of ECBs
5. As per Indian corporate law, all preference shares are mandatorily redeemable unless they are convertible
6. Hence, convertible preference shares will not be ECB (will be Foreign Direct Investment)
7. Non convertible, partly convertible or optionally convertible preference shares are treated as ECBs
Bonds, Credit notes, Asset Backed Securities, Mortgage Backed securities
Not expressly covered but Guidelines refer to securitised notes
The current all-in-cost ceilings are as under:

<table>
<thead>
<tr>
<th>Maturity period</th>
<th>All-in-cost ceilings over 6 months LIBOR*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 1 year</td>
<td>75 bps</td>
</tr>
<tr>
<td>More than 1 year but less than 3 years</td>
<td>125 bps</td>
</tr>
</tbody>
</table>

* for the respective currency of credit or applicable benchmark.

AD banks are permitted to issue Letters of Credit/guarantees/Letter of Undertaking (LoU) /Letter of Comfort (LoC) in favour of overseas supplier, bank and financial institution, up to MUSD 20 per transaction for a period up to 1 year for import of all non-capital goods and up to 3 years for import of capital goods.

The period of such Letters of credit / guarantees / LoU / LoC has to be co-terminus with the period of credit, reckoned from the date of shipment.

Policy for ECB also applicable to Foreign Currency Convertible Bonds (FCCBs) in all respects read with Notification FEMA No. 120/RB-2004 dated July 7, 2004, except in the case of housing finance companies for which criteria will be notified by RBI.

Preference shares only fully and mandatorily convertible instruments are now considered to be FDI.

Foreign investment in preference shares of any nature other than fully and mandatorily convertible, in redeemable), optionally convertible or partially convertible preference shares and preference shares or any instrument with no definite period for conversion in equity would be considered as debt and shall require confirming to ECB guidelines.

Proceeds cannot be used for acquisition of existing shares (FEMA)

Issue of preference shares of any type would continue to conform to the guidelines of RBI/SEBI and other statutory bodies and would be subject to all statutory requirements.
Addition, the ECB proceeds can also be utilised for the following purposes with the prior approval of RBI –

- Implementation of new projects and modernisation / expansion of existing production units by the companies engaged in the industrial sector including SME.
- Import of capital goods by service sector companies
- First stage acquisition of shares of PSUs in the disinvestment process by Government and also in the mandatory second stage offer to the public.
- Refinancing of an existing ECB

Introduction - the Meaning of Profit

The starting point in understanding the profit and loss account is to be clear about the meaning of "profit". Profit is the incentive for business; without profit people wouldn’t bother. Profit is the reward for taking risk; generally speaking high risk = high reward (or loss if it goes wrong) and low risk = low reward. People won’t take risks without reward. All business is risky (some more than others) so no reward means no business. No business means no jobs, no salaries and no goods and services.

This is an important but simple point. It is often forgotten when people complain about excessive profits and want more taxes to pay for eg more policemen on the streets.

Profit also has an important role in allocating resources (land, labour, capital and enterprise). Put simply, failures at an end eg black-and-white TVs) signal that resources should be taken out of that business and put into others; failures of resources should be moved into this business. Without these signals we are left to guess as to what is the best use of society’s scarce resources.

People sometimes say that government should decide (or at least decide more often) how much of this or that to make, but the evidence is that governments usually do a bad job of this e.g. the Dome.

The Task of Accounting - Measuring Profit

The main task of accounts, therefore, is to monitor and measure profits.

Profit = Revenue less Costs

So monitoring profit also means monitoring and measuring revenue and costs. There are two parts to this:-

1) Recording financial data. This is the ‘book-keeping’ part of accounting.
2) Measuring the result. This is the ‘financial’ part of accounting. If we say ‘profits are high’ this begs the question ‘high compared to what?’

(You can look at this idea in more detail when covering Ratio Analysis)

Profits are ‘spent’ in three ways.

1) Retained for future investment and growth.
2) Returned to owners eg a ‘dividend’.
3) Paid as tax.

Parts of the Profit and Loss Account

The Profit & Loss Account aims to monitor profit. It has three parts.

1) The Trading Account.
This records the money in (revenue) and out (costs) of the business as a result of the business’ ‘trading’ ie buying raw materials and selling finished goods; it might be buying goods wholesale and selling them retail. This yields the Gross Profit.
2) **The Profit and Loss Account proper**
This starts with the Gross Profit and adds to it any further costs and revenues, including overheads. These are other activities not directly related to trading. An example is income received from investments.

3) The Appropriation Account. This shows how the profit is ‘appropriated’ or divided between the three uses mentioned above.

**Uses of the Profit and Loss Account.**

1) The main use is to monitor and measure profit, as discussed above. This assumes that the information recording is accurate. Significant problems can arise if the information is inaccurate, either through incompetence or deliberate fraud.

2) Once the profit/loss has been accurately calculated, this can then be used for comparison ie judging how the business is doing itself in the past, compared to the managers’ plans and compared to other businesses.

3) There are ways to ‘fix’ accounts. Internal accounts are rarely ‘fixed’, because there is little point in the managers fooling themselves (unless fraud is going on) but public accounts are routinely ‘fixed’ to create a good impression out to the outside world. You can usually (not always) spot these ‘fixes’ and take them out to get a true picture.

**Example Profit and Loss Account:**

An example profit and loss account is provided below:

<table>
<thead>
<tr>
<th></th>
<th>£'000</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Revenue</strong></td>
<td>12,500</td>
</tr>
<tr>
<td><strong>Cost of Sales</strong></td>
<td>7,500</td>
</tr>
<tr>
<td><strong>Gross Profit</strong></td>
<td>5,000</td>
</tr>
<tr>
<td>Gross profit margin (gross profit / revenue)</td>
<td>40%</td>
</tr>
<tr>
<td><strong>Operating Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Sales and distribution</td>
<td>1,260</td>
</tr>
<tr>
<td>Finance and administration</td>
<td>570</td>
</tr>
<tr>
<td>Other overheads</td>
<td>970</td>
</tr>
<tr>
<td>Depreciation</td>
<td>235</td>
</tr>
<tr>
<td><strong>Total Operating Costs</strong></td>
<td>3,035</td>
</tr>
</tbody>
</table>
Operating Profit (gross profit less operating costs)  1,965

Operating profit margin (operating profit / revenue)  15.7%

Interest  (450)

Profit before Tax  1,515

Taxation  (455)

Profit after Tax  1,060

Dividends  650

Retained Profits  410

In this series of articles we will also discuss:
1. Balance Sheet Explained
2. Trading and Profit and Loss Account
3. Adjustments of Final Accounts

Previously while discussing the basic accounting equation it was noted that $A - L = P$, where $A$ represents assets (property and possessions) owned by the business; $L$ represents liabilities (claims against the business of the creditors) and $P$ represents the proprietor's funds (equity) in the business.

**Accounting Concept of Income**
The concept of 'income' is different to the economists and accountants. Economists’ concept of income is that of 'real income' meaning thereby the increase in real terms of the ownership funds between two points of time.

In accounting the term income is known as 'net profit'. It was stated earlier:

Sales - Merchandising cost = Gross profit and Gross profit - Expenses of doing business = Net profit

In other words, Revenue - Expenses = Net profit.
These terms are explained below:

**Revenue**

It is the monetary value of the products sold or services rendered to the customers during the period. It results from sales, interest, dividend and commission etc. For example, sales affected by the business and charge made for services rendered by the business constitutes revenue. However, all cash receipt may not be revenue.

Thus, money borrowed leads to cash receipt but it does not constitute revenue. Similarly additional capital brought in increases proprietor's funds but it is not revenue.

**Expenses/Cost of (doing business)**

Expenditure incurred by the business to earn revenue is termed as expense or cost of doing business. Examples of expenses are raw materials consumed, salaries, rent, depreciation, advertisement etc.

**Cash v/s Accrual Basis of Accounting**

Small business, individual professionals and non-trading concerns usually adopt cash basis of accounting. Under this system the profit or loss of an accounting period is the difference between incomes received and the expenses paid. Though the cash basis of accounting is simple (no adjustment is required) but it loses its comparability.

Under accrual basis all incomes are credited to the period in which earned irrespective of the fact whether received or not. Similarly, all expenses are debited to the period in which incurred irrespective of the fact whether paid or not. It is a scientific basis of accounting, though a bit difficult.

Matching Concept. Requires that expenses should be matched to the revenues of the appropriate accounting period. So we must determine what are the revenues earned during a particular accounting period and the expenses incurred to earn these revenues.

It is the matching concept which justifies accrual basis of accounting.

**Accruals and Deferrals**

Accounting is expected to measure or ascertain the net income of the business during the accounting period (January to 31st December) but in other cases it may be Financial year (1st April to 31st March) or any other period according to the business community of the area.

The combined impact of matching concept and the accounting period concept on accounting has resulted in accruals and deferrals.

**Accrued or Outstanding expenses**

It is the term which denotes that expenditure has been incurred during the accounting period but the same Rent, Wage etc. becoming due but not paid.

**Deferred or pre-paid expenses**

It is the term which denotes that payment in cash has been made "in advance but the full benefit of this payment will be enjoyed during the accounting period, e.g., Insurance paid in advance.

**Accrued or outstanding Income**

It is the term which denotes that the income has been earned but the cash has not been received against the same e.g. Interest on investments etc.
Differed or Received in-advance Income

It is the term which denotes income which has been received (in cash) in advance but it has not been earned so far. The accruals and deferrals are not be adjusted at the end of the accounting period (end-period adjustments) in order to find out the income of the business during the period under review. The procedure of ascertaining (i) business income and (ii) financial position is being described below:

In fact, these are two most important of many objectives of book-keeping. In order to know the profits earned he prepares a trading and loss account and in order to know the financial position of his business on the last day of the financial period he prepares a balance sheet.

Such accounts are called 'Final Accounts'. Preparation of final accounts is the concluding step of accounting period. The number of accounts (i) Manufacturing/ Production account, (ii) Trading account, (iii) Profit and loss account and (iv) Balance sheet.

Practically balance sheet is a statement but for accounting purposes here it is treated as a part vital accounts.

The preparation of above all or any of the above accounts depends upon the nature of the business being carried on by the business concern. In case of a manufacturing business manufacturing account, trading account, profit and loss account and balance sheet form the parts of final accounts whereas in case of trading business all other accounts are prepared with the exception of manufacturing account. Each of these accounts provide specific vital information to businessman to help to control and organize the business activities in a better way.

UNIT – V
COST AND BREAK-EVEN ANALYSES

Managerial Uses of Cost Analysis

A detailed study of cost analysis is very useful for managerial decisions. It helps the management

1. To find the most profitable rate of operation of the firm.
2. To determine the optimum quantity of output to be produced and supplied.
3. To determine in advance the cost of business operations.
4. To locate weak points in production management to minimize costs.
5. To fix the price of the product.
6. To decide what sales channel to use.
7. To have a clear understanding of alternative plans and the right costs involved in them.
8. To have clarity about the various cost concepts.
9. To decide and determine the very existence of a firm in the production field.
10. To regulate the number of firms engaged in production.
11. To decide about the method of cost estimation or calculations.
12. To find out decision making costs by reclassifications of elements, reprising of input factors etc, so as to planning, choice etc.

Different Kinds of Cost Concepts.

1. Money Cost and Real Cost

When cost is expressed in terms of money, it is called as money cost. It relates to money outlays by a firm on various factor inputs to produce a commodity. In a monetary economy, all kinds of cost estimations and calculations are made in terms of money. Hence, the knowledge of money cost is of great importance in economics. Exact measurement of money cost is possible.

When cost is expressed in terms of physical or mental efforts put in by a person in the making of a product, it is called as real cost. It refers to the physical, mental or psychological efforts, the exertions, sacrifices, the pains, the discomforts, displeasures and inconveniences which various members of the society have to undergo to produce a commodity. It is a subjective and relative concept and hence exact measurement is not possible.

2. Implicit or Imputed Costs and Explicit Costs

Explicit costs are those costs which are in the nature of contractual payments and are paid by an entrepreneur [excluding himself] in the form of rent, wages, interest and profits, utility expenses, and payments for raw materials etc. They can be estimated and calculated exactly and recorded in the books of accounts. Implicit or imputed costs are implied costs. They are the earnings of owner employed resources.
For example, the factor inputs owned by the entrepreneur himself like capital can be utilized by himself or can be supplied to others for a contractual sum if he himself does not utilize them in the business. It is to be remembered that the total costs.

3. Actual costs and Opportunity Costs

Actual costs are also called as outlay costs, absolute costs and acquisition costs. They are those costs that are incurred at some time and hence are recorded in the books of accounts. *They are the actual expenses incurred for producing a service by a firm.* For example, wages paid to workers, expenses on raw materials, power, fuel and other types of inputs. They can be exactly calculated and accounted without any difficulty.

*Opportunity cost of a good or service is measured in terms of revenue which could have been earned by employing that good or service in some other alternative uses.*

In other words, opportunity cost of anything is the cost of displaced alternatives or costs of sacrificed alternatives. Hence, they are also called as alternative costs. Opportunity cost represents only sacrificed alternatives. Hence, they can never be exactly measured and recorded in the books of accounts.

The knowledge of opportunity cost is of great importance to management decision. They help in taking a decision among several alternatives, a manager selects the best one which is more profitable or beneficial.

For example, a firm may decide to buy a computer which can do the work of 10 laborers. If the cost of buying a computer is much lower than that of the total wages to be paid to the workers over a period of time, it will be a wise decision. On the other hand, if the total wage bill is much lower than that of the cost of computer, it is better to employ workers instead of buying a computer. Thus, a firm has to take a number of decisions almost daily.

4. Direct costs and indirect costs

*Direct costs are those costs which can be specifically attributed to a particular product, a department, or a process of production.* For example, expenses on raw materials, fuel, wages to workers, salary to a divisional manager etc are direct costs. On the other hand, indirect costs are those costs, which are not traceable to any one unit of operation. They cannot be attributed to a product, a department or a process. For example, expenses incurred on electricity bill, water bill, telephone bill, administrative expenses etc.

5. Past and future costs.

Past costs are those costs which are spent in the previous periods. On the other hand, future costs are those costs which are to be spent in the future. Past helps in taking decisions for future.

6. Marginal and Incremental costs

*Marginal cost refers to the cost incurred on the production of another or one more unit.* It implies the additional cost incurred to produce an additional unit of output. It has nothing to do with fixed cost and is always associated with variable cost. Incremental cost on the other hand refers to the costs involved in the production of a batch or group of output. They are the added costs due to a change in the level or nature of business activity.

For example, cost involved in the setting up of a new sales depot in another city or cost involved in the production of another 100 extra units.

7. Fixed costs and variable costs.
Fixed costs are those costs which do not vary with either expansion or contraction in output. They remain constant irrespective of the level of output. They are positive even if there is no production. They are also called as supplementary or overhead costs.

On the other hand, variable costs are those costs which directly and proportionately increase or decrease with the level of output produced. They are also called as prime costs or direct costs.

8. Accounting costs and economic costs.

Accounting costs are those costs which are already incurred on the production of a particular commodity. They are the actual costs involved in the making of a commodity. On the other hand, economic costs are those costs that are to be incurred by an entrepreneur on various alternative programs. It involves the application of opportunity costs in decision making.

Determinants of Costs

Cost behavior is the result of many factors and forces. But it is very difficult to determine in general the factors influencing the cost as they widely differ from firm to firm and even industry to industry. However, economists have given some determinants of costs. They have enough importance in modern business setup and decision making process.

The following factors deserve our attention in this connection.

1. Technology

Modern technology leads to optimum utilization of resources, avoid all kinds of wastages, saving of time, reduction in production costs and resulting in higher output. On the other hand, primitive technology would lead to higher production costs.

2. Rate of output: (the degree of utilization of the plant and machinery)

Complete and effective utilization of all kinds of plants and equipments would reduce production costs and under utilization of existing plants and equipments would lead to higher production costs.

3. Size of Plant and scale of production

Generally speaking big companies with huge plants and machineries organize production on large scale which reduce the cost per unit.

4. Prices of input factors

Higher market prices of various factor inputs result in higher cost of production and vice-versa.

5. Efficiency of factors of production and the management

Higher productivity and efficiency of factors of production would lead to lower production costs and vice versa.

6. Stability of output

Stability in production would lead to optimum utilization of the existing capacity of plants and equipments and kinds of hidden costs of interruption and learning leading to higher output and reduction in production costs.

7. Law of returns

Increasing returns would reduce cost of production and diminishing returns increase cost.

8. Time period
In the short run, cost will be relatively high and in the long run, it will be low as it is possible to make all kinds of adjustments and readjustments in production process. Thus, many factors influence cost of production of a firm.

**TYPES OF COSTING**

**Relationship: Cost Function**

Cost and output are correlated. Cost output relations play an important role in almost all business decisions. The relation between the cost and output is technically described as the **“COST FUNCTION”**. The significance of cost output relationship is so great that in economic analysis the relationship between cost and rate of output alone and we assume that all other independent variables are kept constant. Mathematically speaking, TC = f (Q) where TC = Total cost and Q stands for output produced.

However, cost function depends on three important variables.

1. **Production function**
   
   If a firm is able to produce higher output with a little quantity of inputs, in that case, the cost function becomes cheaper.

2. **The market prices of inputs**
   
   If market prices of different factor inputs are high, in that case, cost function becomes higher.

3. **Period of time**
   
   Cost function becomes cheaper in the long run and it would be relatively costlier in the short run.

**Types of cost function.**

Generally speaking there are two types of cost functions.

1. Short run cost function.
2. Long run cost function.

**Relationship and Cost curves in the Short-Run.**

It is interesting to note that the relationship between the cost and output is different at two different periods of time i.e. short run and long run. Generally speaking, cost of production will be relatively higher in the short run when compared to the long run. In the long run, a producer will get enough time to make all kinds of adjustments in the productive process.

When cost and output relationship is represented with the help of diagrams, we get short run and long run cost curves of the firm. Now we shall make a detailed study of cost out put relations both in the short-run as well as in the long run.

**Meaning of Short Run**

Short-run is a period of time in which only the variable factors can be varied while fixed factors like plant, machinery etc remains constant.
Hence, the plant capacity is fixed in the short run. The total number of firms in an industry will remain constant for the entry of new firms or exit of the old firms. If a firm wants to produce greater quantities of output, it can do so only by employing more units of variable factors or by having additional shifts, or by having over time work for the existing labor force, stock of capital assets etc. Hence, short run is defined as a period where adjustments to changed conditions are only partial.

The short run cost function relates to the short run production function. It implies two sets of inputs—fixed and variable inputs. Fixed inputs are unalterable. They remain unchanged over a period of time. On the other hand, variable factors are changed to vary the output in the short run.

Thus, in the short period some inputs are fixed in amount and a firm can expand or contract its output only by changing the amounts of other variable inputs. The cost output relationship in the short run refers to a particular set of conditions where the scale of operation is limited by the fixed plant and equipment. Hence, the costs of the firm in the short run are divided into fixed cost and variable costs. We shall study these two concepts of costs in some detail.

1. Fixed costs

These costs are incurred on fixed factors like land, buildings, equipments, plants, superior type of labor, top management etc. Fixed costs in the short run remain constant because the firm does not change the size of plant and the amount of fixed factors employed.

*Fixed costs do not vary with either expansion or contraction in output.* These costs are to be incurred even if the firm close down its operation for some time temporarily in the short run, but remains in business, these costs are independent of output and are referred to as unavoidable contractual cost.

Prof. Marshall called fixed costs as supplementary costs. They include such items as contractual rent payment, interest on capital borrowed, insurance premiums, depreciation and maintenance allowances, administrative expenses like manager’s salary or salary of the permanent staff, property and business taxes, license fees, etc. They are called as overhead costs because these costs are to be incurred whether there is production or not. These costs are to be distributed on each unit of output produced by a firm. Hence, they are called as indirect costs.

2. Variable costs

The cost corresponding to variable factors are discussed as variable costs. These costs are incurred on raw materials, ordinary labor, transport, power, fuel, water etc, which directly vary in the short run.

Variable costs directly and proportionately increase or decrease with the level of output. If a firm shuts down, then it will not use the variable factors of production and will not therefore incur any variable costs. Variable costs increase as the amount of output is produced. Total variable costs increase with increase in the level of production and vice versa.

Prof. Marshall called variable costs as prime costs or direct costs because the volume of output produced depends directly upon them. It is clear from the above description that production costs consist of both fixed as well as variable costs. Hence, costs are meaningful and relevant only in the short run. In the long run all costs become variable because all factors become adjustable and variable in the long run.
However, the distinction between fixed and variable costs is very significant in the short run because it influences the average cost behavior of the firm. In the short run, even if a firm wants to close down its operation but wants to remain in business, it must cover at least its variable costs.

Cost output relationship and nature and behavior of cost curves in the short run In order to study the relationship between output and corresponding cost of production, we have to prepare the cost schedule of the firm.

A cost schedule is a statement of a variation in costs resulting from variations in the levels of output. A hypothetical cost schedule of a firm has been represented in the following table.

<table>
<thead>
<tr>
<th>Output in Units</th>
<th>FC</th>
<th>TVC</th>
<th>TC</th>
<th>AFC</th>
<th>AVC</th>
<th>AC</th>
<th>MC</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>360</td>
<td>-</td>
<td>360</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1</td>
<td>360</td>
<td>180</td>
<td>540</td>
<td>360</td>
<td>180</td>
<td>540</td>
<td>180</td>
</tr>
<tr>
<td>2</td>
<td>360</td>
<td>240</td>
<td>600</td>
<td>180</td>
<td>120</td>
<td>300</td>
<td>60</td>
</tr>
<tr>
<td>3</td>
<td>360</td>
<td>270</td>
<td>630</td>
<td>120</td>
<td>90</td>
<td>210</td>
<td>30</td>
</tr>
<tr>
<td>4</td>
<td>360</td>
<td>315</td>
<td>675</td>
<td>90</td>
<td>78</td>
<td>168</td>
<td>45</td>
</tr>
<tr>
<td>5</td>
<td>360</td>
<td>420</td>
<td>780</td>
<td>72</td>
<td>84</td>
<td>156</td>
<td>105</td>
</tr>
<tr>
<td>6</td>
<td>360</td>
<td>630</td>
<td>900</td>
<td>60</td>
<td>105</td>
<td>165</td>
<td>210</td>
</tr>
</tbody>
</table>

On the basis of the above cost schedule, we can analyse the relationship between changes in the level of output and corresponding cost of production. If we represent the relationship between the two in a geometrical manner, we get different types of cost curves in which we study the following kinds of cost concepts and cost curves.

1. **Total fixed cost (TFC)**

   TFC refers to total money expenses incurred on fixed inputs like plant, machinery, tools & equipments, which corresponds to the fixed inputs in the short run production function. TFC remains the same at all levels of output, even when output is nil. It indicates that whatever may be the quantity of output, whether 1 to 6 units, TFC remains the same and parallel to OX axis, showing that it is constant regardless of output per unit of time. TFC starts from a point on Y axis indicating that the total fixed cost will be incurred even if the output is zero. In our example, Rs 30000 is TFC. It is obtained by summing up the product or quantities of the fixed factors multiplied by their respective unit price.

   \[ \text{TFC} = \text{TC} - \text{TFC} \]
2. **Total variable cost (TVC)**

TVC refers to total money expenses incurred on the variable factors inputs like raw materials, power, fuel, water, transport and communication etc, in the short run. Total variable cost corresponds to variable inputs in the short run production function, summing up the production of quantities of variable inputs multiplied by their prices. The formula to calculate TVC is as follows. TVC = TCTFC.

TVC = f (Q) i.e. TVC is an increasing function of output. In other words TVC varies with output. It is a direct cost of output. TVC rises sharply in the beginning, gradually in the middle and sharply at the end in accordance with the law of variable proportion. The law of variable proportion explains that in the beginning to obtain a given quantity of output, relative variation in factors needed are in less proportion, but after a point when the diminishing returns operate, variable factors are to be employed in a larger proportion to increase the same level of output. TVC curve slope upwards from left to right.

TVC curve rises as output is expanded. When output is Zero, TVC also will be zero. Hence, the TVC curve starts from the origin.

\[ \text{TVC} = \text{TC} - \text{TFC} \]

3. **Total cost (TC)**

The total cost refers to the aggregate money expenditure incurred by a firm to produce a given quantity of output in relation to the production function by multiplying the factor prices with their quantities. TC = f (Q) which means that the T.C. varies with the output. Theoretically speaking TC includes all kinds of money costs, both explicit and implicit cost. Normal profit is included in the total cost as it is an implicit cost. It includes fixed as well as variable costs.
Hence, \( \text{TC} = \text{TFC} + \text{TVC} \).

TC varies in the same proportion as TVC. In other words, a variation in TC is the result of variation in the short run.

The total cost curve is rising upwards from left to right. In our example the TC curve starts from Rs. 300 because even if there is no output, TFC is a positive amount. TC and TVC have same shape \( \text{TC} = \text{TFC} + \text{TVC} \) because an increase in output increases them both by the same amount since TFC is constant. TC curve is derived by adding up vertically the TVC and TFC curves. The vertical distance between TVC curve and TC curve is equal to TFC and is constant throughout because TFC is constant.

4. **Average fixed cost (AFC)**

*Average fixed cost is the fixed cost per unit of output. When TFC is divided by total units of output AFC is obtained.*

\[
\text{AFC} = \frac{\text{TFC}}{Q}
\]

AFC and output have inverse relationship. It is higher at smaller level and lower at the higher levels of output. It is simple to understand. Since \( \text{AFC} = \frac{\text{TFC}}{Q} \), it is a pure mathematical result that the numerator remaining unchanged causes diminishing product. Hence, TFC spreads over each unit of output with the increase in output. Consequently, AFC diminishes continuously. This relationship between output and fixed cost is universal for all types of business concerns.

The AFC curve has a negative slope. The curve slopes downwards throughout the length. The AFC curve never touches axis. Graphically it will fall steeply in the beginning, gently in middle and tend to become horizontal as output increases, AFC diminishes. But AFC will never become zero because the TFC is a positive amount and output cannot be enlarged to an unlimited extent.

5. **Average variable cost: (AVC)**
The average variable cost is variable cost per unit of output. AVC can be computed by dividing the total variable cost (TVC) by the total units of output. Thus, \( AVC = \frac{TVC}{Q} \). The AVC will come down in the beginning and then rise as more units of output are produced when we add more units of variable factors in a fixed plant, the efficiency of the inputs first increases and then it decreases. This is because as we add more units of variable factors in a fixed plant, the efficiency of the inputs first increases and then it decreases. The AVC curve is a U shaped cost curve. It has three phases.

![AVC Curve Diagram]

a. **Decreasing phase**

In the first phase from A to B, AVC declines. As output expands, AVC declines because when we add more quantity of variable factors to a given quantity of fixed factors, output increases more efficiently and more than proportionately due to the operation of increasing returns.

b. **Constant phase**

In the II phase, i.e. at B, AVC reaches its minimum point. When the proportion of both fixed and variable factors are the most ideal, the output will be the optimum. Once the firm operates at its normal full capacity, output reaches its zenith and as such AVC will become the minimum.

c. **Increasing phase**

In the III phase, from B to C, AVC rises when once the normal capacity is crossed, the AVC rises sharply. Additional units of variable factors will not result in more than proportionate output. Hence, greater output may be obtained but at much greater AVC. The old proverb “Too many cooks spoil the broth” aptly applies to this III stage. It is clear that as long as increasing returns operate, AVC falls and when diminishing returns set in, AVC tends to increase.

6. **Average total cost (ATC) or Average cost (AC)**

\( AC \) refers to cost per unit of output. AC is also known as the unit cost since it is the cost per unit of output. AC is the sum of AFC and AVC. Average total cost or average cost is obtained by dividing the total cost by total output produced. ATC is the sum of AFC and AVC. In the short run AC curve also tends to be U shaped. The combined influence of AFC and AVC curve...
As we observe, average fixed cost begin to fall with an increase in output while average variable costs come down and rise. As long as the falling effect of AFC is much more than the rising effect of AVC, the AC tends to fall. At this stage, increasing returns and economies of scale operate and complete utilization of resources force the AC to fall. When the firm produces the optimum output, the AC is called as least – cost output level. Again, at the point where the rise in AVC exactly counter balances the falling effect of AFC, AC to remain constant.

In the third stage when the rise in average variable cost is more than the drop in AFC, then the AC starts rising. When output is expanded beyond the optimum level of output, diminishing returns set in and diseconomies of scale starts operating. Indivisible factors are used in wrong proportions. Thus, AC starts rising in the third stage.

The short run AC curve is also called as “Plant curve”. It indicates the optimum utilization of a given plant or optimum plant capacity.

7. Marginal Cost (MC)

Marginal cost may be defined as the net addition to the total cost as one more unit of output is produced. In other words, it implies additional cost incurred to produce an additional unit.

For example, if it costs Rs. 100 to produce 50 units of a commodity and Rs. 105 to produce 51 units, then MC would be Rs. 5. It is obtained by calculating the change in total costs as a result of a change in the total output. Also MC is the rate at which total cost changes with output. Hence, \( MC = \frac{\text{D TC}}{\text{D TQ}} \), where D TC stands for change in total cost and D TQ stands for change in total output.

It is necessary to note that MC is independent of TFC and it is directly related to TVC as we calculate the cost of producing only one unit. In the short run, the MC curve also tends to be U shaped.

The shape of the MC curve is determined by the laws of returns. If MC is falling, production will be subject of increasing returns and if MC is rising, production will be subject of diminishing returns.
The table indicates the relationship between AC & MC

<table>
<thead>
<tr>
<th>Output in Units</th>
<th>TC in Rs.</th>
<th>AC in Rs.</th>
<th>Difference in Rs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>150</td>
<td>150</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>190</td>
<td>95</td>
<td>40</td>
</tr>
<tr>
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<td>220</td>
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</tr>
<tr>
<td>4</td>
<td>236</td>
<td>59</td>
<td>16</td>
</tr>
<tr>
<td>5</td>
<td>270</td>
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</tr>
<tr>
<td>6</td>
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<td>54</td>
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</tr>
<tr>
<td>7</td>
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</tr>
<tr>
<td>8</td>
<td>580</td>
<td>72</td>
<td>165</td>
</tr>
</tbody>
</table>

Relation between AC and MC

From the diagram it is clear that:

1. Both MC and AC fall at a certain range of output and rise afterwards.
2. When AC falls, MC also falls but at certain range of output MC tends to rise even though AC continues to fall. This is because MC is attributed to a single unit where as in case of AC, the decreasing AC is distributed over all the units of output produced.

3. So long as AC is falling, MC is less than AC. Hence, MC curve lies below AC curve. It indicates that fall in MC is more than the fall in AC. This is because MC is attributed to a single unit where as in case of AC, the decreasing AC is distributed over all the units of output produced.

\[ AC = MC \]

4. When AC is rising, after the point of intersection, MC will be greater than AC. This is because in case of MC, the increasing MC is attributed to a single unit, whereas in case of AC, the increasing AC is distributed over all the output produced.

5. So long as the AC is rising, MC is greater and AC. Hence, AC curve lies to the left side of the MC curve. Increase in MC indicates the rise in AC.

6. MC curve cuts the AC curve at the minimum point of the AC curve. This is because, when MC decreases, it pulls AC down and when MC increases, it pushes AC up. When AC is at its minimum, it is neither being pulled down or being pushed up. This point is known as the point of intersection. At this point, MC = AC. The point of intersection indicates the least cost combination point or the optimum point where the firm is working at its "Optimum Capacity" with lowest AC. Beyond Q, there is scope for "Maximum Capacity" with rising cost.

**Cost Output Relationship in the Long Run**

*Long run is defined as a period of time where adjustments to changed conditions are complete.* In the long run, all the quantities of all factors, variable as well as fixed factors can be adjusted. Hence, there are no fixed costs in the long run. A firm has to carry on its production within the existing plant capacity, but in the long run it is not tied up to a particular plant capacity. If demand for the product increases, it can expand output by enlarging its plant capacity. It can construct new buildings or hire administrative and other permanent staff. It can make use of the existing as well as new staff in the most efficient way and there is lot of scope for making indivisible factors to become divisible factors.

On the other hand, if demand for the product declines, a firm can cut down its production permanently and the size of the plant can also be reduced and other expenditure can be minimized.

Hence, production cost comes down to a greater extent in the long run. As all costs are variable in the long run, the total cost of production is total cost of production.

Hence, the distinction between fixed and variables costs in the total cost of production will disappear in the long run and the average total cost is important and considered in taking long term output decisions.

Long run average cost is the long run total cost divided by the level of output. In brief, it is the per unit cost of producing different levels of output by changing the size of the plant or scale of production.

The long run cost–output relationship is explained by drawing a long run cost curve through short run cost curves as the long period is made up of many short– periods as the day is made up of 24 hours and a week is made out of 7 days. This curve explains how costs will change when the scale of production is varied.
The long run cost curves are influenced by the laws of return to scale as against the short run cost curves which are subject to the law of variable proportions.

In the short run the firm is tied with a given plant and as such the scale of operation remains constant. There will be only one AC curve to represent one fixed scale of output in the short run. In the long run as it is possible to alter the scale of production, one can have as many AC curves as there are changes in the scale of operations.

In order to derive LAC curve, one has to draw a number of SAC curves, each curve representing a particular scale of output. The LAC curve will be tangential to the entire family of SAC curves. It means that it will touch each SAC curve at its minimum point.

**Production cost difference in the short run and long run**
In the diagram, the LAC curve is drawn on the basis of three possible plant sizes. Consequently, we have three different SAC curves – SAC1, SAC2 and SAC3. They represent three different scales of output. For output OM3 the AC will be L2M2 in the short run. When output is to be expanded to OM3, it can be obtained at a higher average cost of production. K3, M3 is the short run AC because, scale of production would remain constant in the short run. But the same output of OM3 can be produced at a lower AC in the long run since the scale of production can be modified according to the requirements. The distance between K3L3 represent difference in cost in the short run and long run.

Similarly, when output is contracted to OM1 in the short run, K1M1 will become the short run AC and L1M1 will be the long run AC. Hence, K1L1 indicates the differences between short run and long run cost of production. If we join points L1, L2 and L3 we get LAC curve.

Important features of long run AC curves

1. Tangent curve

Different SAC curves represent different operational capacities of different plants in the short run. SAC and LAC are tangential. The SAC curve can never cut a LAC curve though they are tangential to each other. This implies a SAC curve can ever be below the LAC curve. Hence, SAC cannot be lower than the LAC in the long run. Therefore, SAC curves are always above LAC curves.

2. Envelope curve

It is known as Envelope curve because it envelopes a group of SAC curves appropriate to different levels of output.

3. Flatter U shaped or dish shaped curve.

The LAC curve is also \textit{U shaped or dish shaped} cost curve. But it is less pronounced and much flatter in nature. LAC gradually falls and rises due to economies and diseconomies of scale.

4. Planning curve.

The LAC curve is described as the \textit{Planning Curve} of the firm because it represents the least cost of producing each possible level of output. This helps in producing optimum level of output at the minimum LAC. This is possible when the entrepreneur is selecting the optimum scale plant.

Optimum scale plant is that size where the minimum point of SAC is tangent to the minimum point of LAC. In the diagram, OM2 is regarded as the optimum scale of output, as it has the least per unit cost. At OM2 output LAC = SAC.

LAC curve will be tangent to SAC curves lying to the left of the optimum scale or right side of the optimum scale. At tangency, neither LAC is minimum nor will SAC be minimum. SAC curves are either rising or falling indicating a higher cost.

Managerial Use of LAC

The study of LAC is of greater importance in managerial decision making process.
1. It helps the management in the determination of the best size of the plant to be constructed or when a new one is introduced to get the minimum cost output for a given plant. But it is interested in producing a given output at the minimum cost.

2. The LAC curve helps a firm to decide the size of the plant to be adopted for producing the given output combination at the optimum scale i.e., when the firm is working subject to increasing returns to scale, it is more economical to under use a slightly large plant operating at less than its minimum cost – output than to over use a smaller unit.

Conversely, at output beyond the optimum level, that is when the firm experience decreasing return to scale, it is more economical to over use a slightly smaller plant than to under use a slightly larger one. Thus, it explains why it is more economical to over use a slightly smaller plant rather than to under use a large plant.

3. LAC is used to show how a firm determines the optimum size of the plant. An optimum size of plant is one that helps in best utilization of resources in the most economical manner.

**Long Run Marginal cost**

A long run marginal cost curve can be derived from the long run average cost curve. Just as the SMC is related to the SAC, similarly the LMC is related to the LAC and, therefore, we can derive the LMC directly from the LAC. In the diagram we have taken three plant sizes (for the sake of simplicity) and the corresponding three SAC and SMC curves.

The LAC curve is drawn by enveloping the family of SAC curves. The points of tangency between the SAC and the LAC curves indicate different outputs for different plant sizes.

If the firm wants to produce ON output in the long run, it will have to choose the plant size corresponding to SAC1 at point A. For ON output, the average cost is NA and the corresponding marginal cost is NB. If LAC curve is tangent to SAC1 curve at point A, the corresponding LMC curve will have to be equal to SMC1 curve at point B. The LMC will pass through point B.

If output OQ is to be produced in the long run, it will be done at point C which is the point of tangency between SAC2 and the LAC. At point C, the short run average cost (SAC2) and the short run marginal cost (SMC2) are equal and, therefore, the LAC for output OQ is QC and the corresponding LMC is also QC. The LMC curve will, therefore, pass through point C.
Finally, for output OR, at point D the LAC is tangent to SAC3. For OR output at point E LMC is passing through SMC3. By connecting points B, C and E, we can draw the long run marginal cost curve.

**Cost of Production: Formulas**

- \( TC = \text{cost per unit} \times \text{total production} \) or \( TC = TFC + TVC \)
- \( TFC = TC \times TVC \) or \( AFC \times Q \)
- \( TVC = TC - TFC \) or \( AVC \times Q \) or addition of \( MC \)
- \( AFC = AC - AVC \) or \( TFC/Q \)
- \( AVC = AC - AFC \) or \( TVC/Q \)
- \( AC = AFC + AVC \) or \( TC/Q \)
- \( MC = \frac{TC - TC_{n-1}}{D TQ} \)

**PRICE:**

The price of a product or service is the number of monetary units a customer has to pay to receive one unit of that product or service. (Simon 1989).

This was the traditional definition, but in the 1990s a broader interpretation of the price concept became customary. A broader view is Hutt and Speh's observation that the cost of an industrial good includes much more than the seller's price. (Hutt and Speh 1998)

The simplest way to set price is through uniform pricing. At the profit-maximizing uniform price, the incremental margin percentage equals the reciprocal of the absolute value of the price elasticity of demand. The most profitable pricing policy is complete price discrimination, where each unit is priced at the benefit that the unit provides to its buyer. To implement this policy, however, the seller must know each potential buyer's individual demand curve and be able to set different prices for every unit of the product.

The next most profitable pricing policy is direct segment discrimination. For this policy, the seller must identify the various segments. The third most profitable policy is indirect segment discrimination. This involves structuring a set of choices around some variable to which the various segments are differentially sensitive. Uniform pricing is the least profitable way to set a price.

A commonly used basis for direct segment discrimination is location. This exploits a difference between freight-free and freight-inclusive prices. A commonly used method of indirect segment discrimination is bundling. Sellers may apply either pure or mixed bundling.

Pricing is the process of determining what a company will receive in exchange for its products. Pricing factors are manufacturing cost, market place, competition, market condition, and quality of product. Pricing is also a key variable in microeconomic price allocation theory. Pricing is a fundamental aspect of financial modeling and is one of the four Ps of the marketing mix. The other three are product, promotion, and place. Price is the only revenue generating element amongst the four Ps, the rest being cost centers.

Pricing is the manual or automatic process of applying prices to purchase and sales orders, based on factors such as promotion or sales campaign, specific vendor quote, price prevailing on entry, shipment or invoice date,
Transfer pricing refers to the pricing of contributions (assets, tangible and intangible, services, and funds) from one division of a corporation or similar entity. For example, goods from the production division may be sold to the marketing division, or goods from a parent company may be sold to a foreign subsidiary. Since the prices are set within an organization (i.e. controlled), transfer pricing methods are employed.

Cost plus pricing method
The Cost Plus (CP) method, generally used for the trade of finished goods, is determined by adding an appropriate markup to the costs incurred by the selling party in manufacturing/purchasing the goods or services provided, with the appropriate markup being based on the profits of companies comparable to the tested party. For example, the arm's length price for a transaction involving the sale of designer snowflakes to a related distributor would be determined by adding an appropriate markup to the cost of materials, labour, manufacturing, and fixed costs.

Price skimming is a pricing strategy in which a marketer sets a relatively high price for a product or service at first, then lowers the price over time. It is a temporal version of price discrimination/yield management. It allows the firm to recover its sunk costs quickly before competition steps in and lowers the market price.

Price skimming is sometimes referred to as riding down the demand curve. The objective of a price skimming strategy is to capture the consumer surplus. If this is done successfully, then theoretically no customer will pay less for the product than the maximum they are willing to pay. In practice, it is almost impossible for a firm to capture all of this surplus.

Cost-plus pricing is a pricing method used by companies. It is used primarily because it is easy to calculate and requires little information. There are several variations, but the common thread in all of them is that one first calculates the cost of the product, then includes an additional amount to represent profit. It is a way for companies to calculate how much profit they will make. Cost-plus pricing has been criticized as promoting wasteful expenditures.

The method determines the price of a product or service that uses direct costs, indirect costs, and fixed costs whether related to the production and sale of the product or service or not. These costs are converted to per unit costs for the product and then a predetermined percentage is added to provide a profit margin.

Target rate of return pricing is a pricing method used almost exclusively by market leaders or monopolists. You start with a rate of return objective, like 5% of invested capital, or 10% of sales revenue. Then you arrange your price structure so as to achieve these target rates of return.

For example, assume a firm invests $100 million in order to produce and market designer snowflakes, and that they estimate that with demand for designer snowflakes being what it is, they can sell 2 million flakes per year.

Joint Products are two or more products, produced from the same process or operation, considered to be of relative equal importance. Pricing for joint products is a little more complex than pricing for a single product. To begin with there are two demand curves. The characteristics of each demand curve could be different. Demand for one product could be greater than for the other product. Consumers of one product could be more price elastic than the consumers of the other product (and therefore more sensitive to changes in the product's price).

Dual pricing
Even within a country, differentiated pricing may be established to ensure that citizens receive lower prices than non-citizens; this is known as dual pricing. This is particularly common for goods that are subsidized or otherwise provided by the state (and hence paid by taxpayers). Thus Finns, Thais, and Indians (among others) may purchase special fare tickets for public transportation that are available only to citizens. Many countries also maintain separate admission charges for museums, national parks and similar facilities, the usually professed rationale being that citizens should be able to educate themselves and enjoy the country's natural wonders cheaply, but other visitors should pay the market rate.

Premium pricing
For certain products, premium products are priced at a level (compared to "regular" or "economy" products) that is well beyond their marginal cost of production. For example, a coffee chain may price regular coffee at $1, but "premium" coffee at $2.50 (where the respective costs of production may be $0.90 and $1.25).
A market economy is an economy based on the power of division of labor in which the prices of goods and services are determined in a free price system set by supply and demand.[1]

This is often contrasted with a planned economy, in which a central government determines the price of goods and services using a fixed price system. Market economies are also contrasted with mixed economy, where the price system is not entirely free but under some government control or heavily regulated, which is sometimes combined with state-led economic planning that is not extensive.

In the real world, market economies do not exist in pure form, as societies and governments regulate them to varying degrees rather than allow self-regulation by market forces.[2][3] The term free-market economy is sometimes used synonymously with market economy;[4] but, as Ludwig von Mises also pointed out, this does not preclude an economy from having socialist attributes opposed to a laissez-faire system.[5] Economist Ludwig von Mises also pointed out that a market economy is still a market economy even if the government intervenes in pricing.

Different perspectives exist as to how strong a role the government should have in both guiding the market and addressing the inequalities the market produces. For example, there is no universal agreement on issues such as central banking, and welfare. However, most economists oppose protectionist tariffs.[7]

The term market economy is not identical to capitalism where a corporation hires workers as a labour commodity to produce material wealth and boost shareholder profits.[8] Market mechanisms have been utilized in a handful of socialist states, such as China, Yugoslavia and even Cuba to a very limited extent.

It is also possible to envision an economic system based on independent producers, cooperative, democratic worker ownership and market allocation of final goods and services; the labour-managed market economy is one of several proposed forms.

Uniform pricing.

(a) Uniform pricing: a pricing policy where a seller charges the same price for every unit of the product.

2. Profit maximizing price (incremental margin percentage)

A price where the incremental margin percentage (i.e., price less marginal cost divided by the price) is equal to the reciprocal of the absolute value of the price elasticity of demand. This is the rule of marginal revenue equals the marginal cost.

i. Price elasticity may vary along a demand curve, marginal cost changes with scale of production. The above procedure typically involves a series of trials and errors with different prices.

ii. Intuitive factors that underlie price elasticity: direct and indirect substitutes, buyers‘ prior commitments, search cost.

(c) Price adjustments following changes in demand and cost. i. To maximize profits, a seller should consider both demand and costs.

iii. A seller should adjust its price to changes in either the price elasticity or the marginal cost.

iv. It must consider the effect of the price change on the quantity demanded.

v. If demand is more elastic (price elasticity will be a larger negative number), the seller should aim for a lower incremental margin percentage, and not necessarily a lower price, and likewise.

vi. If demand is less elastic, the seller should aim for a higher incremental margin percentage, and not necessarily a higher price.
vii. A seller should not necessarily adjust the price by the same amount as a change in marginal cost.

(d) Special notes.

i. Only the incremental margin percentage (i.e., price less marginal cost divided by the price) is relevant to pricing.

(1). Contribution margin percentage (i.e., price less average variable cost divided by the price) is not relevant to pricing.

(2). Variable costs may increase or decrease with the scale of production, and hence, marginal cost will not be the same as average variable cost.

ii. Setting price by simply marking up average cost will not maximize profit. Problems of cost plus pricing:

(1). In businesses with economies of scale, average cost depends on scale, but scale depends on price. It is a circular exercise.

(2). Cost plus pricing gives no guidance as to the markup on average cost. (e) Limitations of uniform pricing (incremental margin percentage rule).

The inframarginal buyers do not pay as much as they will be willing to pay. A seller could increase its profit by taking some of the buyer surplus.

**Oligopoly**, in which a market is dominated by a small number of firms which own more than 40% of the market.

**Oligopsony**, a market, where many sellers can be present but meet only a few buyers.

**Monopoly**, where there is only one provider of a product or service.

Natural monopoly, a monopoly in which economies of scale cause efficiency to increase continuously with the size of the firm. A firm is a natural monopoly if it is able to serve the entire market demand at a lower cost than any combination of two or more smaller, more specialized firms.

**Monopsony**, when there is only one buyer in a market.

The imperfectly competitive structure is quite identical to the realistic market conditions where some monopolistic competitors, oligopolists, and duopolists exist and dominate the market conditions. The elements of Market Structure include the number and size distribution of firms, entry conditions, and the extent of differentiation.

These somewhat abstract concerns tend to determine some but not all details of a specific concrete market system where buyers and sellers actually meet and commit to trade. Competition is useful because it reveals actual customer demand and induces quality levels and price levels that buyers (customers) want, typically subject to the seller's financial need to cover its costs. In other words, competition can align the seller's interests with the buyer's interests and can cause the seller to reveal his true costs and other private information. In the absence of perfect competition, three basic approaches can be adopted to deal with problems related to the control of market power and an asymmetry between the government and the operator with respect to objectives and information: (a) subjecting the operator to competitive pressures; (b) gathering information on the operator and the market, and (c) applying incentive regulation.[1]

Quick Reference to Basic Market Structures

<table>
<thead>
<tr>
<th>Market Structure</th>
<th>Seller Entry Barriers</th>
<th>Seller Number</th>
<th>Buyer Entry Barriers</th>
<th>Buyer Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perfect Competition</td>
<td>No</td>
<td>Many</td>
<td>No</td>
<td>Many</td>
</tr>
<tr>
<td>CIVIL-IV</td>
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</tbody>
</table>
The correct sequence of the market structure from most to least competitive is perfect competition, imperfect competition, oligopoly, and pure monopoly.

The main criteria by which one can distinguish between different market structures are: the number and size of producers and consumers in the market, the type of goods and services being traded, and the degree to which information can flow freely.

**Cash Flow Statement**
Complementing the balance sheet and income statement, the cash flow statement (CFS), a mandatory part of financial reports since 1987, records the amounts of cash and cash equivalents entering and leaving a company. The CFS allows investors to understand how a company’s operations are running, where its money is coming from, and how it is being spent. Here you will learn how the CFS is structured and how to use it as part of your analysis of a company.

A cash flow statement is one of the most important financial statements for a project or business. The statement can be as simple as a one-page analysis or may involve several schedules that feed information into a central statement.

A cash flow statement is a listing of the flows of cash into and out of the business or project. Think of it as your checking account at the bank. Deposits are the cash inflows and withdrawals (checks) are the cash outflows. The balance in your checking account is your net cash flow at a specific point in time.

A cash flow statement is a listing of cash flows that occurred during the past accounting period. A projection of future flows of cash is called a cash flow budget. You can think of a cash flow budget as a projection of the future deposits and withdrawals to your checking account.

A cash flow statement is not only concerned with the amount of the cash flows but also the timing of the flows. Many cash flows are constructed with multiple time periods. For example, it may list monthly cash inflows and outflows over a year’s time. It not only projects the cash balance remaining at the end of the year but also the cash balance for each month.
Working capital is an important part of a cash flow analysis. It is defined as the amount of money needed to facilitate business operations and transactions, and is calculated as current assets (cash or near cash assets) less current liabilities (liabilities due during the upcoming accounting period).

Computing the amount of working capital gives you a quick analysis of the liquidity of the business over the future accounting period. If working capital appears to be sufficient, developing a cash flow

The Structure of the CFS

The cash flow statement is distinct from the income statement and balance sheet because it does not include the amount of future incoming and outgoing cash that has been recorded on credit. Therefore, cash is not the same as net income, which, on the income statement, includes cash sales and sales made on credit. (To learn more about the credit crisis, read Liquidity And Toxicity: Will TARP Fix The Financial System?)

Cash flow is determined by looking at three components by which cash enters and leaves a company: core operations, investing and financing.

Operations

Measuring the cash inflows and outflows caused by core business operations, the operations component of cash flow reflects how much cash is generated from a company's products or services. Generally, changes made in cash, accounts receivable, depreciation, inventory and accounts payable are reflected in cash from operations.

Cash flow is calculated by making certain adjustments to net income by adding or subtracting differences in revenue, expenses and credit transactions (appearing on the balance sheet and income statement) resulting from transactions that occur during one period to the next. These adjustments are made because non-cash items are calculated into net income (income statement) and total assets and liabilities (balance sheet). So, because not all transactions involve actual cash items, many items have to be re-evaluated when calculating cash flow. For example, depreciation is not really a cash expense; it is an amount that is deducted from the total value of an asset that has previously been accounted for. That is why it is added back into net sales for calculating cash flow. The only time income from an asset is accounted for in CFS calculations is when the asset is sold.

Changes in accounts receivable on the balance sheet from one accounting period to the next must also be reflected in cash flow. If accounts receivable decreases, this implies that more cash has entered the company from customers paying off their AR has decreased is then added to net sales. If accounts receivable increase from one accounting period to the next, the amount of the increase from one year to the other would be added to net sales. If inventory was paid with cash, the increase in the value of inventory is deducted from net sales. A decrease in inventory would be added to net sales. If inventory was purchased on credit, an increase in accounts payable would be added to net sales.

An increase in inventory, on the other hand, signals that a company has spent more money to purchase more raw materials. If the inventory was paid with cash, the increase in the value of inventory is deducted from net sales. If inventory was purchased on credit, an increase in accounts payable would be added to net sales.

The same logic holds true for taxes payable, salaries payable and prepaid insurance. If something has been paid off, then the difference in the value owed from one year to the next has to be subtracted from net income. If there is an amount that is still owed, then any differences will have to be added to net earnings.

Investing

Changes in equipment, assets or investments relate to cash from investing. Usually cash changes from investing is used to buy new equipment, buildings or short-term assets such as marketable securities. However, when a transaction is considered "cash in" for calculating cash from investing.

Financing

CIVIL-IV
Changes in debt, loans or dividends are accounted for in cash from financing. Changes in cash from financing are "cash in" when capital is raised, and they're "cash out" when dividends are paid. Thus, if a company issues a bond to the public, the company receives cash; however, when interest is paid to bondholders, the company is reducing its cash.

Analyzing an Example of a CFS

Let's take a look at this CFS sample:

<table>
<thead>
<tr>
<th>Cash Flow From Operations</th>
<th>2,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Additions to Cash</td>
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<tr>
<td>Depreciation</td>
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<tr>
<td>Decrease in Accounts Receivable</td>
<td>15,000</td>
</tr>
<tr>
<td>Increase in Accounts Payable</td>
<td>15,000</td>
</tr>
<tr>
<td>Increase in Taxes Payable</td>
<td>2,000</td>
</tr>
<tr>
<td>Subtractions From Cash</td>
<td></td>
</tr>
<tr>
<td>Increase in Inventory</td>
<td>(30,000)</td>
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<tr>
<td>Net Cash from Operations</td>
<td>2,012,000</td>
</tr>
<tr>
<td>Cash Flow From Investing</td>
<td></td>
</tr>
<tr>
<td>Equipment</td>
<td>(500,000)</td>
</tr>
<tr>
<td>Cash Flow From Financing</td>
<td></td>
</tr>
<tr>
<td>Notes Payable</td>
<td>10,000</td>
</tr>
<tr>
<td>Cash Flow for FY Ended 31 Dec 2003</td>
<td>1,522,000</td>
</tr>
</tbody>
</table>

From this CFS, we can see that the cash flow for FY 2003 was $1,522,000. The bulk of the positive cash flow stems from cash earned from operations, which is a good sign for investors. It means that core operations are generating business and buying inventory. The purchasing of new equipment shows that the company has cash to invest in inventory for growth. Finally, the amount of cash available to the company should ease investors' minds regarding the notes payable, as cash is plentiful to cover that future loan expense.

Of course, not all cash flow statements look this healthy, or exhibit a positive cash flow. But a negative cash flow should not automatically raise a red flag without some further analysis. Sometimes, a negative cash flow is a result of a company's decision to expand its business at a certain point in time, which would be a good thing for the future. This is why analyzing changes in cash flow from one period to the next gives the investor a better idea of how the company is performing, and whether or not the company is on the brink of bankruptcy or success.

Tying the CFS with the Balance Sheet and Income Statement

As we have already discussed, the cash flow statement is derived from the income statement and the balance sheet. Net earnings from the income statement is the figure from which the information on the CFS is deduced. As for the balance sheet, the net change in cash from one period to the next should equal the increase or decrease of cash between the two consecutive balance sheets that the CFS statement covers. (For example, if you are calculating a cash flow for the year 2000, the balance sheets for 1999 and 2000 should be used.)
Conclusion

A company can use a cash flow statement to predict future cash flow, which helps with matters in budgeting. A company's financial health: basically, the more cash available for business operations, the better. However, sometimes a negative cash flow results from a company's growth strategy in the form of expanding its operations.

By adjusting earnings, revenues, assets and liabilities, the investor can get a very clear picture of what some people consider the most important aspect of a company: how much cash it generates and, particularly, how much of that cash stems from core operations.

FINANCIAL STATEMENT ANALYSIS

MEANING

Tearing apart the financial statements and looking at the relationships

Who analyzes financial statements?

Internal users (i.e., management)

External users (emphasis of chapter)

Examples?

Investors, creditors, regulatory agencies & …

stock market analysts and auditors

What do internal users use it for?

Planning, evaluating and controlling company operations

What do external users use it for?

Assessing past performance and current financial position and making predictions about the future profitability and solvency of the company as well as evaluating the effectiveness of management

METHODS OF FINANCIAL STATEMENTS ANALYSIS

Horizontal Analysis

Vertical Analysis

Common-Size Statements

Trend Percentages

CIVIL-IV
Ratio Analysis

**HORIZONTAL ANALYSIS (COMPARATIVE STATEMENTS)**

Using comparative financial statements to calculate dollar or percentage changes in a statement item from one period to the next.

CLOVER CORPORATION

**Comparative Balance Sheets**
December 31, 1999 and 1998

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>1998</th>
<th>Increase (Decrease)</th>
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<tr>
<td><strong>Current a sse ts:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>$12,000</td>
<td>$23,500</td>
<td></td>
</tr>
<tr>
<td>Accounts receivable, net</td>
<td>$60,000</td>
<td>$40,000</td>
<td></td>
</tr>
<tr>
<td>Inventory</td>
<td>$80,000</td>
<td>$1,00,000</td>
<td></td>
</tr>
<tr>
<td>Prepaid expenses</td>
<td>$3,000</td>
<td>$1,200</td>
<td></td>
</tr>
<tr>
<td>Total current assets</td>
<td><strong>1,55,000</strong></td>
<td><strong>1,64,700</strong></td>
<td><strong>$9,700</strong> 5.65%</td>
</tr>
<tr>
<td><strong>Property and eq uipment:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>$40,000</td>
<td>$40,000</td>
<td></td>
</tr>
<tr>
<td>Buildings and equipment, net</td>
<td>$1,20,000</td>
<td>$85,000</td>
<td></td>
</tr>
<tr>
<td>Total property and equipment</td>
<td><strong>1,60,000</strong></td>
<td><strong>1,25,000</strong></td>
<td><strong>$35,000</strong> 28%</td>
</tr>
<tr>
<td>Total assets</td>
<td><strong>$3,15,000</strong></td>
<td><strong>$2,89,700</strong></td>
<td><strong>$25,300</strong> 8.75%</td>
</tr>
</tbody>
</table>

CLOVER CORPORATION
Comparative Balance Sheets
December 31, 1999 and 1998

<table>
<thead>
<tr>
<th></th>
<th>1999</th>
<th>1998</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liabilities and Stockholders' Equity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current liabilities:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accounts payable</td>
<td>$67,000</td>
<td>$44,000</td>
<td>$23,000</td>
<td>52.3</td>
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</tbody>
</table>

CIVIL-IV
### VERTICAL ANALYSIS (COMMON SIZE STATEMENTS)

For a single financial statement, each item is expressed as a percentage of a significant total, e.g., all income statement items are expressed as a percentage of sale.

#### ER CORPORATION

**Comparative Income Statements**

For the Years Ended December 31, 1999 and 1998

<table>
<thead>
<tr>
<th>Item</th>
<th>1999</th>
<th>1998</th>
<th>Amount</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net sales</td>
<td>$5,20,000</td>
<td>$4,80,000</td>
<td>$40,000</td>
<td>8.3</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>3,60,000</td>
<td>3,15,000</td>
<td>45,000</td>
<td>14.3</td>
</tr>
<tr>
<td>Gross margin</td>
<td>1,60,000</td>
<td>1,65,000</td>
<td>(5,000)</td>
<td>(3.0)</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>1,28,600</td>
<td>1,26,000</td>
<td>2,600</td>
<td>2.1</td>
</tr>
<tr>
<td>Net operating income</td>
<td>31,400</td>
<td>39,000</td>
<td>(7,600)</td>
<td>(19.5)</td>
</tr>
<tr>
<td>Interest expense</td>
<td>6,400</td>
<td>7,000</td>
<td>(600)</td>
<td>(8.6)</td>
</tr>
<tr>
<td>Net income before taxes</td>
<td>25,000</td>
<td>32,000</td>
<td>(7,000)</td>
<td>(21.9)</td>
</tr>
<tr>
<td>Less income taxes (30%)</td>
<td>7,500</td>
<td>9,600</td>
<td>(2,100)</td>
<td>(21.9)</td>
</tr>
<tr>
<td>Net income</td>
<td>$17,500</td>
<td>$22,400</td>
<td>$(4,900)</td>
<td>(21.9)</td>
</tr>
</tbody>
</table>

CIVIL-IV
TREND PROJECTION METHOD

Show changes over time in given financial statements (can help evaluate financial information of several years)

RATIO ANALYSIS

Expression of logical relationships between items in a financial statement of a single period (e.g., percentage relationship between revenue and net income)

Liquidity Ratios

Indicate a company’s short-term debt-paying ability

1. **Equity (Long-Term Solvency) Ratios**

Show relationship between debt and equity financing in a company

Profitability Tests

Relate income to other variables Market Tests

Help assess relative merits of stocks in the marketplace

CAPITAL BUDGETING

Development of a written investment policy, which is reviewed by independent professional advisers (including legal experts as required), approved by the board, and reviewed annually.

2. Ensuring that the written investment policy addresses the following issues (discussed further in Section D):
   - investment committee functions and structure;
   - investment philosophy and objectives;
   - attitude to risk and process for managing risk;
   - decision rights; and
   - process for evaluating and managing investments.

3. Establishment of an investment committee if major investment is being proposed. Key roles of the investment committee...
establish the overall methodology, processes and controls which govern investments;

ensure that robust processes (eg evaluation of fit with the NHS foundation trust’s overall strategy, use of appropriate independent professional advisers) are followed; and

evaluate, scrutinise and monitor investments.

4. Confirmation that the NHS foundation trust has the legal power to make the proposed investment.

5. Engagement early on in the investment evaluation process of independent external advisers with demonstrated expertise in advising on transactions of the size and nature being proposed.

6. Rigorous evaluation of all proposed major investments using a thorough evaluation, execution, and monitoring process, such as the one described in Appendix 1.

Risk Evaluation for Investment Decisions by NHS Foundation Trusts D. Key elements of investment policy

A best practice investment policy will contain the following elements:

(i) Investment committee functions and structure

Typically the functions of the investment committee will be to approve investment and borrowing strategy, set and review investment benchmarks, review performance against the benchmarks, ensure proper safeguards are in place for security, monitor compliance with treasury policies and procedures, approve proposals for acquisition and disposal of assets, and approve external funding arrangements within their delegated authority.

The investment committee will comprise executive and non-executive directors, with a majority of non-executive directors. It should be chaired by a non-executive director with relevant investment decision-making experience. It may be a committee of the board, or the board itself in the case of smaller NHS foundation trusts. (ii) Investment philosophy and objectives

A best practice statement of investment philosophy and objectives will provide the criteria for selecting the NHS foundation trust’s investments, and address the following:

1. the statutory and principal purpose of the NHS foundation trust – the provision of goods and services for the health service in England;

2. the NHS foundation trust’s corporate strategy (including geographic and service focus);

3. target rates of return for investments and explanation of how rates of return will be calculated (eg return net of any cross-subsidies);

4. time frame for realising the desired return on investments.

(iii) Attitude to risk and process for managing risk

Risk refers to the probability of an adverse outcome that is different from the expected outcome and the potential impact of such an outcome. Some major categories of investment risk include:

2. Strategic: risks associated with a particular strategy, for instance, overcapacity, product or service line obsolescence, competitor reactions;

3. Financial: risks associated with the financial structure of a business, the financial...
transactions made by the business, and the financial systems which are in place, for instance, interest rate risk, foreign exchange risk and credit risk;

3. **Operational**: risks associated with the operational and administrative procedures of a business, such as clinical operations, supply chain management, IT systems, recruitment, labour management and post-merger integration process;

4. **Regulatory and political**: risks posed by potential changes in the regulatory and political environment and changes in healthcare targets;

5. **Reputational**: risks to the perceived quality or brand of an institution, for instance, through bad press resulting from association with a failed joint venture;

6. **Contingent**: risks that will only come into existence if a certain contingent event takes place, for instance, guarantees of a joint venture that are only payable if it defaults.

Risk management refers to the collective set of processes, working practices and tools used to minimise the probability and impact of adverse outcomes. It entails:

- identifying potential sources of risk;
- estimating value at risk, calculated as probability of loss x severity of loss;
- implementing controls to minimise probability and severity of loss.

It is best practice to define in the investment policy the NHS foundation trust’s principles for managing risk aligned with its corporate strategy. Examples of risk management principles include:

- guidelines on identification of different types of risk;
- methodology for calculating value at risk;
- expected returns of individual investments for a given risk level – higher risk investments require higher expected returns;
- aggregate targeted rate of return across the portfolio of investments;
- limitations on the locations and types of investments that can be pursued. For instance, the policy may specify that overseas ventures should only be within the ‘core competence’ of the organisation and within stated risk concentrations for each geography;
- guidelines for asset diversification outside core operations. For instance, specifying that either the organisation will not diversify outside the health sector in England, or specifying limits on concentration of risk in a particular technology or sector.

A best practice investment policy will provide the criteria for categorising investments by level of risk (eg high, medium and low risk). Criteria for assessing riskiness of an investment include:
Risk Evaluation for Investment Decisions by NHS Foundation Trusts

(iv) Decision rights

A best practice investment policy will define clearly the roles, responsibilities and approval limits of the various committees and individuals with investment oversight. These are likely to include the board, investment committee, finance director, and business development group, if one exists. For example, the board might be required to approve the written investment policy and all “high risk” investments, while the investment committee might approve all other investments and ensure that investment decisions follow the guidelines laid out in the written investment policy.

(v) Process for evaluating and managing investments

A robust investment policy will explain the internal processes for evaluating, executing, and performance managing investments. The extent of review/due diligence needs to be appropriate to the investment proposed. For example, all major investments would be expected to undergo detailed business case evaluation and challenge.

An example of a robust framework for evaluating and managing investments is set out in Appendix 1. This framework describes the key phases in making a major investment decision: preliminary review, detailed review, and execution and monitoring. For each of these phases, it lists the key questions that board members will ask and also lists the types of external advisers that will likely be engaged.

This risk evaluation framework is an indication of the type of analysis required at each of the three stages of investment appraisal. If an NHS foundation trust is unclear about how to apply the framework to a particular investment appraisal they should seek professional advice.

Each potential project’s value should be estimated using a discounted cash flow (DCF) valuation, to find its net present value (NPV).
to Corporate Finance by Joel Dean in 1951; see also Fisher separation theorem, John Burr Williams: Theory, size and timing of all of the incremental cash flows from the project. These future cash flows are then estimated to determine their present value. These present values are then summed, to get the NPV. See also Time value of money, accept all positive NPV projects in an unconstrained environment, or if projects are mutually exclusive, accept the one with the highest NPV(GE).

The NPV is greatly affected by the discount rate, so selecting the proper rate - sometimes called the hurdle rate - is critical to making the right decision. The hurdle rate is the minimum acceptable return on an investment. It should reflect the riskiness of the investment, the volatility of cash flows, and must take into account the financing mix. Managers may use models such as the CAPM or the APT to estimate a discount rate appropriate for each particular project, and use the weighted average cost of capital (WACC) as the hurdle rate.

Common practice in choosing a discount rate for a project is to apply a WACC that applies to the entire firm, but a higher discount rate may be appropriate when a project's risk is higher than the risk of the firm as a whole.

**Internal rate of return**

The internal rate of return (IRR) is defined as the discount rate that gives a net present value (NPV) of zero. It is a commonly used measure of investment efficiency.

The IRR method will result in the same decision as the NPV method for (non-mutually exclusive) projects in the usual cases where a negative cash flow occurs at the start of the project, followed by all positive cash flows, and projects that have an IRR higher than the hurdle rate should be accepted. Nevertheless, for mutually exclusive projects, the decision rule of taking the project with the highest IRR - which is often used - may select a project with a lower NPV.

In some cases, several zero NPV discount rates may exist, so there is no unique IRR. The IRR exists and is unique if one or more years of net investment (negative cash flow) are followed by years of net revenues. But if the signs of the cash flows change more than once, there may be several IRRs. The IRR equation generally cannot be solved analytically but only via iterations.

One shortcoming of the IRR method is that it is commonly misunderstood to convey the actual annual profitability of an investment. However, this is not the case because intermediate cash flows are almost never reinvested at the project's IRR; and, therefore, the actual rate of return is certainly going to be lower. Accordingly, a measure called Modified Internal Rate of Return (MIRR) is often used in concert. In a budget-constrained environment, efficiency measures should be used to maximize the overall NPV of the firm.

Despite a strong academic preference for NPV, surveys indicate that executives prefer IRR over NPV[citation needed], although they should be used in concert. In a budget-constrained environment, efficiency measures should be used to maximize the overall NPV of the firm.

**Capital budgeting (or investment appraisal)** is the planning process used to determine whether a firm's long-term investments such as new machinery, replacement machinery, new plants, new products, and research development projects are worth pursuing. It is budgeted for major capital, or investment, expenditures.[1]

Many formal methods are used in capital budgeting, including the techniques such as:

- Accounting rate of return
- Net present value
- Internal rate of return
- Modified internal rate of return

CIVIL-IV
These methods use the incremental cash flows from each potential investment, or project. Techniques based on accounting rules are sometimes used—though economists consider this to be improper—such as the accounting rate of return, and "return on investment." Simplified and hybrid methods are used as well, such as payback period and discounted payback.

Each potential project's value should be estimated using a discounted cash flow (DCF) valuation, to find its net present value (NPV). First applied to Corporate Finance by Joel Dean in 1951; see also Fisher separation theorem, John Burr Williams: Theory. This valuation requires estimating the size and timing of all of the incremental cash flows from the project. These future cash flows are then discounted to determine their present value. These present values are then summed, to get the NPV. See also Time value of money. The NPV decision rule is to accept all positive NPV projects in an unconstrained environment, or if projects are mutually exclusive, accept the one with the highest NPV.

**NET PRESENT VALUE**

The NPV is greatly affected by the discount rate, so selecting the proper rate—sometimes called the hurdle rate—is critical to making the right decision. The hurdle rate is the minimum acceptable return on an investment. It should reflect the riskiness of the project, the volatility of cash flows, and must take into account the financing mix. Managers may use models such as the CAPM or the APT to estimate a discount rate appropriate for each particular project, and use the weighted average cost of capital (WACC) to reflect the financing mix selected. A common practice in choosing a discount rate for a project is to apply a WACC that applies to the entire firm, but a higher discount rate may be more appropriate when a project's risk is higher than the risk of the firm as a whole.

**Internal rate of return**

The internal rate of return (IRR) is defined as the discount rate that gives a net present value (NPV) of zero. It is a commonly used measure of investment efficiency. The IRR method will result in the same decision as the NPV method for (non-mutually exclusive) projects in an unconstrained environment. In most realistic cases, all independent projects that have an IRR higher than the hurdle rate should be accepted. Nevertheless, for mutually exclusive projects, the decision rule of taking the project with the highest IRR—which is often used—may select a project with a lower NPV.

In some cases, several zero NPV discount rates may exist, so there is no unique IRR. The IRR exists and is unique if one or more years of net investment (negative cash flow) are followed by years of net revenues. But if the signs of the cash flows change more than once, there may be several IRRs. The IRR equation generally cannot be solved analytically but only via iterations.

One shortcoming of the IRR method is that it is commonly misunderstood to convey the actual annual profit that is generated by the project. The IRR is not the case because intermediate cash flows are almost never reinvested at the project's IRR; and, therefore, the actual rate of return is almost certainly going to be lower. Modified Internal Rate of Return (MIRR) is often used.

Despite a strong academic preference for NPV, surveys indicate that executives prefer IRR over NPV[citation needed], although they should be used in concert. In a budget-constrained environment, efficiency measures should be used to maximize the overall NPV of the firm. Some managers find it intuitively more appealing to evaluate investments in terms of percentage rates of return than dollars of NPV.

**Average rate of return**

Definition

Method of investment appraisal which determines return on investment by totaling the cash flows (over the years invested) and dividing that amount by the number of years.
One way of measuring an investment's profitability. To calculate, one takes the total net earnings, divides by the total number of years the investment was held, and then divides that answer by the investment's initial acquisition cost.

Example: Rainer spent $800,000 to buy an apartment building. After deducting all operating expenses, real estate taxes, and insurance, she receives $65,000 in the first year, $71,000 in the second year, $69,000 in the third year, and $70,000 in the fourth year. The total net earnings are $275,000. Divide that number by the 4 years being analyzed, to reach $68,750 as an average annual return. Divide $68,750 by the initial $800,000 investment to calculate the average rate of return of 8.59 percent.

Drawback: The procedure does not take into account the time value of money. The $65,000 received in the first year was more valuable than the $70,000 received in the fourth year, because the $65,000 could have been invested to earn still more money.

Payback period in capital budgeting refers to the period of time required for the return on an investment to equal the sum of the original investment. For example, a $1000 investment which returned $500 per year would have a two year payback period. Payback period intuitively measures how long something takes to "pay for itself." All else being equal, shorter payback periods are preferable to longer payback periods. Payback period is widely used due to its ease of use despite recognized limitations, described below.

The payback period is also widely used in other types of investment areas, often with respect to energy efficiency projects, maintenance, upgrades, or other changes. For example, a compact fluorescent light bulb may be described as having a payback period of a certain number of years or operating hours, assuming certain costs. Here, the return to the investment consists of reduced operating costs and the concept of a payback period is occasionally extended to other uses, such as energy payback period (the amount of energy saved in a project equal the amount of energy expended since project inception); these other terms may not be standardized.

Payback period as a tool of analysis is often used because it is easy to apply and easy to understand for managers, regardless of training or field of endeavor. When used carefully or to compare similar investments, it can be quite useful. An investment with "doing nothing," payback period has no explicit criteria for decision-making (except, perhaps, that the payback period should be less than infinity).

The payback period is considered a method of analysis with serious limitations and qualifications for its use. For the time value of money, risk, financing or other important considerations, such as the opportunity cost, it is not rectified by applying a weight average cost of capital discount, it is generally agreed that this tool for investment decision-making should not be used in isolation. Alternative measures of "return" preferred by economists are net present value and internal rate of return. An implicit assumption in the use of payback period is that returns to the investment continue after the payback period. Payback period does not specify any required comparison to other investments or even to not making an investment.

There is no formula to calculate the payback period, excepting the simple and non-realistic case of the initial cash outlay and further constant cash inflows or constant growing cash inflows. To calculate the payback period an algorithm is needed. It is easy to apply in spreadsheets. The typical algorithm reduces to the calculation of cumulative cash flow and the moment in which it turns to positive from negative. Additional complexity arises when the cash flow changes sign several times, that is it contains outflows in the midst or at the end of the project lifetime. The modified payback period algorithm may be applied then. Firstly, the sum of all of the cash flows is calculated. Then the cumulative positive cash flows are determined for each period. The modified payback period is calculated as the moment in which the cumulative positive cash flow exceeds the total cash outflow.

BREAK-EVEN ANALYSIS

A fundamental of accounting is that all revenues and costs must be accounted for and the difference, profit, or loss, of the business. Costs can be classified as either a fixed cost or a variable cost. A fixed cost is sales; rather, it is related to the passage of time. Examples of fixed costs include rent, salaries and insurance.
related to the level of sales, such as cost of goods sold and commissions. The revenue curve related to unit sales, as well as the variable costs of production are generally depicted graphically in the following manner:

The revenues increase at a decreasing rate since, as you may recall from economics, the only way to gain more sales from competitors is to lower your price. The variable cost curve reflects both increasing and decreasing returns to scale. The objective of production efforts is to operate at that level that maximizes the profits, indicated on the graph as $Q^*$ units.

For our purposes, we will assume that the revenues and costs are linear, at least within the relevant range of output where we can reasonably anticipate operating, at least in the short-run. For instance, the lower end may be certain contracts that the company has, while the upper end may be defined by plant capacity.
These relationships can be expressed as

\[
\text{Revenues} = \text{Fixed Costs} + \text{Variable Costs} + \text{Profit}
\]

or

\[
P*Q = FC + V*Q + \pi
\]

**Starting a Business**

Suppose you intend to open a franchise business to supply a nationally-known line of women’s shoes, Al Bundy’s Bunion-Frees for Women. You’ve found a good location in a strip mall to open your shop, and have determined that the average prices and costs of operating the store are:

- **Price** = $50 per pair
- **Cost** = $30 per pair
- **Rent** = $2,500 per month
- **Insurance** = $500 per month
- **Utilities & Telephone** = $300 per month

CIVIL-IV
In addition, you plan to hire two salespersons on a commission basis of 10% in order to provide them with incentive to sell shoes. The fixed costs are $3,300 per month while the variable costs are $35 per pair ($30 cost plus $5 commission). To determine the breakeven, we set the profit to zero and solve for Q:

\[ P \times Q = FC + V \times Q + \pi \]

\[ 50Q = 3,300 + 35Q + 0 \]

\[ 15Q = 3,300 \]

\[ Q = 220 \]

Two hundred pairs of shoes must be sold each month in order to yield total revenues of $11,000 to cover the fixed costs of $3,300 and the variable costs of $7,700 ($6,600 for the shoes and $1,100 in commissions). The breakeven point can be written as

Breakeven Point \( Q = \frac{FC}{P - V} \)

The denominator, \( P - V \), is referred to as the contribution margin; i.e., the dollar amount per sale that is contributed towards covering the fixed costs (or towards profits after fixed costs are covered). The breakeven point can be written in dollar terms as well:

Breakeven in Sales \( = P \times Q = \frac{FC}{\frac{V}{1 - \frac{V}{P}}} \)

The denominator of this equation is the same as the gross profit margin.

But we don’t go into business to just break even. Suppose we want to show a before-tax profit of $6,000 per month on our investment in the firm. What do monthly sales have to be in order to accomplish this?

\[ P \times Q = FC + V \times Q + \pi \]

\[ 50Q = 3,300 + 35Q + 6,000 \]

\[ 15Q = 9,300 \]

\[ Q = 620 \]

The number of pairs of shoes that must be sold to generate a fair profit on the investment has increased substantially. Total revenues will now be $31,000 while fixed costs remain $3,300 and variable costs amount to $21,700 (consisting of $18,600 for purchasing the shoes and $3,100 in commissions).

The commissions of $3,100 amounts to $1,550 per salesperson. Suppose we pay a fixed wage rate of $1,200 per month to the two employees rather than a commission. What happens to the breakeven point now?
The breakeven point has gone up from 220 pairs of shoes to 285 pairs per month that must be sold. Why?

The reason is because we now have higher fixed costs due to the fact that we have guaranteed a fixed income to our salespeople. How many shoes do we need to sell in order to make a profit of $6,000 per month if we pay each of our two salespersons $1,200 per month?

\[
\begin{align*}
\text{P} \times \text{Q} &= \text{FC} + \text{V} \times \text{Q} + \pi \\
50 \times \text{Q} &= 5,700 + 30 \times \text{Q} + 6,000 \\
10 \times \text{Q} &= 11,700 \\
\text{Q} &= 585
\end{align*}
\]

The number of pairs of shoes that we need to sell to earn our required profit has now fallen from 620 to only 585 pairs.

This effect is referred to as operating leverage and has the same effect as we saw with financial leverage inasmuch as it magnifies profits and losses. Operating leverage is the substitution of a fixed cost in place of a variable cost. Losses can be bigger at low sales levels (compare breaking even at 220 shoes when we pay commissions versus being below breakeven for a salary basis of compensation) because we must make the fixed payments of a salary no matter what sales we experience. What is the fixed cost that must be paid in the case of financial leverage? (Interest expense.)

Larger profits can also be realized since, once the fixed costs are covered, more money per unit of sales is contributed toward profit since our variable costs are lower. Thus, with a fixed salary compensation scheme, $20 per pair of shoes is going towards higher profit after we reach $6,000 in profits at a sales level of 585 pairs, whereas the commission basis has not even reached the level of the minimum $6,000 profit until sales reach 620 pairs. Graphically,
The increase in the variability of the profits (the difference between the revenue line and the total cost line of each alternative) translates into higher risk for the salaried alternative. This greater variability can be seen in the following graph:

**Profit–volume graph**

*Profit–volume chart*
Illustration

When sales are zero, there will be a loss equal to the fixed cost, which gives the first point to plot at (…………………..).

When 900 units are sold the sales are £810 and the profit is £160, giving the second point to plot at (…………………..).

*Profit-volume chart using data from the case study 'Market trader'*

*Beyond the breakeven point*

A dry-cleaning shop takes two types of clothing. Jackets cost £6 to clean and the customer is charged £9 per garment. Coats cost £10 to clean and the customer is charged £12 per garment. The monthly fixed costs are £600 for each garment (representing the rental costs of two different types of machine). The shop expects to take in 500 jackets and 500 coats in the month.

*Calculation of breakeven point and of sales beyond the breakeven point*
Take as an example the dry-cleaning business of the previous illustration. If the selling price of cleaning a coat rises to £15 then the contribution per unit will rise to £……. That will require cleaning only ………… coats to break even. The ……….. of raising the price is that customers may move elsewhere so that while it may not be difficult to exceed the breakeven point at a selling price of £12 it may be extremely difficult at a selling price of £15.

Applications of contribution analysis

- Accepting a special order to use up spare capacity.
- Abandoning a line of business.
- The existence of a limiting factor.
- Carrying out an activity in-house rather than buy in a service under contract.