Master of Business Administration

(Open and Distance Learning Mode)

Semester – I

Managerial Economics

Centre for Distance and Online Education (CDOE)

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Managerial Economics

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Objectives

After studying this unit, you should be able to understand the following topics:

- Introduction to economics
- Problem of choice
- Fundamental economic concepts
- Nature and scope of economics
- Micro- and Macro-Economics: Features, merits and demerits, and differences.

1.1 Introduction

Economics may appear to be the study of complicated tables and charts, statistics and numbers, but, more specifically, it is the study of what constitutes rational human behavior in the endeavor to fulfill needs and wants.

As an individual, for example, you face the problem of having only limited resources with which to fulfill your wants and needs, as a result, you must make certain choices with your money. You'll probably spend part of your money on rent, electricity and food. Then you might use the rest to go to the movies and/or buy a new pair of jeans. Economists are interested in the choices you make, and inquire into why, for instance, you might choose to spend your money on a new DVD player instead of replacing your old TV. They would want to know whether you would still buy a carton of cigarettes if prices increased by $2 per pack. The underlying essence of economics is trying to understand how both individuals and nations behave in response to certain material constraints.

Economics is a discipline which deals with the broad issue of resource allocation. Within it, an ongoing debate is raging over the question o how best to organise economic activities such that the allocation of resources will achieve that which society desires. A debate which feeds into political discussions in a way that exposes all members of society to the consequences of economic analysis. The academic side of Economics provides the concepts, tools of analysis and reasoning upon which such a debate is based. To be able to understand the logic of an existing system or the motivation behind the drive for its change one must possess a reasonable

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understanding of economics as an academic discipline. Besides the obvious benefits to society from having better informed citizens, such an understanding can provide one with the ability to benefit most from the system; an ability and drive which are naturally taken into account in economic analysis.

To some of you, economics is not the main area of study and this introductory course is just one of those things which you have to endure in order to receive the academic qualification. May I remind you that the purpose of an academic programme is not to tell you what various things are. Instead, its aim is to help you develop academic skills, the most important of which is a creative and critical way of thinking about almost anything. The fact that not all students are therefore required to take courses only in mathematics, logic and philosophy is merely an indication that nowadays, we have a more sophisticated conception of what critical and creative thinking means. We came to realise that different areas of our interest have their own particular features which are necessary for the development of relevant academic skills. Of course, studying mathematics, logic and philosophy will not reduce one's critical abilities but they cannot provide the entire scope of considerations which the social sciences demand. Learning what things are will provide you with some knowledge but will not provide you with the skill of analytical thinking. Therefore, the academic programme has been carefully design to provide students of the social sciences with the necessary exposure to the more fundamental methods of analysis that will, we hope, equip you for life with an ability to understand the broad dimensions of society, contribute to it and benefit from it. The implications of this is that the course which you are now beginning to study will sometimes appear intimidating. It is indeed a complex subject.

Still, it is our view (and experience) that with patience and work everyone can gain the necessary command over it. The purpose of this subject guide is to assist you in your endeavour and to guide you through the labyrinth of material, levels of knowledge and examination standards. There are, as I am sure you know, numerous textbooks at the introductory level. However, most of them cater for the American market with its unique characteristics and in particular, the notion of general undergraduate studies. This is in contrast with the British (and European) system where degrees are specialised. This means that the level of knowledge, in economics, which is required of a student by the end of their study is much greater than that which would be required of them had they pursued a general degree. Consequently, the spacing of that knowledge over three years requires a much more rigorous introductory course than is offered by most textbooks. I would therefore strongly advise against picking a single textbook and concentrating one's effort on it. Instead, you should conduct your study along the lines and recommendations of this subject guide. In it you will find a well-focused organisation of the subject which will highlight those things which we deem to be important. You will find, on each topic, references to readings from a set of textbooks which will help you understand each topic through the use of different methods of exposition. At the end of each topic you will find worked-out past exam questions which will enable you to enhance your understandings as well as help you prepare yourself for the examination.

There are a few sections in the subject guide which are slightly more difficult than others. They are there because we wish to cater for the interested student as much as we would like to support the one who is struggling. We believe that as time is an important factor in the learning process, even the struggling student will reach the point in time where they will wish to expand their knowledge. Naturally, as we must distinguish between the process and learning from the process of assessment, the sections in the guide which we deem difficult will be clearly marked. If they are not essential for examination purposes, you will be advised that you may skip the section and come back to it at your leisure.

To know about economics it is indeed sufficient to read about the various economic concepts. Then, whenever you encounter them you will understand what is meant by these concepts. Almost like being able to recognise the meaning of words in a foreign

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language. But this, as I am sure you will agree, is far from being sufficient in order to be able to speak the foreign language. To achieve this, one would have to learn a bit of grammar too. Most textbooks tend to teach the 'words' which are used in economics. We wish to teach you its 'grammar'. To know what the concepts are one must not only acquaint one's self with the meaning of these concepts but one must also be able to use them. This means that after learning about the concept, one must do as many exercises as possible. Exercises, however, can sometimes be misleading. A question like 'explain the meaning of concept A' is not an exercise question. An exercise is a problem where the student is expected to:

a. choose the right model, or concept, with which to deal with the problem

b. use the model, or the concept, to derive a solution to the problem.

Definition: "Economics is a Social Science which studies human behavior as a relationship between multiple ends and scarce resources which have alternate uses."

In this definition three terms are used: Multiple Ends i.e wants are unlimited, Scarce Resources i.e resources are scarce and Multiple Uses i.e. the resources have multiple uses.

Consequently, we can say that Economics studies human behavior that how he meet his/her unlimited wants and desires through managing his/her scarce resources and by making optimal choice about best use of the resources among their alternate uses. There the concept of preference is developed that to manage multiple wants from limited (scarce) resources he/she has to preferential about the choices. He/she may prefer his/her one want or desire over other then first he/she may fulfill his/her more preferred choice first because of the Scarcity of resources.

1.2 Problem of Choice

Scarcity, or limited resources, is one of the most basic economic problems we face. We run into scarcity because while resources are limited, we are a society with unlimited wants. Therefore, we have to choose. We have to make trade-offs. We have to efficiently allocate resources. We have to do those things because resources are limited and cannot meet our own unlimited demands.

Without scarcity, the science of economics would not exist. Economics is the study of production, distribution, and consumption of goods and services. If society did not have to make choices about what to produce, distribute, and consume, the study of those actions would be relatively boring. Society would produce, distribute, and consume an infinite amount of everything to satisfy the unlimited wants and needs of humans. Everyone would get everything they wanted, and it would all be free. But we all know that is not the case. The decisions and trade-offs society makes due to scarcity is what economists study.

Let's take two scarce goods - shark meat and chicken. Both have a non-zero cost/price, but we would all agree shark meat is much more expensive to buy than chicken. Why is that? The resources to produce shark meat are largely limited by the labor and capital it takes to catch a shark, while the labor and capital required to produce chickens is less limiting. Even though the resources to produce both are limited, there is much more labor and capital available to produce chicken meat than shark meat. Not to mention the quantity of sharks is also much more limited than that of chickens. Factors like production costs and labor affect the cost of scarce items.

All societies face the economic problem, which is the problem of how to make the best use of limited, or scarce, resources. The economic problem exists because, although the needs and wants of people are endless, the resources available to satisfy needs and wants are limited.

Limited resources:

1. Resources are limited in two essential ways:

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2. Limited in physical quantity, as in the case of land, which has a finite quantity.
3. Limited in use, as in the case of labour and machinery, which can only be used for one purpose at any one time.

Choice and opportunity cost:

Choice and opportunity cost are two fundamental concepts in economics. Given that resources are limited, producers and consumers have to make choices between competing alternatives. All economic decisions involve making choices. Individuals must choose how best to use their skill and effort, firms must choose how best to use their workers and machinery, and governments must choose how best to use taxpayer's money.

Making an economic choice creates a sacrifice because alternatives must be given up, which results in the loss of benefit that the alternative would have provided. For example, if an individual has £10 to spend, and if books are £10 each and downloaded music tracks are £1 each, buying a book means the loss of the benefit that would have been gained from the 10 downloaded tracks. Similarly, land and other resources, which have been used to build a new school could have been used to build a new factory. The loss of the next best option represents the real sacrifice and is referred to as opportunity cost. The opportunity cost of choosing the school is the loss of the factory, and what could have been produced.

It is necessary to appreciate that opportunity cost relates to the loss of the next best alternative, and not just any alternative. The true cost of any decision is always the closest option not chosen.

Samuelson's three questions

America’s first Nobel Prize winner for economics, the late Paul Samuelson, is often credited with providing the first clear and simple explanation of the economic problem - namely, that in order to solve the problem of scarcity all societies, no matter how big or small, developed or not, must endeavour to answer three basic questions.

What to produce?

Societies have to decide the best combination of goods and services to meet their needs. For example, how many resources should be allocated to consumer goods, and many resources to capital goods, or how many resources should go to schools, and how many to defence, and so on.

How to produce?

Societies also have to decide the best combination of factors to create the desired output of goods and services. For example, precisely how much land, labour, and capital should be used produce consumer goods such as computers and motor cars.

For whom to produce?

Finally, all societies need to decide who will get the output from the country’s economic activity, and how much they will get. For example, who will get the computers and cars that have been produced? This is often called the problem of distribution.

An economic problem is basically the problem of choice which arises because of scarcity of resources. Human wants are unlimited but means to satisfy them are limited. Therefore, all human wants cannot be satisfied with limited means. Wants differ in intensity and limited resources have alternative uses. In such a background, every consumer tries to satisfy his maximum wants. Therefore, one has to choose as to what goods one should consume and in what quantity. Economic problem arises the moment problem of choice arises. Actually speaking, economic problem is basically the problem of choice.

1.3 Fundamental Economic Concepts

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The world in which we exist is composed of scarce (finite / limited) resources that can be used to satisfy our virtually limitless needs, wants, and desires; more specifically the world is composed of scare resources with alternative uses.

Human preferences and circumstances vary greatly. Individuals assign a particular value to an available resource through a process of individual thought. The concept of value apart from an individual living being is not possible. Because the concept of value applies only in relation to individual preference toward specific available resources at a specific point in time, value is subjective in this regard.

For example, a person in the desert may value a cold beverage differently than a person at home on the coach who just finished drinking a large glass of lemonade.

Goods are items existing in scarce quantity that have subjective value to an individual. An apple or a dump truck might be a good. An element in a far off universe that has yet to be discovered is not a good.

Scarcity

You implicitly understand scarcity, whether you are aware of it or not. It is the most basic concept in economics, and is more of a solid fact than any abstraction. Simply put, the world has limited means to meet unlimited wants, so there is always a choice to be made. For example, there is only so much wheat grown every year. Some people want bread; some people want cereal; some people want beer, and so on. Only so much of any one product can made because of the scarcity of wheat. How do we decide how much flour should be made for bread? Or, more importantly, how much beer to make? One answer is a market system.

Supply and Demand

The market system is driven by supply and demand. Take beer again. Let's say people want more beer, meaning the demand for beer is high. This demand means you can charge more for beer, so you can make more money on average by changing wheat into beer than grounding that same wheat into flour. More people start making beer and, after a few production cycles, there is so much beer on the market that prices plummet. Meanwhile, the price of flour has been increasing as the supply shrinks, so more producers buy up wheat for the purpose of making flour - and on, and on.

This extreme and simplified example does encapsulate the wonderful balancing act that is supply and demand. The market is generally much more responsive in real life, and true supply shocks are rare – at least ones caused by the market are rare. On a basic level, supply and demand helps explain why last year's hit product is half the price the following year.

Costs and Benefit

The concept of costs and benefits encompass a large area of economics that has to do with rational expectations and rational choices. In any situation, people are likely to make the choice that has the most benefit to them, with the least cost, or, put another way, the choice that provides more in benefits than it costs. Going back to beer, the breweries of the world will hire more employees to make more beer, only if the price of beer and the sales volume justifies the additional costs to the payroll and the materials needed to brew more. Similarly, the consumer will buy the best beer he or she can afford, not, perhaps, the best tasting beer in the store.

This extends far beyond financial transactions. University students perform cost benefit analysis on a daily basis, by focusing on certain courses that they believe will be more important for them, while cutting the time spent studying or even attending courses that they see as less necessary.

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Of course, everyone knows someone who has seemingly made a poor life choice. Although people are generally rational, there are many, many factors that can throw our internal accountant out the window. Advertising is one that everyone is familiar with. Commercials tweak emotional centers of our brain and do other clever tricks to fool us into overestimating the benefits of a given item. Some of these same techniques are used quite adeptly by the lottery, showing a couple sailing a yacht and enjoying a carefree life. This image and its emotional message ("this could be you") overwhelm the rational part of your brain that can run the very, very long odds of actually winning. Cost and benefits may not rule your mind all the time, but they are in charge more than you think - especially when it comes to the next concept.

Everything Is in the Incentives

Incentives are part of costs and benefits and rational expectations, but they are so important that they are worth further examination. Incentives make the world go round, and sometimes go wrong. If you are a parent, a boss, a teacher or anyone with the responsibility of oversight, and things are going horribly awry, the chances are very good that your incentives are out of alignment with what you want to achieve.

We'll take a safe example, however, of – you guessed it – a brewery. This particular brewery has two sizes of bottle: one 500ml bottle and a 1L bottle for couples. The owner wants to increase production, so he offers a bonus to the shift that produces the most bottles of beer in a day. Within a couple days, he sees production numbers shoot up from 10,000 bottles a day to 15,000. However, he is soon deluged with calls from suppliers wondering when the shipments of the 1L bottles are going to come. The problem, of course, is that his incentive focused on the wrong thing – the number of the bottles rather than the volume of beer – and made it "beneficial" for the competing shifts to cheat by only using the smaller bottles.

When incentives are aligned with organizational goals, however, the benefits can be exceptional. Some incentives have been proven so effective that they are common practice at many firms, such as profit sharing, performance bonuses and employee shareholding. However, even these incentives can turn disastrous if the criteria for the incentives falls out of alignment with the original goal. Poorly structured performance bonuses, for example, have driven many a CEO to take temporary measures to juice the financial results enough to get the bonus – measures that often turn out to be detrimental in the longer term.

Putting It All Together

Scarcity is the overarching theme of all economics. It sounds negative, and it is one of the reasons economics is referred to as the dismal science, but it simply means that choices have to be made. These choices are decided by the costs and benefits that impact the choice, leading to a dynamic market system where choices are played out through supply and demand. On a personal level, scarcity means that we have to make choices based on the incentives we are given and the cost and benefits of different courses of action. This is a very broad look at what is, believe it or not, a very compelling subject. These concepts feed into others, like comparative advantage, entrepreneurial spirit, marginal benefit and so on. The world is wide with choices, so the field of economics is wide with theories, laws and concepts that explore those choices.

Opportunity Cost

Both micro and macro economics make abundant use of the fundamental concept of opportunity cost. In everyday life, we apply the notion of opportunity cost even if we are unable to articulate its significance. In Managerial Economics, the opportunity cost concept is useful in decision involving a choice between different alternative courses of action.

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Resources are scarce, we cannot produce all the commodities. For the production of one com-modity, we have to forego the production of another commodity. We cannot have everything we want. We are, therefore, forced to make a choice.

Opportunity cost of a decision is the sacrifice of alternatives required by that decision. Sacrifice of alternatives is involved when carrying out a decision requires using a resource that is limited in supply with the firm. Opportunity cost, therefore, represents the benefits or revenue forgone by pursuing one course of action rather than another.

The concept of opportunity cost implies three things:

1. The calculation of opportunity cost involves the measurement sacrifices
2. Sacrifices may be monetary or real.
3. The opportunity cost is termed as the cost of sacrificed alternatives.

Opportunity cost is just a notional idea which does not appear in the books of account of the company. If resource has no alternative use, then its opportunity cost is nil.

Trade-off

Have you ever had to make a decision about spending your money today versus tomorrow? For example, you might ask yourself, 'Should I go out to dinner tonight, or would I rather save my money so I can go to the movies tomorrow?' You probably make decisions like this several times a day without even realizing it. Since your resources - such as time and money - are limited, you must choose how to best allocate them by making some trade-offs. Let's learn a little more about trade-offs and why understanding this concept will help you make better decisions about your time and money.

In economics, the term trade-off is often expressed as an opportunity cost, which is the most preferred possible alternative. A trade-off involves a sacrifice that must be made to get a certain product or experience. A person gives up the opportunity to buy 'good B,' because they want to buy 'good A' instead. For a person going to a baseball game, their economic trade-off is the money and time spent at the ballpark, as compared to the alternative of watching the game at home and saving their money, plus the time spent driving to the ball game.

Time Value of Money

Money has time value. A rupee today is more valuable than a year hence. It is on this concept “the time value of money” is based. The recognition of the time value of money and risk is extremely vital in financial decision making.

Most financial decisions such as the purchase of assets or procurement of funds, affect the firm’s cash flows in different time periods. For example, if a fixed asset is purchased, it will require an immediate cash outlay and will generate cash flows during many future periods. Similarly if the firm borrows funds from a bank or from any other source, it receives cash and commits an obligation to pay interest and repay principal in future periods. The firm may also raise funds by issuing equity shares. The firm’s cash balance will increase at the time shares are issued, but as the firm pays dividends in future, the outflow of cash will occur. Sound decision-making requires that the cash flows which a firm is expected to give up over period should be logically comparable. In fact, the absolute cash flows which differ in timing and risk are not directly comparable. Cash flows become logically comparable when they are appropriately adjusted for their differences in timing and risk. The recognition of the time value of money and risk is extremely vital in financial decision-making. If the timing and risk of cash flows is not considered, the firm may make decisions which may allow it to miss its objective of maximising the owner’s welfare. The welfare of owners would be maximised when Net Present Value is created from making a financial decision. It is thus, time value concept which is important for financial decisions.

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Thus, we conclude that time value of money is central to the concept of finance. It recognizes that the value of money is different at different points of time. Since money can be put to productive use, its value is different depending upon when it is received or paid. In simpler terms, the value of a certain amount of money today is more valuable than its value tomorrow.

Cost-benefit analysis

Cost-Benefit Analysis (CBA) estimates and totals up the equivalent money value of the benefits and costs to the community of projects to establish whether they are worthwhile. These projects may be dams and highways or can be training programs and health care systems.

Many costs and benefits are not obvious the first time you think about a question. Economists describe those costs and benefits as "hidden." For example, if you make an agreement with your roommate that you will do the cooking and he'll wash the dishes, you both may have forgotten initially that some of the meals you both like to eat entail way more dirty pots and pans than either of you realized. There was a hidden cost involved. Practicing thinking like an economist will help you anticipate a lot of potential hidden costs and benefits.

A particular kind of hidden cost is what economists call an "unintended consequence." Unintended consequences--after-the-fact fallouts, byproducts, or repercussions after embarking on a course of action that was based on a careful initial study of costs and benefits--often involve an unanticipated change in incentives. For example, if you live in a town where there is almost no undeveloped land left, you may be in favor of a new law allowing the town to buy up all the remaining farmland to use for town parks. You probably understand that there will be some extra taxes to buy the land and to maintain the land as parkland so it doesn't devolve into weeded, unusable overgrowth. You may even understand that the town is sacrificing the collection of higher tax revenues it might have gotten had the land been sold to other homeowners or businesses. But did you also think about the possibility that private citizens and companies in the town, now more stressed than ever for land, may now have an incentive to build taller houses and office buildings, or may expand their existing houses on the land they own to the boundaries of their property because they can't buy and move to larger plots and still stay in the town, say, as they have a second child and want a bigger house but want to stay in the same school district? Economists describe this as an unintended consequence. Not everyone is affected alike, even when the best of intentions are initially involved.

Division of Labor, and Specialization

Specialization is a wide economic concept that is used to describe the process of separation of various tasks within a system or a firm. Specialization will give each individual a chance to specialize in the area that one is best in. In the context of economics it describes the specialization of all the factors of productions. The factors of productions that are subjected to specializations are land, labor, capital and entrepreneurship. This different category gives rise to the four categories of specialization, land specialization, capital specialization, labor specialization or division of labor. Specialization will help in the accomplishment of some of unattainable goals of the factors of productions. In all the cases of specialization all the individual of the system will become very dependent on other units and will be difficult to work outside the specialized systems.

Division of labor on the other hand is the cooperative specialization of labor. Division of labor can be dated as early as the start of civilization and was practiced by the Sumerians to group different jobs according to various skills of the members of the society. Division of labor is historically associated with increased growth in total output and is viewed as the rise of capitalism. It also helps to solve some of the most complex industrialization Processes. Division of labor as explained by Adam smith can be restricted based on the market extent. Adam has suggested that the bigger the market

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the higher the specialization. It can then be deduced that the global market that we are currently enjoying has resulted to so much specialization. The conditions for specialization to thrive on the global market are a free trade, free mobility and migration of labor. The process of specialization brings the law of comparative advantage into the mind. It is commonly referred to as the law of association by many economists. This is so because division of labor, free trade, specialization and law of comparative advantage results into a relationship between individuals.

Every concept and idea has its main pros and cons. In specialization although there is increased efficiency and increase in productivity, there are several conflicts that will arise between the different specialized units. The conflicts might hinder the growth of the firm or job dissatisfaction by the employees of the company. Further specialization can act as an impediment to communication among the specialized units. Another disadvantage of specialization is that it can lead to burnout and boredom to the employees. An employee will have to repeat the same procedure each day for the whole year and denies the employees a chance to explore new areas. The above problems associated with specialization and division of labor is being addressed and some of the solution that has been given out are changing the structures of companies to commitment oriented approach and increase the scope of specialization.

1.4 Nature and Scope of Economics

In discussing the scope of economics, we have to indicate whether it is a science or an art and a positive science or a normative science. It also covers the subject matter of economics.

Economics - A Science and an Art

1. **Economics is a science:** Science is a systematized body of knowledge that traces the relationship between cause and effect. Another attribute of science is that its phenomena should be amenable to measurement. Applying these characteristics, we find that economics is a branch of knowledge where the various facts relevant to it have been systematically collected, classified and analyzed. Economics investigates the possibility of deducing generalizations as regards the economic motives of human beings. The motives of individuals and business firms can be very easily measured in terms of money. Thus, economics is a science. Economics - A Social Science: In order to understand the social aspect of economics, we should bear in mind that labourers are working on materials drawn from all over the world and producing commodities to be sold all over the world in order to exchange goods from all parts of the world to satisfy their wants. There is, thus, a close inter-dependence of millions of people living in distant lands unknown to one another. In this way, the process of satisfying wants is not only an individual process, but also a social process. In economics, one has, thus, to study social behaviour i.e., behaviour of men in-groups.
2. **Economics is also an art.** An art is a system of rules for the attainment of a given end. A science teaches us to know; an art teaches us to do. Applying this definition, we find that economics offers us practical guidance in the solution of economic problems. Science and art are complementary to each other and economics is both a science and an art.

Positive and Normative Economics: Economics is both positive and normative

1. **Positive science:** It only describes what it is and normative science prescribes what it ought to be. Positive science does not indicate what is good or what is bad to the society. It will simply provide results of economic analysis of a problem.
2. **Normative science:** It makes distinction between good and bad. It prescribes what should be done to promote human welfare. A positive statement is based on facts. A normative statement involves ethical values.

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1.5 Subject Matter of Economics

Economics can be studied through traditional approach and modern approach.

1. **Traditional Approach:** Economics is studied under five major divisions namely consumption, production, exchange, distribution and public finance.
   - *Consumption:* The satisfaction of human wants through the use of goods and services is called consumption.
   - *Production:* Goods that satisfy human wants are viewed as "bundles of utility". Hence production would mean creation of utility or producing (or creating) things for satisfying human wants. For production, the resources like land, labour, capital and organization are needed.
   - *Exchange:* Goods are produced not only for self-consumption, but also for sales. They are sold to buyers in markets. The process of buying and selling constitutes exchange.
   - *Distribution:* The production of any agricultural commodity requires four factors, viz., land, labour, capital and organization. These four factors of production are to be rewarded for their services rendered in the process of production. The land owner gets rent, the labourer earns wage, the capitalist is given with interest and the entrepreneur is rewarded with profit. The process of determining rent, wage, interest and profit is called distribution.
   - *Public finance:* It studies how the government gets money and how it spends it. Thus, in public finance, we study about public revenue and public expenditure.
2. **Modern Approach**

   The study of economics is divided into:

   Microeconomics and Macroeconomics.

1.6 Micro and Macro-Economics

Microeconomics refers to more individual or company specific studies in economics. How businesses establish prices, how taxes will impact individual decision making, the concept of supply and demand. So Microeconomics looks at all the small economic decisions and interactions that all add up to the big picture concepts that Macroeconomics looks at.

The study and application of macroeconomics is most commonly employed by businesses, in establishing how they price their products through understanding the needs of consumers. Central to this is the concept of supply and demand and how both factors influence price setting.

1. **Supply:** If there is an overabundance of supply for a specific product, the price will naturally be driven down (assuming demand for that product stays constant). People don't want the product any more than they did before, but since there's so much of that product out there people are only willing to pay a limited amount. Alternatively if supply drops, but the demand stays the same, people are willing to pay a more for that same product.
2. **Demand:** If people want a product more than they previously did, say it's become the 'must have' item of the year, the price for that product will go up if the supply of that product stays the same. People will pay more to obtain the product to make sure they get it. If demand goes down, say something goes out of fashion, there can still be the same amount of it on the market for sale but people don't want it anymore so the price goes down.

These relationships are the key focus of microeconomics and how various factors (i.e. taxes) impact the supply and demand model for products in general. Companies also need to be aware of these concepts in order to set an effective price for their products, to ensure they can maximize their profits.

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Macroeconomics refers to the 'big picture' study of economics, so looking at concepts like industry, country, or global economic factors. Macroeconomics includes looking at concepts like a nation's Gross Domestic Product (GDP), unemployment rates, growth rate, and how all these concepts interact with each other.

Studying and applying macroeconomics is incredibly important at the government level as the policy and economic decision and regulations enacted by government can have a major impact on many aspects of the overall economy.

Extensive study goes into establishing the appropriate interest rates in an economy, where the government sets a base rate and banks work from there. If interest rates goes up:

People may save more money as they get a better return on their deposits Business will invest in less expansion as borrowing money will cost relatively more.

The local currency will go up in value because now deposits in that currency can earn more compared to other currencies.

Inflation will go down, because in general saving is up and spending is down and people are buying less.

The opposite would be expected for each point if interest rates go down.

This gets very complex because 'relatively go up' or 'relatively go down' are very loose relationships and many factors impact decision making also (i.e. taxes & employment rates). Then the impact of the policy decisions of other countries have to be considered also as they impact what happens to a countries economy also.

In theory, macroeconomics can be easy because for each change in a relevant figure it can be assumed that if all other factors are constant, this is what would happen. In reality, all of the factors are constantly shifting and enacting macroeconomic policy is very difficult to manage.

Economists also look at two realms. There is big-picture macroeconomics, which is concerned with how the overall economy works. It studies such things as employment, gross domestic product, and inflation—the stuff of news stories and government policy debates. Little-picture microeconomics is concerned with how supply and demand interact in individual markets for goods and services.

In macroeconomics, the subject is typically a nation—how all markets interact to generate big phenomena that economists call aggregate variables. In the realm of microeconomics, the object of analysis is a single market—for example, whether price rises in the automobile or oil industries are driven by supply or demand changes. The government is a major object of analysis in macroeconomics—for example, studying the role it plays in contributing to overall economic growth or fighting inflation. Macroeconomics often extends to the international sphere because domestic markets are linked to foreign markets through trade, investment, and capital flows. But microeconomics can have an international component as well. Single markets often are not confined to single countries; the global market for petroleum is an obvious example.

The macro/micro split is institutionalized in economics, from beginning courses in "principles of economics" through to postgraduate studies. Economists commonly consider themselves microeconomists or macroeconomists. The American Economic Association recently introduced several new academic journals. One is called Microeconomics. Another, appropriately, is titled Macroeconomics.

Why the divide?

It was not always this way. In fact, from the late 18th century until the Great Depression of the 1930s, economics was economics—the study of how human societies organize the production, distribution, and consumption of goods and services. The field began with the observations of the earliest economists, such as Adam Smith, the Scottish philosopher popularly credited with being the father of economics—although scholars

Notes

were making economic observations long before Smith authored The Wealth of Nations in 1776. Smith's notion of an invisible hand that guides someone seeking to maximize his or her own well-being to provide the best overall result for society as a whole is one of the most compelling notions in the social sciences. Smith and other early economic thinkers such as David Hume gave birth to the field at the onset of the Industrial Revolution.

Economic theory developed considerably between the appearance of Smith's The Wealth of Nations and the Great Depression, but there was no separation into microeconomics and macroeconomics. Economists implicitly assumed that either markets were in equilibrium—such that prices would adjust to equalize supply and demand—or that in the event of a transient shock, such as a financial crisis or a famine, markets would quickly return to equilibrium. In other words, economists believed that the study of individual markets would adequately explain the behavior of what we now call aggregate variables, such as unemployment and output.

The severe and prolonged global collapse in economic activity that occurred during the Great Depression changed that. It was not that economists were unaware that aggregate variables could be unstable. They studied business cycles—as economies regularly changed from a condition of rising output and employment to reduced or falling growth and rising unemployment, frequently punctuated by severe changes or economic crises. Economists also studied money and its role in the economy. But the economics of the time could not explain the Great Depression. Economists operating within the classical paradigm of markets always being in equilibrium had no plausible explanation for the extreme "market failure" of the 1930s.

If Adam Smith is the father of economics, John Maynard Keynes is the founding father of macroeconomics. Although some of the notions of modern macroeconomics are rooted in the work of scholars such as Irving Fisher and Knut Wicksell in the late 19th and early 20th centuries, macroeconomics as a distinct discipline began with Keynes's masterpiece, The General Theory of Employment, Interest and Money, in 1936. Its main concern is the instability of aggregate variables. Whereas early economics concentrated on equilibrium in individual markets, Keynes introduced the simultaneous consideration of equilibrium in three interrelated sets of markets—for goods, labor, and finance. He also introduced "disequilibrium economics," which is the explicit study of departures from general equilibrium. His approach was taken up by other leading economists and developed rapidly into what is now known as macroeconomics.

Coexistence and Complementarity

Microeconomics is based on models of consumers or firms (which economists call agents) that make decisions about what to buy, sell, or produce—with the assumption that those decisions result in perfect market clearing (demand equals supply) and other ideal conditions. Macroeconomics, on the other hand, began from observed divergences from what would have been anticipated results under the classical tradition.

Today the two fields coexist and complement each other.

Microeconomics, in its examination of the behavior of individual consumers and firms, is divided into consumer demand theory, production theory (also called the theory of the firm), and related topics such as the nature of market competition, economic welfare, the role of imperfect information in economic outcomes, and at the most abstract, general equilibrium, which deals simultaneously with many markets. Much economic analysis is microeconomic in nature. It concerns such issues as the effects of minimum wages, taxes, price supports, or monopoly on individual markets and is filled with concepts that are recognizable in the real world. It has applications in trade, industrial organization and market structure, labor economics, public finance, and welfare economics. Microeconomic analysis offers insights into such disparate efforts as making business decisions or formulating public policies.

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Macroeconomics is more abstruse. It describes relationships among aggregates so big as to be hard to apprehend—such as national income, savings, and the overall price level. The field is conventionally divided into the study of national economic growth in the long run, the analysis of short-run departures from equilibrium, and the formulation of policies to stabilize the national economy—that is, to minimize fluctuations in growth and prices. Those policies can include spending and taxing actions by the government or monetary policy actions by the central bank.

Bridging the micro/macro divide

Like physical scientists, economists develop theory to organize and simplify knowledge about a field and to develop a conceptual framework for adding new knowledge. Science begins with the accretion of informal insights, particularly with observed regular relationships between variables that are so stable they can be codified into "laws." Theory is developed by pinning down those invariant relationships through both experimentation and formal logical deductions—called models.

Since the Keynesian revolution, the economics profession has had essentially two theoretical systems, one to explain the small picture, the other to explain the big picture (micro and macro are the Greek words, respectively, for "small" and "big"). Following the approach of physics, for the past quarter century or so, a number of economists have made sustained efforts to merge microeconomics and macroeconomics. They have tried to develop microeconomic foundations for macroeconomic models on the grounds that valid economic analysis must begin with the behavior of the elements of microeconomic analysis: individual households and firms that seek to optimize their conditions.

There have also been attempts to use very fast computers to simulate the behavior of economic aggregates by summing the behavior of large numbers of households and firms. It is too early to say anything about the likely outcome of this effort. But within the field of macroeconomics there is continuing progress in improving models, whose deficiencies were exposed by the instabilities that occurred in world markets during the global financial crisis that began in 2008.

How they differ

Contemporary microeconomic theory evolved steadily without fanfare from the earliest theories of how prices are determined. Macroeconomics, on the other hand, is rooted in empirical observations that existing theory could not explain. How to interpret those anomalies has always been controversial. There are no competing schools of thought in microeconomics—which is unified and has a common core among all economists. The same cannot be said of macroeconomics—where there are, and have been, competing schools of thought about how to explain the behavior of economic aggregates. Those schools go by such names as New Keynesian or New Classical. But these divisions have been narrowing over the past few decades (Blanchard, Dell'Ariccia, and Mauro, 2010).

Microeconomics and macroeconomics are not the only distinct subfields in economics. Econometrics, which seeks to apply statistical and mathematical methods to economic analysis, is widely considered the third core area of economics. Without the major advances in econometrics made over the past century or so, much of the sophisticated analysis achieved in microeconomics and macroeconomics would not have been possible.

Features:

Features of Micro Economics:

Classical economists always insisted on micro economics because they believed that it is better to understand concept at individual level and then go for general (or macro) level. E.g. first understanding individual consumer behaviour and then analyzing the behaviour of entire market.

Notes

1. **Nature of Analysis:** In micro economics, the behaviour of individual consumers and producers in detail is analysed. It is study of subject matter from particular to general.
2. **Method:** Micro economics divides the economy into various small units and every unit is analysed in detail. It is a slicing method.
3. **Scope:** Micro economic analysis involves product pricing, factor pricing and theory of welfare.
4. **Application:** Both theoretically and practically, micro economics is useful in formulating various policies, resource allocation, public finance, international trade, etc.
5. **Nature of Assumptions:** Assumption of Ceteris Paribus is always made in every micro economic theory. It means theory is applicable only when 'other things being same'.

Features of Macro Economics:

1. **Study of Aggregates:** scope of Macro Economics is wide. Macroeconomics is concerned with the study of aggregates. It is concerned with concept such as Aggregate Demand, Aggregate Supply, Total Output, General Price Level, National Income, etc.
2. **Lumping Method:** Macroeconomics uses lumping method for the purpose of economic study. Under lumping method we study the general price level, and not prices of individual products.
3. **General Equilibrium analysis:** Macroeconomics is concerned with the behaviour of aggregates and their interdependence. It is a general equilibrium analysis in which everything depends on everything else.
4. **Useful for Government Policies:** The study of macroeconomics is highly useful for the formulation and implementation of economic policies of the government. The government is concerned with regulation of aggregates of the economic system such as the general price level, the general level of production, the level of employment, and so on.
5. **Income Theory:** The income theory is a major aspect of macroeconomics theory. A major task of macroeconomics is the determination of national income. Macroeconomics studies the factors determining national income and the causes of the trends in national income.
6. **Overall view of the economy:** The study of macroeconomics gives an overall view of the economy. It interlinks various aggregates so as to show the inter-relationships between them, it tend to provide a more realistic view of the overall economy.

Merits and Demerits

Merits of Micro Economics:

1. **Individual Behaviour Analysis:** Micro economics studies behaviour of individual consumer or producer in a particular situation.
2. **Resource Allocation:** Resources are already scare i.e less in quantity. Micro economics helps in proper allocation and utilization of resources to produce various types of goods and services.
3. **Price Mechanization:** Micro economics decides prices of various goods and services on the basis of 'Demand-Supply Analysis'.
4. **Economic Policy:** Micro economics helps in formulating various economic policies and economic plans to promote all round economic development.
5. **Free Enterprise Economy:** Micro economics explain operating of a free enterprise economy where individual has freedom to take his own economic decisions.

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6. **Public Finance:** It helps the government in fixing the tax rate and the type of tax as well as the amount of tax to be charged to the buyer and the seller.
7. **Foreign Trade:** It helps in explaining and fixing international trade and tariff rules, causes of disequilibrium in BOP, effects of factors deciding exchange rate, etc.
8. **Social Welfare:** It not only analyse economic conditions but also studies the social needs under different market conditions like monopoly, oligopoly, etc.

Demerits of Micro Economics:

1. **Unrealistic Assumptions:** Micro economics is based on unrealistic assumptions, especially in case of full employment assumption which does not exist practically. Even behaviour of one individual can not be generalised as the behaviour of all.
2. **Inadequate Data:** Micro economics is based on the information dealing with individual behaviour, individual customers. Hence, it is difficult to get correct information. So because of incorrect data Micro Economics may provide inaccurate results.
3. **Ceteris Paribus:** It assumes that all other things being equal (same) but actually it is not so.

Merits of Macro Economics:

1. It helps to understand the functioning of a complicated modern economic system. It describes how the economy as whole functions and how the level of national income and employment is determined on the basis of aggregate demand and aggregate supply.
2. It helps to achieve the goal of economic growth, higher level of GDP and higher level of employment. It analyses the forces which determine economic growth of a country and explains how to reach the highest state of economic growth and sustain it.
3. It helps to bring stability in price level and analyses fluctuations in business activities. It suggests policy measures to control inflation and deflation.
4. It explains factors to determine balance of payment and suggests remedial measures.

Demerits of Macro Economics:

1. **Excessive Generalisation:** Despite the immense importance of macroeconomics, there is the danger of excessive generalization from individual experience to the system as a whole. If an individual withdraws his deposits from the bank, there is no harm in it, but if all the persons rushed, to withdraw the deposits, the bank would perhaps collapse.
2. **Heterogeneous elements:** It may, however, be remembered that macroeconomics deals with such aggregates as aggregate consumption, saving, investment, and income, all composed of heterogeneous quantities money is the only measuring rod. But the value of money itself keeps on changing, rendering economic aggregates immeasureable and incomparable in real terms. As, such the sum or average of heterogeneous individual quantities loses their significance for accurate economic analysis and economic policy.
3. **Differences within Aggregates:** Under this approach one is likely to overlook the differences within aggregates. For example, during the first decade of planning in India the national income increased by 42%; this however, does not mean that the income of all the constituents, i.e., the wage earners or salaried persons increased by as much as that of entrepreneurs and businessmen. Hence, it takes no account of difference within aggregates.

Differences

1. Microeconomics studies the particular market segment of the economy, whereas Macroeconomics studies the whole economy, that covers several market segments.

Notes

2. Microeconomics deals with an individual product, firm, household, industry, wages, prices, etc., while Macroeconomics deals with aggregates like national income, national output, price level etc.
3. Microeconomics covers issues like how the price of a particular commodity will affect its quantity demanded and quantity supplied and vice versa, while Macroeconomics covers major issues of an economy like unemployment, monetary/ fiscal policies, poverty, international trade etc.
4. Microeconomics determine the price of a particular commodity along with the prices of complementary and the substitute goods, whereas the Macroeconomics is helpful in maintaining the general price level.
5. While analyzing any economy, microeconomics takes a bottom-up approach, whereas the macroeconomics takes a top-down approach into the consideration.

1.7 Summary

Let's face it: If there's one fundamental principle guiding life on earth, it's scarcity. There simply aren't enough beachfront houses, luxury cars, and seats at the theater for everyone who wants one! And on a more serious note, there's not enough food, clothing, and medical care for everyone who needs it.

The entire discipline of economics—and all economic activity—arises from a scarcity of goods and services in comparison to human wants and needs. If there is not enough of something for everyone who wants or needs it, society faces a serious problem: How do we decide who gets that something and who goes without it?

Throughout history there have always been people who obtained what they wanted or needed by force. The barbarians who sacked Rome practiced this form of “economic activity,” and in modern times it is practiced by armed robbers. But a society worthy of the name requires an orderly system of producing and distributing the necessities and luxuries of life. Such a system is essential to a stable society. Economics is the study of systems of production and distribution—which are called economies—and of their fundamentals, dynamics, and results.

1.8 Check Your Progress

Multiple Choice Questions

1. What is the most basic economic problem:
   a) Scarcity of resources
   b) price determination
   c) Both of these
   d) none of these
2. Goods are items existing in ..... quantity that have subjective value to an individual:
   a) higher
   b) scarce
   c) both a and b
   d) neither a nor b
3. Which is termed as the cost of sacrificed alternatives:
   a) trade off
   b) scarcity of resources
   c) time value of money
   d) opportunity cost

Notes

4. Most financial decisions such as the purchase of assets or procurement of funds, affects the firms:
   a) Price policy
   b) cash flows
   c) profits
   d) decision policy
5. Which concept is important for financial decisions:
   a) trade off
   b) money
   c) time value
   d) profit making
6. Which of the following concept is centered to the finance:
   a) time value
   b) money making
   c) opportunity cost
   d) trade off
7. Economics describes the cost and benefits as:
   a) loose concept
   b) comparable
   c) hidden
   d) none of these
8. The factor of production that are subjected to specializations are:
   a) land
   b) labor
   c) capital
   d) all of these
9. A particular kind of hidden cost is what economists call as:
   a) intended consequence
   b) unintended consequence
   c) both of these
   d) none of these
10. Economics is a:
   a) Science
   b) social science
   c) arts
   d) all of these

1.9 Questions and Exercises

1. Define Economics.
2. What is micro and macro economics?
3. What is the difference between Micro and Macro economics?
4. Explain economics as a Science.
5. Briefly explain Opportunity cost.
6. Explain economics as an art.

Notes

7. What are the merits of micro economics?
8. What do you mean by trade off?
9. What are the demerits of macro economics?
10. Explain the traditional and modern approach of economics.

1.10 Key Terms

- **Absolute minimum:** The output value of the lowest point on a graph over a given input interval or over all possible input values. An absolute minimum point is a local minimum point and occurs at an endpoint of the given input interval.
- **Data:** Real-world information recorded as numerical values.
- **Demand:** The amount of a good or service that an individual is willing and able to buy at each possible price.
- **Demand curve:** A graph illustrating demand, with prices on the vertical axis and quantity demanded on the horizontal axis. Demand curve slopes downward because of the negative relationship between price and quantity demanded.

Check Your Progress: Answers

1.a, 2.b, 3.d, 4.b, 5.c, 6.a, 7.c, 8.d, 9.b, 10.d.

1.11 Further Readings

- Principles of Economics, Alfred Marshall – 2013.
- Economics,Paul A. Samuelson - 2010.
- Basic Economics, Thomas Sowell – 2014.
- Ecological Economics, Second Edition: Principles and Herman E. Daly, Joshua Farley – 2011.
- Handbook of Regional and Urban Economics: Regional economics, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- Principles of Economics - Volume 1, N. Gregory Mankiw – 2008.
- Economics: The User's Guide: A Pelican Introduction, Ha-Joon Chang – 2014.
- Economics: A New Introduction, Hugh Stretton – 1999.
- Principles of Microeconomics - Volume 1, N. Gregory Mankiw – 1998.

Unit 2: Economic Systems

Notes

Structure

Objectives

After studying this unit, you should be able to understand the following topics:

- Economic Systems
- Economics – salient features, merits and demerits
- Market Types
- Perfect and Imperfect competition

2.1 Introduction

Economic systems are the means by which countries and governments distribute resources and trade goods and services. They are used to control the five factors of production, including labor, capital, entrepreneurs, physical resources and information resources. In everyday terms, these production factors involve the employees and money a company has its disposal, as well as access to entrepreneurs, the people who want to run companies or start their own businesses. The physical materials and resources needed to run a business, along with the data and knowledge companies use to be successful, are also factors in production. Different economic systems view the use of these factors in different ways.

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Economic Systems is a refereed journal for the analysis of causes and consequences of the significant institutional variety prevailing among all developed, developing, emerging, and transition economies, as well as attempts at and proposals for their reform.

The journal is open to micro and macro contributions, theoretical as well as empirical, the latter to analyze related topics against the background of country or region-specific experiences. This is to reflect the respective new orientation within the field of comparative economics: decades of development and transition experience in many countries have clearly demonstrated the importance of institutions and institutional change for the functioning of markets and the ways in which policies influence economic activity in general and economic growth in particular. However, we believe that institutional development is only one of the important factors in affecting domestic and global economies.

There are two basic solutions to the economic problem as described by Paul Samuelson, namely free markets and central panning.

Free Market Economies

Markets enable mutually beneficial exchange between producers and consumers, and systems that rely on markets to solve the economic problem are called market economies. In a free market economy, resources are allocated through the interaction of free and self-directed market forces. This means that what to produce is determined consumers, how to produce is determined by producers, and who gets the products depends upon the purchasing power of consumers. Market economies work by allowing the direct interaction of consumers and producers who are pursuing their own self-interest. The pursuit of self-interest is at the heart of free market economics.

Command Economies

The second solution to the economic problem is the allocation of scarce resources by government, or an agency appointed by the government. This method is referred to as central planning, and economies that exclusively use central planning are called command economies. In other words governments direct or command resources to be used in particular ways. For example, governments can force citizens to pay taxes and decide how many roads or hospitals are built.

Command economies have certain advantages over free market economies, especially in terms of the coordination of scarce resources at times of crisis, such as a war or following a natural disaster. Free markets also fail at times to allocate resources efficiently, so remedies often involve the allocation of resources by government to compensate for these failures.

Command economies have certain advantages over free market economies, especially in terms of the coordination of scarce resources at times of crisis, such as a war or natural disaster. Free markets also fail at times to allocate resources efficiently, so remedies often involve the allocation of resources by government to compensate for these failures.

Mixed Economies

There is a third type of economy involving a combination of market forces and central planning, called mixed economies.

Mixed economies may have a distinct private sector, where resources are allocated primarily by market forces, such as the grocery sector of the UK economy. Mixed economies may also have a distinct public sector, where resources are allocated mainly by government, such as defence, police, and fire services. In many sectors, resources are allocated by a combination of markets and panning, such as healthcare and, which have both public and private provision.

Notes

In reality, all economies are mixed, though there are wide variations in the amount of mix and the balance between public and private sectors. For example, in Cuba the government allocates the vast majority of resources, while in Europe most economies have an even mix between markets and planning.

Economic systems can be evaluated in terms of how efficient they are in achieving economic objectives.

2.2 Capitalism

A Capitalist economic system is one characterised by free markets and the absence of government intervention in the economy.

In practice a capitalist economy will need some government intervention, primarily to protect private property.

In the real world, many economies which are viewed to have a capitalist economic system may have government spending taking up 35% of GDP. This is because the government pays for welfare, health, education and national defence. However, the economy is still viewed as capitalist because in the area of private enterprise, firms are free to decided what to produce and for whom.

Problems of a Capitalist Economic System

Inequality. Capitalist economic systems invariably lead to inequalities of wealth and income. However, it is argued that this inequality provides an incentive for wealth generation and economic growth.

Monopoly. In a capitalist society, firms could gain monopoly power over consumers and workers.

Environmental problems. A capitalist society driven by the profit motive may take decisions to maximise economic income in the short term, but at a cost of environmental problems in the long-term.

Capitalism," a term of disparagement coined by socialists in the mid-nineteenth century, is a misnomer for "economic individualism," which Adam Smith earlier called "the obvious and simple system of natural liberty" (Wealth of Nations). Economic individualism's basic premise is that the pursuit of self-interest and the right to own private property are morally defensible and legally legitimate. Its major corollary is that the state exists to protect individual rights. Subject to certain restrictions, individuals (alone or with others) are free to decide where to invest, what to produce or sell, and what prices to charge. There is no natural limit to the range of their efforts in terms of assets, sales, and profits; or the number of customers, employees, and investors; or whether they operate in local, regional, national, or international markets.

The emergence of capitalism is often mistakenly linked to a Puritan work ethic. German sociologist Max Weber, writing in 1903, stated that the catalyst for capitalism was in seventeenth-century England, where members of a religious sect, the Puritans, under the sway of John Calvin's doctrine of predestination, channeled their energies into hard work, reinvestment, and modest living, and then carried these attitudes to New England. Weber's thesis breaks down, however. The same attitudes toward work and savings are exhibited by Jews and Japanese, whose value systems contain no Calvinist component. Moreover, Scotland in the seventeenth century was simultaneously orthodox Calvinist and economically stagnant.

A better explanation of the Puritans' diligence is that by refusing to swear allegiance to the established Church of England, they were barred from activities and professions to which they otherwise might have been drawn—landownership, law, the military, civil service, universities— and so they focused on trade and commerce. A similar pattern of exclusion or ostracism explains why Jews and other racial and religious minorities in other countries and later centuries tended to concentrate on retail businesses and money lending.

Notes

In early-nineteenth-century England the most visible face of capitalism was the textile factories that hired women and children. Critics (Richard Oastler and Robert Southey, among others) denounced the mill owners as heartless exploiters and described the working conditions—long hours, low pay, monotonous routine—as if they were unprecedented. Believing that poverty was new, not merely more visible in crowded towns and villages, critics compared contemporary times unfavorably with earlier centuries. Their claims of increasing misery, however, were based on ignorance of how squalid life actually had been earlier. Before children began earning money working in factories, they had been sent to live in parish poorhouses; apprenticed as unpaid household servants; rented out for backbreaking agricultural labor; or became beggars, vagrants, thieves, and prostitutes. The precapitalist "good old days" simply never existed (see industrial revolution and the standard of living).

Nonetheless, by the 1820s and 1830s the growing specter of child labor and "dark Satanic mills" (poet William Blake's memorable phrase) generated vocal opposition to these unbridled examples of self-interest and the pursuit of profit. Some critics urged legislative regulation of wages and hours, compulsory education, and minimum age limits for laborers. Others offered more radical alternatives. The most vociferous were the socialists, who aimed to eradicate individualism, the name that preceded capitalism.

Socialist theorists repudiated individualism's leading tenets: that individuals possess inalienable rights, that government should not restrain individuals from pursuing their own happiness, and that economic activity should not be regulated by government. Instead, they proclaimed an organic conception of society. They stressed ideals such as brotherhood, community, and social solidarity and set forth detailed blueprints for model utopian colonies in which collectivist values would be institutionalized.

The short life span of these utopian societies acted as a brake on the appeal of socialism. But its ranks swelled after Karl Marx offered a new "scientific" version, proclaiming that he had discovered the laws of history and that socialism inevitably would replace capitalism. Beyond offering sweeping promises that socialism would create economic equality, eradicate poverty, end specialization, and abolish money, Marx supplied no details at all about how a future socialist society would be structured or would operate.

Even nineteenth-century economists—in England, America, and Western Europe—who were supposedly capitalism's defenders did not defend capitalism effectively because they did not understand it. They came to believe that the most defensible economic system was one of "perfect" or "pure" competition. Under perfect competition all firms are small scale, products in each industry are homogeneous, consumers are perfectly informed about what is for sale and at what price, and all sellers are what economists call price takers (i.e., they have to "take" the market price and cannot charge a higher one for their goods).

Clearly, these assumptions were at odds with both common sense and the reality of market conditions. Under real competition, which is what capitalism delivered, companies are rivals for sales and profits. This rivalry leads them to innovate in product design and performance, to introduce cost-cutting technology, and to use packaging to make products more attractive or convenient for customers. Unbridled rivalry encourages companies to offer assurances of security to imperfectly informed consumers, by means such as money-back guarantees or product warranties and by building customer loyalty through investing in their brand names and reputations.

2.3 Socialism

Socialism is an economic and political system based on public or collective ownership of the means of production. Socialism emphasizes equality rather than achievement, and values workers by the amount of time they put in rather than by the amount of value they produce. It also makes individuals dependent on the state for everything from food to health care. China, Vietnam and Cuba are examples of modern-day socialist

societies. Twentieth-century socialist governments were overthrown in Czechoslovakia, East Germany and the U.S.S.R.

Notes

Socialism is a type of command economic system. The state owns and controls most of the factors of production, including land and capital goods. The state also engages in central planning. Production of goods and services, as well as their prices and distribution, are centrally controlled by the state. Marvin will have a hard time starting a business in a purely socialistic economic country.

However, socialism does not assert control over people's own labor. The central planners will not dictate where Marvin can work and what he will do. Marvin can work for whom he wants and do the type of work he wants so long as he can get hired. Economies that utilize socialism also tend to have a high-degree of worker participation in management and distribution of wealth is often based on need. Sweden is an example of a country that uses socialism as an economic system.

Socialism is an economic system in which the means of production are socially owned and used to meet human needs instead of to create profits. The means of production refers to the tools, technology, buildings, and other materials used to make the goods or services in an economy. Social ownership of the means of production can take many forms. It could refer to cooperative enterprises, common ownership, direct public ownership, or autonomous state enterprises. Social ownership contrasts with capitalist ownership, in which the means of production are used to create a profit. In a socialist economic system, the means of production would instead be used to directly satisfy economic demands and human needs. Accounting would be based on physical quantities or a direct measure of labor-time instead of on profits and expenses.

Although socialism is often associated with Karl Marx , it has evolved to take a variety of forms. As a political movement, socialism includes a diverse array of political philosophies, ranging from reformism to revolutionary socialism, from a planned economy to market socialism. In a planned economy, the means of production are publicly owned and the government is in charge of coordinating and distributing production. By contrast, in market socialism, the means of production may be publicly or cooperatively owned, but they operate in a market economy. That is, market socialism uses the market and monetary prices to allocate and account for the means of production and the products they create. Just like in capitalism, the means of production generate profit; however, that profit would be used to remunerate employees or finance public institutions, not to benefit private owners.

Socialists critique capitalism, arguing that it derives wealth from a system of labor exploitation and then concentrates wealth and power within a small segment of society that controls the means of production. As a result, society is stratified, split into classes according to who owns the means of production and who is forced to sell their labor; as a result, individuals do not all have the same opportunity to maximize their potential. A capitalist society, they argue, does not utilize available technology and resources to their maximum potential in the interests of the public. Instead, it focuses on satisfying market-induced wants as opposed to human needs. Socialists argue that socialism would allow for wealth to be distributed based on how much one contributes to society, as opposed to how much capital one owns. A primary goal of socialism is social equality and a distribution of wealth based on one's contribution to society, and an economic arrangement that would serve the interests of society as a whole.

2.4 Mixed Economy

A mixed economic system is an economic system that features characteristics of both capitalism and socialism. A mixed economic system allows a level of private economic freedom in the use of capital, but also allows for governments to interfere in economic activities in order to achieve social aims. This type of economic system is less efficient than capitalism, but more efficient than socialism.

Notes

Most modern economies feature a synthesis of two or more economic systems. The public sector works alongside the private sector, but may compete for the same limited resources. Mixed economic systems do not block the private sector from profit-seeking, but do monitor profit levels and may nationalize companies that are deemed to go against the public good.

Mixed economic systems are not laissez-faire systems: the government is involved in planning the use of resources and can exert control over businesses in the private sector. Governments may seek to redistribute wealth by taxing the private sector, and using funds from taxes to promote social objectives.

A mixed economy permits private participation in production, which in return allows healthy competition that can result in profit. It also contributes to public ownership in manufacturing, which can address social welfare needs.

The advantage of this type of market is that it allows competition between producers with regulations in place to protect society as a whole. With the government being present in the economy it brings a sense of security to sellers and buyers. This security helps maintain a stable economy.

Overall, businesses, as well as consumers, in mixed economies have freedoms that are important to both. And while government is actively involved and provides support, its control is limited, which is good for structure.

The Advantages of a Mixed Economy

1. In a mixed economy, private businesses can decide how to run their businesses (e.g. what to produce, at what price, who to employ, etc.).
2. Consumers also have a choice in what they want to buy.
3. In this system, there is also less income inequality.
4. Monopolies, market structures that are the only producer of a certain product, are allowed under government watch so they do not make it impossible for entrepreneurs in the same industry to succeed.

More Specifically:

1. The elements of a mixed economy have been demonstrated to include a variety of freedoms:
2. to possess means of production (farms, factories, stores, etc.)
3. to participate in managerial decisions (cooperative and participatory economics)
4. to travel (needed to transport all the items in commerce, to make deals in person, for workers and owners to go to where needed)
5. to buy (items for personal use, for resale; buy whole enterprises to make the organization that creates wealth a form of wealth itself)
6. to sell (same as buy)
7. to hire (to create organizations that create wealth)
8. to fire (to maintain organizations that create wealth)
9. to organize (private enterprise for profit, labor unions, workers' and professional associations, non-profit groups, religions, etc.)
10. to communicate (free speech, newspapers, books, advertisements, make deals, create business partners, create markets)
11. to protest peacefully (marches, petitions, sue the government, make laws friendly to profit making and workers alike, remove pointless inefficiencies to maximize wealth creation).

They provide tax-funded, subsidized, or state-owned factors of production, infrastructure, and services:

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1. libraries and other information services
2. roads and other transportation services
3. schools and other education services
4. hospitals and other health services
5. banks and other financial services
6. telephone, mail, and other communication services
7. electricity and other energy services (e.g. oil, gas)
8. water systems for drinking, agriculture, and waste disposal
9. subsidies to agriculture and other businesses
10. government-granted monopoly to otherwise private businesses
11. legal assistance
12. government-funded or state-run research and development agencies

2.5 Transitional and Emerging Economics

An emerging market economy (EME) is defined as an economy with low to middle per capita income. Such countries constitute approximately 80% of the global population, and represent about 20% of the world's economies. The term was coined in 1981 by Antoine W. Van Agtmael of the International Finance Corporation of the World Bank.

Although the term "emerging market" is loosely defined, countries that fall into this category, varying from very big to very small, are usually considered emerging because of their developments and reforms. Hence, even though China is deemed one of the world's economic powerhouses, it is lumped into the category alongside much smaller economies with a great deal less resources, like Tunisia. Both China and Tunisia belong to this category because both have embarked on economic development and reform programs, and have begun to open up their markets and "emerge" onto the global scene. EMEs are considered to be fast-growing economies.

An emerging economy is one that is moving from developing to developed (or industrial),while a transition economy is one evolving from a planned economy (meaning one controlled by the government, as in the former Soviet bloc countries) to a free market economy like those in North America and Europe. A country may be both emerging and transitional. Countries undergoing these economic shifts experience varying degrees of progress regarding their impoverished citizens. Generally, a great number of people are able to enter the middle class during such a transition because of increased business opportunities. At the same time, the incidence of poverty and extreme poverty can increase as the very poor have little or no access to such opportunities.

Researchers of poverty use a measurement called the Gini coefficient to discuss income equality—that is, the poverty gap. Developed by the Italian statistician Corrado Gini in 1912, the Gini coefficient is a number between zero and one, with zero representing perfect equality and one representing perfect inequality. Scholars often use the Gini coefficient to express how wide the gap is between the very poor and those with higher incomes.

2.5.1 Salient Features

EMEs are characterized as transitional, meaning they are in the process of moving from a closed economy to an open market economy while building accountability within the system. Examples include the former Soviet Union and Eastern bloc countries. As an emerging market, a country is embarking on an economic reform program that will lead it to stronger and more responsible economic performance levels, as well as transparency and efficiency in the capital market. An EME will also reform its exchange rate system because a stable local currency builds confidence in an economy,

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especially when foreigners are considering investing. Exchange rate reforms also reduce the desire for local investors to send their capital abroad (capital flight). Besides implementing reforms, an EME is also most likely receiving aid and guidance from large donor countries and/or world organizations such as the World Bank and International Monetary Fund.

One key characteristic of the EME is an increase in both local and foreign investment (portfolio and direct). A growth in investment in a country often indicates that the country has been able to build confidence in the local economy. Moreover, foreign investment is a signal that the world has begun to take notice of the emerging market, and when international capital flows are directed toward an EME, the injection of foreign currency into the local economy adds volume to the country's stock market and long-term investment to the infrastructure.

2.5.2 Merits and Demerits

Portfolio Investment and Risks

Because their markets are in transition and hence not stable, emerging markets offer an opportunity to investors who are looking to add some risk to their portfolios. The possibility for some economies to fall back into a not-completely-resolved civil war or a revolution sparking a change in government could result in a return to nationalization, expropriation and the collapse of the capital market. Because the risk of an EME investment is higher than an investment in a developed market, panic, speculation and knee-jerk reactions are also more common - the 1997 Asian crisis, during which international portfolio flows into these countries actually began to reverse themselves, is a good example of how EMEs can be high-risk investment opportunities.

Local Politics vs. Global Economy

An emerging market economy must have to weigh local political and social factors as it attempts to open up its economy to the world. The people of an emerging market, who are accustomed to being protected from the outside world, can often be distrustful of foreign investment. Emerging economies may also often have to deal with issues of national pride because citizens may be opposed to having foreigners owning parts of the local economy.

Moreover, opening up an emerging economy means that it will also be exposed not only to new work ethics and standards, but also to new cultures. The introduction and impact of, say, fast food and music videos to some local markets has been a by-product of foreign investment.

Market Types (Structure): Area, Time:

A market is one of the many varieties of systems, institutions, procedures, social relations and infrastructures whereby parties engage in exchange. While parties may exchange goods and services by barter, most markets rely on sellers offering their goods or services (including labor) in exchange for money from buyers. It can be said that a market is the process by which the prices of goods and services are established.

Markets of varying types can spontaneously arise whenever a party has interest in a good or service that some other party can provide. Hence there can be a market for cigarettes in correctional facilities, another for chewing gum in a playground, and yet another for contracts for the future delivery of a commodity. There can be black markets, where a good is exchanged illegally, for example markets for goods under a command economy despite pressure to repress them, and virtual markets, such as eBay, in which buyers and sellers do not physically interact during negotiation. A market can be organized as an auction, as a private electronic market, as a commodity wholesale market, as a shopping center, as a complex institution such as a stock market, and as an informal discussion between two individuals.

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Physical Consumer Markets

1. food retail markets: farmers' markets, fish markets, wet markets and grocery stores
2. retail marketplaces: public markets, market squares, Main Streets, High streets, bazaars, souqs, night markets, shopping centers and shopping malls
3. big-box stores: supermarkets, hypermarkets and discount stores

Physical Business Markets

1. physical wholesale markets: sale of goods or merchandise to retailers; to industrial, commercial, institutional, or other professional business users or to other wholesalers and related subordinated services
2. markets for intermediate goods used in production of other goods and services
3. labor markets: where people sell their labour to businesses in exchange for a wage

Non-physical Markets

1. media markets (broadcast market): is a region where the population can receive the same (or similar) television and radio station offerings, and may also include other types of media including newspapers and Internet content
2. Internet markets (electronic commerce): trading in products or services using computer networks, such as the Internet
3. artificial markets created by regulation to exchange rights for derivatives that have been designed to ameliorate externalities, such as pollution permits

Financial Markets

Financial markets facilitate the exchange of liquid assets. Most investors prefer investing in two markets:

1. the stock markets, for the exchange of shares in corporations (NYSE, AMEX, and the NASDAQ are the most common stock markets in the US)
2. and the bond markets
3. currency markets are used to trade one currency for another, and are often used for speculation on currency exchange rates

Unauthorized and Illegal Markets

1. grey markets (parallel markets): is the trade of a commodity through distribution channels which, while legal, are unofficial, unauthorized, or unintended by the original manufacturer
2. markets in illegal goods such as the market for illicit drugs, illegal arms, infringing products, cigarettes sold to minors or untaxed cigarettes (in some jurisdictions), or the private sale of unpasteurized goat milk

2.6 Competition based classifications – Perfect and Imperfect competition

2.6.1 Monopoly

A monopoly is a situation in which a single company or group owns all or nearly all of the market for a given type of product or service. By definition, monopoly is characterized by an absence of competition, which often results in high prices and inferior products.

Monopoly is the extreme case in capitalism. Most believe that, with few exceptions, the system just doesn't work when there is only one provider of a good or service because there is no incentive to improve it to meet the demands of consumers. Governments attempt to prevent monopolies from arising through the use of antitrust laws.

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Of course, there are gray areas; take for example the granting of patents on new inventions. These give, in effect, a monopoly on a product for a set period of time. The reasoning behind patents is to give innovators some time to recoup what are often large research and development costs. In theory, they are a way of using monopolies to promote innovation.

A pure monopoly is a single supplier in a market. For the purposes of regulation, monopoly power exists when a single firm controls 25% or more of a particular market.

2.6.2 Formation of monopolies

Monopolies can form for a variety of reasons, including the following:

If a firm has exclusive ownership of a scarce resource, such as Microsoft owning the Windows operating system brand, it has monopoly power over this resource and is the only firm that can exploit it.

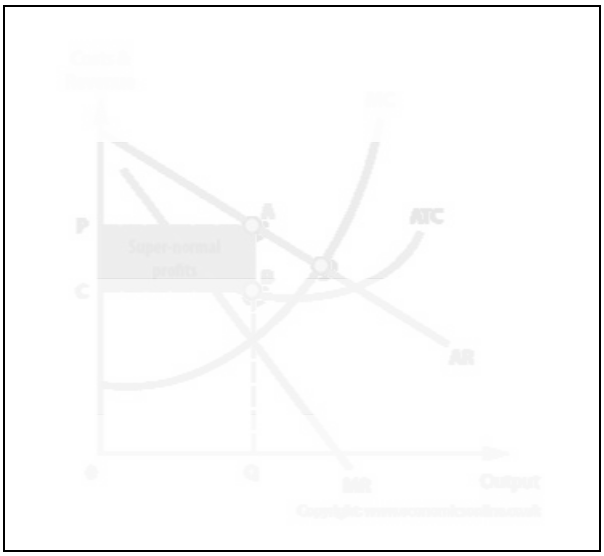
Governments may grant a firm monopoly status, such as with the Post Office, which was given monopoly status by Oliver Cromwell in 1654. The Royal Mail Group finally lost its monopoly status in 2006, when the market was opened up to competition.

Producers may have patents over designs, or copyright over ideas, characters, images, sounds or names, giving them exclusive rights to sell a good or service, such as a song writer having a monopoly over their own material.

A monopoly could be created following the merger of two or more firms. Given that this will reduce competition, such mergers are subject to close regulation and may be prevented if the two firms gain a combined market share of 25% or more.

Key characteristics

1. Monopolies can maintain super-normal profits in the long run. As with all firms, profits are maximised when MC = MR. In general, the level of profit depends upon the degree of competition in the market, which for a pure monopoly is zero. At profit maximisation, MC = MR, and output is Q and price P. Given that price (AR) is above ATC at Q, supernormal profits are possible (area PABC).



2. With no close substitutes, the monopolist can derive super-normal profits, area PABC.
3. A monopolist with no substitutes would be able to derive the greatest monopoly power.

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Features:

1. Only one single seller in the market. There is no competition.
2. There are many buyers in the market.
3. The firm enjoys abnormal profits.
4. The seller controls the prices in that particular product or service and is the price maker.
5. Consumers don't have perfect information.
6. There are barriers to entry. These barriers many be natural or artificial.
7. The product does not have close substitutes.

Merits

1. Monopoly avoids duplication and hence wastage of resources.
2. A monopoly enjoys economics of scale as it is the only supplier of product or service in the market. The benefits can be passed on to the consumers.
3. Due to the fact that monopolies make lot of profits, it can be used for research and development and to maintain their status as a monopoly.
4. Monopolies can afford to invest in latest technology and machinery in order to be efficient and to avoid competition.

Demerits

1. Poor level of service.
2. No consumer sovereignty.
3. Consumers may be charged high prices for low quality of goods and services.
4. Lack of competition may lead to low quality and out dated goods and services.

2.6.3 Evaluation of monopolies

The advantages of monopolies

Monopolies can be defended on the following grounds:

1. They can benefit from **economies of scale**, and may be '**natural**' monopolies, so it may be argued that it is best for them to remain monopolies to avoid the wasteful duplication of infrastructure that would happen if new firms were encouraged to build their own infrastructure.
2. Domestic monopolies can become dominant in their own territory and then penetrate overseas markets, earning a country valuable **export revenues**. This is certainly the case with Microsoft.
3. According to Austrian economist **Joseph Schumpeter**, inefficient firms, including monopolies, would eventually be replaced by more efficient and effective firms through a process called *creative destruction*.
4. It has been consistently argued by some economists that monopoly power is required to generate dynamic efficiency, that is, technological progressiveness. This is because:
   - High profit levels boost investment in R&D.
   - Innovation is more likely with large enterprises and this innovation can lead to lower costs than in competitive markets.
   - A firm needs a dominant position to bear the risks associated with innovation.
   - Firms need to be able to protect their intellectual property by establishing **barriers to entry**; otherwise, there will be a **free rider** problem.
   - Why spend large sums on R&D if ideas or designs are instantly copied by rivals who have not allocated funds to R&D?

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- However, monopolies are protected from competition by barriers to entry and this will generate high levels of supernormal **profits**.
- If some of these profits are invested in new technology, costs are reduced via process innovation. This makes the monopolist's **supply curve** to the right of the industry supply curve. The result is lower price and higher output in the long run.

2.7 The disadvantages of monopoly to the consumer

Monopolies can be criticised because of their potential negative effects on the consumer, including:

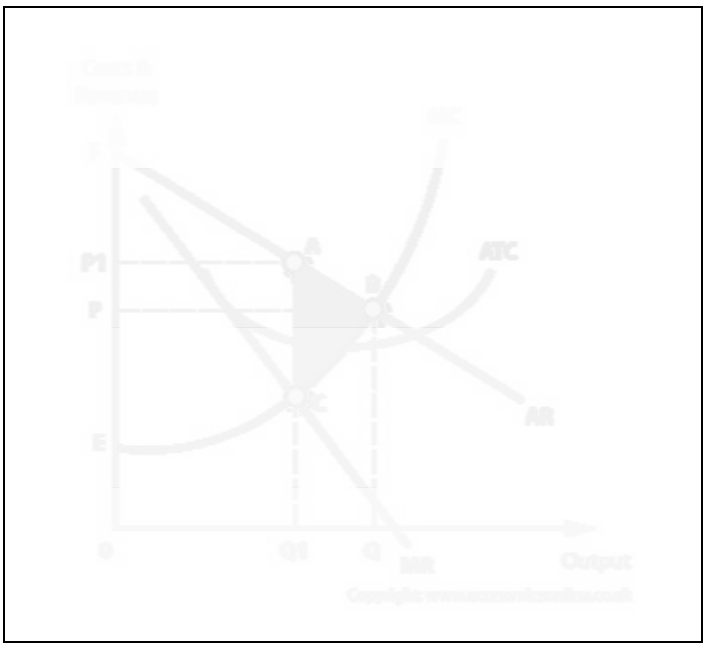
1. Restricting output onto the market.
2. Charging a higher price than in a more competitive market.
3. Reducing consumer surplus and economic welfare.
4. Restricting choice for consumers.
5. Reducing consumer sovereignty.

2.7.1 Higher prices

The traditional view of monopoly stresses the costs to society associated with higher prices. Because of the lack of competition, the monopolist can charge a higher price (P1) than in a more competitive market (at P).

The area of economic welfare under perfect competition is E, F, B. The loss of consumer surplus if the market is taken over by a monopoly is P P1 A B. The new area of producer surplus, at the higher price P1, is E, P1, A, C. Thus, the overall (net) loss of economic welfare is area A B C.

The area of deadweight loss for a monopolist can also be shown in a more simple form, comparing perfect competition with monopoly.



2.7.2 Duopoly

A duopoly is a situation in which two companies own all or nearly all of the market for a given product or service. A duopoly is the most basic form of oligopoly, a market dominated by a small number of companies. A duopoly can have the same impact on the market as a monopoly if the two players collude on prices or output. Collusion

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results in consumers paying higher prices than they would in a truly competitive market and is illegal under U.S. antitrust law.

Boeing and Airbus have been called a duopoly for their command of the large passenger airplane market. Similarly, Amazon and Apple have been called a duopoly for their dominance in the e-book marketplace.

For the following duopoly examples, we will assume the following:

1. The two firms produce homogeneous and indistinguishable goods.
2. There are no other firms in the market who produce the same or substitute goods.
3. No other firms can or will enter the market.
4. Collusive behavior is prohibited. Firms cannot act together to form a cartel.
5. There exists one market for the produced goods.

Cournot Duopoly

In 1838, Augustin Cournot introduced a simple model of duopolies that remains the standard model for oligopolistic competition. In addition to the assumptions stated above, the Cournot duopoly model relies on the following:

1. Each firm chooses a quantity to produce.
2. All firms make this choice simultaneously.
3. The model is restricted to a one-stage game. Firms choose their quantities only once.
4. The cost structures of the firms are public information.

In the Cournot model, the strategic variable is the output quantity. Each firm decides how much of a good to produce. Both firms know the market demand curve, and each firm knows the cost structures of the other firm. The essence of the model is this: each firm takes the other firm's choice of output level as fixed and then sets its own production quantities.

The best way to explain the Cournot model is by walking through examples. Before we begin, we will define the reaction curve, the key to understanding the Cournot model (and elementary game theory as well).

Features

1. Duopoly is a limiting case of oligopoly, in the sense that it has all the characteristics of oligopoly except the number of sellers which are only two increase of duopoly as against a few in oligopoly.
2. A change in price and output by our seller affect the former, and now the former may have to react. This process of action- reaction of the sellers may continue.
3. There are two popular modes of duopoly, i.e., Cournot's Model and Chamberlain's Model. Thus, Oligopoly is a situation where a few large firms complete against each other and there is an element of interdependence in the decision making of these firms. Each firm in the oligopoly recognizes this interdependence.

2.7.3 Oligopoly

In an oligopoly, there are only a few firms that make up an industry. This select group of firms has control over the price and, like a monopoly, an oligopoly has high barriers to entry. The products that the oligopolistic firms produce are often nearly identical and, therefore, the companies, which are competing for market share, are interdependent as a result of market forces. Assume, for example, that an economy needs only 100 widgets. Company X produces 50 widgets and its competitor, Company Y, produces the other 50. The prices of the two brands will be interdependent and, therefore, similar. So, if Company X starts selling the widgets at a lower price, it will get a greater market share, thereby forcing Company Y to lower its prices as well.

Notes

There are two extreme forms of market structure: monopoly and, its opposite, perfect competition. Perfect competition is characterized by many buyers and sellers, many products that are similar in nature and, as a result, many substitutes. Perfect competition means there are few, if any, barriers to entry for new companies, and prices are determined by supply and demand. Thus, producers in a perfectly competitive market are subject to the prices determined by the market and do not have any leverage. For example, in a perfectly competitive market, should a single firm decide to increase its selling price of a good, the consumers can just turn to the nearest competitor for a better price, causing any firm that increases its prices to lose market share and profits.

Oligopoly is a market structure in which a small number of firms has the large majority of market share. An oligopoly is similar to a monopoly, except that rather than one firm, two or more firms dominate the market. There is no precise upper limit to the number of firms in an oligopoly, but the number must be low enough that the actions of one firm significantly impact and influence the others.

An example of an oligopoly is the wireless service industry in Canada, in which three companies – Rogers Communications Inc (RCI), BCE Inc (BCE) subsidiary Bell and Telus Corp (TU) – control approximately 90% of the market. Canadians are conscious of this oligopolistic market structure and often lump the three together as "Robelus," as though they were indistinguishable. In fact, they are often indistinguishable in price: in early 2014 all three companies raised the price for smartphone plans to $80 in most markets, more or less in tandem.

This example shows that participants in oligopolies are often able to set prices, rather than take them. For this reason oligopolies are considered to be able increase profit margins above what a truly free market would allow.

Most jurisdictions have laws against price fixing and collusion. An oligopoly in which participants explicitly engage in price fixing is a cartel: OPEC is one example. Tacit collusion, on the other hand, is perhaps more common though more difficult to detect. A stable oligopoly will often have a price leader; when the leader raises prices, the others will follow.

The alternative is for one or more firms to take advantage of the price rise by cutting prices and siphoning business away from the company with the highest price. If that happens, firms may align in a number of different ways: the majority may keep prices low in an attempt to squeeze the firm with the highest price out of the market; the majority may raise prices, isolating the "cheating" firm and putting it under financial strain; or they may each attempt to undercut the rest, setting off a price war that could damage them all. The late 19th-century railroad cartel in the U.S. was characterized by blatant collusion and price fixing, interspersed with vicious price wars.

Game theorists have developed models for these scenarios, which form a sort of prisoner's dilemma. In general, a situation of (tacit) collusion on prices is considered to be the Nash equilibrium state for oligopolies. Rather than using price, firms in oligopolies tend to prefer to use product differentiation, branding and marketing to compete, with the goal being to increase market share.

The reason new entrants seldom come in to disrupt the market is that oligopolistic industries tend to have high barriers to entry. Wireless carriers, for example, must either build and maintain towers, requiring massive capital expenditures, or lease the incumbents' infrastructure at vampiric rates. Carriers also tend to have strong, instantly recognizable brands. Even if these brands carry certain negative associations (ie, "cartel"), they provide a distinct advantage over unknown new entrants. Other industries that have commonly seen oligopolies also have high barriers to entry: oil and gas drillers, airlines, grocers and movie studios are a few examples.

Notes

Features

1. **Few firms:** Under oligopoly, there are few large firms. The exact number of firms is not defined. Each firm produces a significant portion of the total output. There exists severe competition among different firms and each firm try to manipulate both prices and volume of production to outsmart each other.
2. **Interdependence:** Firms under oligopoly are interdependent. Interdependence means that actions of one firm affect the actions of other firms. A firm considers the action and reaction of the rival firms while determining its price and output levels. A change in output or price by one firm evokes reaction from other firms operating in the market.
3. **Non-Price Competition:** Under oligopoly, firms are in a position to influence the prices. However, they try to avoid price competition for the fear of price war. They follow the policy of price rigidity. Price rigidity refers to a situation in which price tends to stay fixed irrespective of changes in demand and supply conditions. Firms use other methods like advertising, better services to customers, etc. to compete with each other.
4. **Group Behaviour:** Under oligopoly, there is complete interdependence among different firms. So, price and output decisions of a particular firm directly influence the competing firms. Instead of independent price and output strategy, oligopoly firms prefer group decisions that will protect the interest of all the firms. Group Behaviour means that firms tend to behave as if they were a single firm even though individually they retain their independence.

Merits

1. **High Profits:** Since there is such little competition, the companies that are involved in the market have the potential to bring a large amount of profits. The services and goods that are controlled through oligopolies are generally highly needed or wanted by the large majority of the population.
2. **Simple Choices:** Having only a few companies that offer the goods or service that you are looking for makes it easy to compare between them and choose the best option for you. In other markets it can be difficult to thoroughly look at all of the competitors to compare pricing and services offered.
3. **Competitive Prices:** Being able to easily compare prices forces these companies to keep their prices in competition with the other companies involved in the market. This is a great benefit for the consumers because prices continually go lower as other companies lower there prices.
4. **Better Information and Goods:** Right along with price competition, product competition plays a huge part in the oligopoly market structure. Each company scrambles to come out with latest and greatest thing in order to sway consumers to go with their company over a different one. This also goes with the advertising and amount of information and support that they provide their customers.

Demerits

1. **Difficult to Forge A Spot:** For small business and other people with creative ideas in a oligopoly market, the outlook for their business is grim. Extremely large and advanced companies completely control the market, making it nearly impossible for small or new businesses to break into the market place.
2. **Less Choices:** In many cases having to choose a company in an oligopoly is like choosing the lesser evil. The consumers have very limited choices and options for the services that they want. This is one of the biggest pitfalls of a oligopoly.
3. **Fixed Prices Are Bad For Consumers:** While competitive prices come into play, they are rarely very far apart from any other company that they could go with. This is because the businesses and corporations that are part of the market agree to fix prices.

Notes

Monopolistic

Characterizes an industry in which many firms offer products or services that are similar, but not perfect substitutes. Barriers to entry and exit in the industry are low, and the decisions of any one firm do not directly affect those of its competitors. All firms have the same, relatively low degree of market power; they are all price makers. In the long run, demand is highly elastic, meaning that it is sensitive to price changes. In the short run, economic profit is positive, but it approaches zero in the long run. Firms in monopolistic competition tend to advertise heavily.

Monopolistic competition is a middle ground between monopoly, on the one hand, and perfect competition (a purely theoretical state), on the other, and combines elements of each. It is a form of competition that characterizes a number of industries that are familiar to consumers in their day-to-day lives. Examples include restaurants, hair salons, clothing and consumer electronics. To illustrate the characteristics of monopolistic competition, we'll use the example of household cleaning products.

Features

1. **Large Number of Sellers:** There are large numbers of firms selling closely related, but not homogeneous products. Each firm acts independently and has a limited share of the market. So, an individual firm has limited control over the market price. Large number of firms leads to competition in the market.
2. **Product Differentiation:** Each firm is in a position to exercise some degree of monopoly (in spite of large number of sellers) through product differentiation. Product differentiation refers to differentiating the products on the basis of brand, size, colour, shape, etc. The product of a firm is close, but not perfect substitute of other firm.
3. **Selling costs:** Under monopolistic competition, products are differentiated and these differences are made known to the buyers through selling costs. Selling costs refer to the expenses incurred on marketing, sales promotion and adver-tisement of the product. Such costs are incurred to persuade the buyers to buy a particular brand of the product in preference to competitor's brand.
4. **Freedom of Entry and Exit:** Under monopolistic competition, firms are free to enter into or exit from the industry at any time they wish. It ensures that there are neither abnormal profits nor any abnormal losses to a firm in the long run. However, it must be noted that entry under monopolistic competition is not as easy and free as under perfect competition.
5. **Lack of Perfect Knowledge:** Buyers and sellers do not have perfect knowledge about the market conditions. Selling costs create artificial superiority in the minds of the consumers and it becomes very difficult for a consumer to evaluate different products available in the market. As a result, a particular product (although highly priced) is preferred by the consumers even if other less priced products are of same quality.
6. **Pricing Decision:** A firm under monopolistic competition is neither a price- taker nor a price-maker. However, by producing a unique product or establishing a particular reputation, each firm has partial control over the price. The extent of power to control price depends upon how strongly the buyers are attached to his brand.

Merits

1. **Pricing:** The ability to set higher prices is a primary advantage of monopolistic competition. These companies can determine the item's price points, which tend to be much higher than perfectly competitive industries by virtue of their branding efforts. Monopolistic competition is one reason prescription drugs can be costly. Because companies are awarded patents for pharmaceutical innovations, they capitalize on this monopoly by charging high prices.

Notes

2. **Product Quality and Development:** An advantage of monopolistic competition is that it enhances a firm's ability to improve a product's quality through its brand. Economists defend branding as a way to enhance trust and reliability to the consumer. Brands strengthen the need to maintain high quality based on the business's financial stake in its reputation
3. **Price Discrimination:** Monopolies can engage in price discrimination, which is charging different prices to different consumer groups. Companies in a monopoly have the option of determining which customers receive discounts or premiums on goods and services, such as senior citizens or students receiving discounts. Mark Taylor, co-author of the textbook, "Microeconomics," explains how price discrimination enables the monopoly to raise its profits and reduce deadweight loss. Because there can be a high number of sellers in the industry, businesses use this tactic to target customers and gain greater market share.

Demerits

1. **They Can be Wasteful -- Liable of Excess Capacity:** A negative factor of firms that are in monopolistic competition is that they don't produce enough output to efficiently lower the average cost and benefit from economies of scale. As if they were to do this, they are reducing their 'economic profits', as a result of the marginal revenue being less than that of the marginal cost. Moreover, the funding and expense that goes into packaging, marketing and advertising can deemed extremely wasteful on some levels.
2. **Allocatively Inefficient:** Compared with perfect competition, it can be shown that such firms that there is an element of allocation efficiency as the price is above that of the marginal cost curve -- less so in the long run, due to more competition. As the demand curve is one which is downward sloping this then implies the price has to be greater than the marginal cost for a monopolistically competitive firm. Hence it is allocatively inefficient as not enough of the product gets produced for society to benefit -- they want more, however this would force the company to lose money.
3. **Higher Prices:** Another drawback of a monopolistic competition, is that as a result of firms having 'some market power', they can extenuate a mark-up on the marginal cost of revenue. Compared to a perfectly competitive firm, who have their price equal to their marginal cost. Causing a deadweight loss in society as described above.
4. **Advertising:** Although, as stated earlier, advertising and marketing can be beneficial to consumers on some levels such as providing information to customers and from this an increase in competition, it can also have negative impacts on consumer sovereignty. It is argued to manipulate and distort what consumers desire, as well as obviously reducing competition as consumers become captivated over the perception of differentiation.

Monopolistic competition is a market structure characterized by many firms selling products that are similar but not identical, so firms compete on other factors besides price. Monopolistic competition is sometimes referred to as imperfect competition, because the market structure is between pure monopoly and pure competition.

Economic efficiency is also middling. Competitive markets provide efficient outcomes, monopoly markets exhibit deadweight losses — monopolistic competition is somewhere in between, not as efficient as pure competition but less deadweight loss than a monopoly. The major benefit of monopolistic competition is the supply of a wide variety of goods and services.

2.8 Monopolistic Competition Exists

Where there are a large number of sellers, each with a small market share; little interdependence among firms so that they can price their product with little regard to how the competition will react; little possibility for collusion to fix prices.

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Firms do have some control over price, but it is limited by the close substitution of similar products.

Product Differentiation

Monopolistic competition cannot exist unless there is at least a perceived difference among products provided by the firms in the industry. The major tool of competition is product differentiation, which results from differences in product quality, location, service, and advertising. Product quality can differ in function, design, materials, and workmanship. Location is often a good differentiator of products. Generally, firms that are more conveniently located can charge higher prices. Likewise, stores that have extended hours also provide convenience. For instance, if you need cold medicine in the middle of the night, you may go to a 24-hour drugstore to purchase the medicine, even if it is at a higher price, since you want immediate relief. Services include time of availability, the firm's reputation for servicing or exchanging products, and speed of service.

There are many examples of product differentiation in modern economies. Restaurants serve different menu items at different prices in different locations, thus providing varying degrees of time and place utility. Furniture stores sell different types of furniture made of different materials such as oak, walnut, cherry, and maple. Clothes retailers sell different types of clothing at different prices, where people pay not only for good workmanship, but also for items that suit their taste.

Books are an excellent example monopolistic competition because they vary in their prices, quality of workmanship, readability, quality of illustrations or the lack thereof, and differ according to target audience and subjects, such as college textbooks and novels. Each major category will have many minor categories and the minor categories are also distinguished by the writing styles of the authors.

A new front of monopolistic competition occurs among online retailers. In this case, their location does not really matter. What matters is the convenience of shopping online, how well the products are described, and reviews of the products by consumers who actually bought the product. Other important qualities include trustworthiness of the firm and return policies.

Easy Entry and Exit

Because most firms engaged in monopolistic competition have low capital requirements, firms can easily enter or exit the market. However, the amount of investment is generally larger than for pure competition, since there is an expense to developing differentiated products and for advertising. A primary feature of monopolistic competition is the constantly changing array of products that are competing in the marketplace. Firms must continually experiment with product, prices, and advertising to see what yields the greatest profit. Although this leads to productive and allocative inefficiency, the variety of goods offered more than compensates for this inefficiency.

With easy entry and exit, firms will enter a market where present firms are earning an economic profit and will exit the market where firms are losing money — thus, allowing the remaining firms earn a normal profit.

Advertising and Brand Names

When there are only small differences between products, product differentiation would not be useful unless it can be communicated to the consumer. This communication is accomplished through advertising, brand names, and packaging, which are forms of nonprice competition, in that they compel consumers to pay a higher price if they perceive — rightly or wrongly — that the quality is greater. Advertising serves to inform customers of the differentiated products and why they are superior over close substitutes. Even if there are no differences, as is often the case between store brands and national brands, or between a brand name drug and its generics, a consumer can still prefer one brand over another because of the advertising.

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Brand names serve to distinguish identical or nearly identical products and to increase the value of advertising in that the brand name serves as an object to which desirable characteristics can be attached. Advertising is used to build brand awareness or loyalty to a particular company.

Advertising may also be used to build a brand image, which is the association of a lifestyle, or words or images that people will associate with the brand, rather than describing specific characteristics of the product itself. This type of advertising is often used for products that are mostly differentiated by personal taste, such as the advertising for soft drinks. The bandwagon effect is also often used, where the advertising tries to convey that more people prefer a particular brand. Celebrities are often used for this type of advertising.

The main benefit of brand names to consumers is that it allows them to readily identify the product, and brand names are well protected by law so that competing firms cannot try to deceive customers by closely imitating an established brand name. Moreover, brand names give an incentive for the firm to maintain product quality so that the brand continues to be perceived as having value by the consumers.

Advertising also helps firms in ways besides increasing market share or building brand awareness. Advertising can help a company increase the quantity of production, which usually leads to lower prices, since fixed costs are spread over a larger quantity of product.

Advertising allows new firms to attract customers who are buying competing products, thus allowing easier entry of new firms. Advertising also informs customers of price differences so that they can buy at lower prices. In the past, professional firms, such as doctors and lawyers, were prohibited from advertising prices because, it was argued, that it was unprofessional. However the courts decided that the real reason was to limit competition, so they overturned the many state laws that prohibited certain forms of advertising.

However, advertising does have its critics. Advertising often does not convey true information, or conveys misleading information, causing consumers to buy products that are not in their best interest or that are not the best value for their money. Even comparisons with competing products are often misleading. Some people counter argue that if a firm is willing to spend a lot of money advertising, then they will have an incentive to maintain good quality so that people continue buying the product.

Nonetheless, many products and services are marketed that are not in the best interest of the consumer, such as debt consolidation services. Furthermore, it is difficult to compare many products or services directly, since the benefits and costs are not directly observable before buying, such as the services provided by professionals, like doctors, dentists, or lawyers. Many people also pay more money for identical products because of the advertising. For instance, contacts are made by only a few companies, but are marketed by many opticians, who charge widely varying prices. Likewise, people often buy brand-name drugs over generics, even though the generics are equally effective.

Like most other things, advertising has its benefits and drawbacks, but it will remain one of the primary tools of monopolistically competitive firms.

2.9 Summary

Economists generally recognize four types: traditional economies, command economies, market economies, and mixed economies. The critical factor separating the last three is the degree of government involvement in the economy.

The United States, like most advanced democracies, has a mixed economy. Most economic decisions are made in the marketplace by individuals who exercise a great deal of control over their economic lives. But the government also plays a large role in the economy, acting as a referee for market activity and influencing the allocation and distribution of resources. How big a role that should be is something of a political and

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economic balancing act, and one that can be very controversial. Just show up for a Tea Party rally or sign up for MoveOn's email list and you'll see what we're talking about...

2.10 Check Your Progress

Multiple Choice Questions

1. Which competition is a middle group between monopoly and perfect competition:
   a) oligopoly
   b) monopolistic
   c) duopoly
   d) all of these
2. Interdependence is a feature of:
   a) Duopoly
   b) perfect competition
   c) monopoly
   d) oligopoly
3. Which of the following is the most basic form of oligopoly:
   a) monopolistic
   b) duopoly
   c) oligopoly
   d) monopoly
4. Which of these is a situation in which two companies own all or nearly all of the market for a given product:
   a) oligopoly
   b) perfect competition
   c) monopoly
   d) none of these
5. Poor level of services is the disadvantage if:
   a) monopoly
   b) monopolistic
   c) oligopoly
   d) duopoly
6. Which is the extreme case in capitalism:
   a) oligopoly
   b) perfect competition
   c) monopoly
   d) none of these
7. Labor market is an example of which market:
   a) Physical consumer
   b) Physical business
   c) financial
   d) non- physical
8. Internet market is an example of which market:
   a) non- physical

b) physical consumer
c) financial
d) physical business

9. Key characteristic of EME is an increase in:
   a) Local investment
   b) foreign investment
   c) Both of these
   d) none of these
10. Which of the following is the type of command economy:
   a) capitalism
   b) socialism
   c) both a and b
   d) neither a nor b

2.11 Questions and Exercises

1. What do you mean by Economic Systems?
2. What is Mixed Economy?
3. Define markets.
4. Explain the Perfect competition.
5. What do you understand by Oligopoly?
6. What are the merits and demerits of monopolistic?
7. What is monopoly?
8. Explain the merits of perfect competition.
9. Define Duopoly and its features.
10. What is Capitalism

2.12 Key Terms

- **Annual percentage rate (APR):** The percentage used in calculating interest each compounding period. In an investment context, the annual percentage rate (or nominal rate) is the advertised rate of interest, 100r%.
- **Changes in demand:** A change in price does not lead to a change in demand. But a change in a factor other than price such as income and prices of related goods etc, does lead to a change in demand. In that case the change in demand leads to a shift in the demand curve. A fall in demand shifts the demand curve to the left and a rise in demand shifts the curve to the right.
- **Compound interest:** A method of crediting interest in which interest is earned on interest.
- **Econometric Model:** An econometric model is an economic model formulated so that its parameters can be estimated if one makes the assumption that the model is correct.

Check Your Progress: Answers

1.b, 2.d, 3.b, 4.d, 5.a, 6.c, 7.b, 8.a, 9.c, 10.b.

2.13 Further Readings

- Principles of Economics, Alfred Marshall – 2013.
- Economics, Paul A. Samuelson – 2010.

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- Basic Economics, Thomas Sowell – 2014.
- Ecological Economics, Second Edition: Principles and Herman E. Daly, Joshua Farley – 2011.
- Handbook of Regional and Urban Economics: Regional economics, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- Principles of Economics - Volume 1, N. Gregory Mankiw – 2008.
- Economics: The User's Guide: A Pelican Introduction, Ha-Joon Chang – 2014.
- Economics: A New Introduction, Hugh Stretton – 1999.
- Principles of Microeconomics - Volume 1, N. Gregory Mankiw – 1998.

Unit 3: Demand Analysis

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Structure

Objectives

After studying this unit, you should be able to understand the following topics:

- Demand Analysis
- Law of demand and supply
- Meaning of utility, satisfaction
- Measurement of utility
- Ordinal measurement
- Consumer equilibrium.

3.1 Introduction

The concept of demand is the basic concept in modern economics which acquaints a manager with the relationship between the price of a commodity and its quantity which could be purchased at a given price by consumers. The study of such a relationship provides the manager with necessary facts which could be analyzed for measuring the forces that influence sales volume.

People have numerous wants which vary in intensity and quality. Just desiring or wanting things is not enough to create a demand. Suppose a mill worker desires or wants to have a car but he does not have the necessary means to buy it. His desire is ineffective and will not become a demand. Likewise a miser desires to have a car.

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He has the means to purchase it but is not willing to part with it. His desire also would not constitute demand. Thus, we define 'demand for a commodity or service' as an effective desire i.e., a desire backed by means well as willingness to pay for it.

The theory and analysis of demand provides several useful insights for business decision making. Demand is one of the most important aspects of Business Economics, since a firm would not be established or survive if a sufficient demand for its product didn't exist or couldn't be created. That is, a firm could have the most efficient production techniques and the most effective management, but without a demand for its product that is sufficient to cover at least all production and selling costs over the long run, it simply would not survive.

Demand is the quantity of a good or service that customers are willing and able to purchase during a specified period under a given set of economic conditions. The time frame might be an hour, a day, a month or a year. Conditions to be considered include the price of the good in question, prices and availability of related goods, expectations of price changes, consumers' incomes, consumers taste and preferences, advertising expenditures and so on. The amount of the product that consumers are prepared to purchase, its demand, depends on all these factors.

The ability of goods and services to satisfy consumer wants is the basis for consumer demand. This is an important topic in micro-economics because managers must know why consumers demand their products before demand can be met or created. Consumer behavior theory rests upon three basic assumptions regarding the utility tied to consumption.

First, —More is better || :- Consumers will always prefer more to less of any good or service.

It is often being referred to as the —non satiation principle || . Second, —Preferences are complete || :- When preferences are complete, consumers are able to compare and rank the benefits tied to consumption of various goods and services. Third, —Preferences are transitive || :- When preferences are transitive, consumers are able to rank/order the desirability of various goods and services.

Individual Demand and Market Demand

Individual demand refers to the demand for a commodity from the individual point of view. The quantity of a product consumer would buy at a given price over a given period of time is his individual demand for that particular good. Individual demand is considered from one person's point of view or from that of a family or household's point of view. Individual demand is a single consuming entity's demand. Individual demand is determined by the value associated with acquiring and using any good or service and the ability to acquire it. Market Demand for a product, on the other hand, refers to the total demand of all the buyers, taken together. Market demand is an aggregate of the quantities of a product demanded by all the individual buyers at a given price over a given period of time. Market demand for a given commodity is the horizontal summation of the demands of the individual consumers. In other words, the quantity demanded in the market at each price is the sum of the individual demands of all consumers at that price.

Direct Demand and Derived Demand

Direct demand is the demand for goods and services that directly satisfy consumer desires. In other words, direct demand is the demand for personal consumption products. The value or worth of a good or service, its utility, is the prime determinant of direct demand. Individuals are viewed as attempting to maximize the total utility or satisfaction provided by the goods and services they acquire and consume. This optimization process requires that consumers focus on the marginal utility of acquiring additional units of a given product, product characteristics, individual preferences and the ability to pay are all important determinants of direct demand. Goods and services

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are sometimes acquired because they are important inputs in the manufacture and distribution of other products. Such goods and services which are demanded not for direct consumption but rather for their use in providing other goods and services. Examples of derived demand are production facilities and equipment, natural resources, commercial airplanes, machines etc. Input demand is derived from the demand for the products they are used to provide. Input demand is called derived demand. In a nutshell, demand for inputs used in production is called derived demand. The demand function:- A demand function shows the relationship between the demand for a good, say X, and the various factors which cause a change in it. The demand function may be expressed as follows:- DX = f(PX,PY,M,T,W) Where DX= quantity of commodity X demanded per unit of time, PX= Price of X, PY= Mean price of all other substitute commodities, M= consumer's income T= consumer's Taste W= Wealth of the consumer Of the variables mentioned, Tables are difficult to quantify, whereas wealth does not have a direct influence on the demand DX. Hence, T and W are held constant, and DX is assumed to be a function of PX, PY, and M only. Demand functions are generally homogenous of degree zero. Homogeneity means that changes in all the independent variables, namely PX, PY, and M are uniform. If the degree of a homogenous function is zero, then it would imply that when all prices and income change in the same proportion, DX would remain unchanged. PY and M are generally assumed to be the parameters. For simplicity, the demand for X is assumed to be a function of only PX. An over-simplified and the most commonly stated demand function is, thus: DX= f(PX) Which connotes that the demand for commodity X is the function of its price. The traditional demand theory deals with this demand function specially. It must be noted that by demand function, economists mean the entire functional relationship, i.e. the whole range of price-quantity relationship, and not just the amount demanded at a given price per unit of time. In other words, the statement, ―the amount demanded is a functional of price‖ implies that for each possible price, there is a different quantity demanded. To put it differently, demand function for a commodity relates to the entire demand schedule, which shows the varying amounts purchased at alternative prices over a given time period.

3.2 Law of demand and supply

Supply and demand is perhaps one of the most fundamental concepts of economics and it is the backbone of a market economy. Demand refers to how much (quantity) of a product or service is desired by buyers. The quantity demanded is the amount of a product people are willing to buy at a certain price; the relationship between price and quantity demanded is known as the demand relationship. Supply represents how much the market can offer. The quantity supplied refers to the amount of a certain good producers are willing to supply when receiving a certain price. The correlation between price and how much of a good or service is supplied to the market is known as the supply relationship. Price, therefore, is a reflection of supply and demand.

The relationship between demand and supply underlie the forces behind the allocation of resources. In market economy theories, demand and supply theory will allocate resources in the most efficient way possible. How? Let us take a closer look at the law of demand and the law of supply.

For a market economy to function, producers must supply the goods that consumers want. This is known as the law of supply and demand. “Supply” refers to the amount of goods a market can produce, while “demand” refers to the amount of goods consumers are willing to buy. Together, these two powerful market forces form the main principle that underlies all economic theory.

The law of supply and demand explains how prices are set for the sale of goods. The process starts with consumers demanding goods. When demand is high, producers can charge high prices for goods. The promise of earning large profits from high prices inspires producers to manufacture goods to meet the demand. However, the law of demand states that if prices are too high, only a few consumers will purchase the goods

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and demand will go unmet. To fully meet demand, producers must charge a price that will result in the required amount of sales while still generating profits for themselves.

For example, assume that a cell phone manufacturing company perceives demand for new cell phones. The company invests in market research to produce the exact cell phone that consumers want. The company then produces 5,000 units and puts them up for sale at $300 each. Consumers who find the phone to be valuable pay the full $300, and half of the units are soon sold.

Because of the high price, however, sales gradually begin to drop off. Many consumers still want the phone, but are unwilling or unable to pay $300 for one. Because the cell phone company loses money on unsold products, it reduces the phone's price to $250 in hopes of increasing sales. Consumers begin buying again. The process continues until a price is reached that will both meet demand and maximize the company's profits. That price is known as the "market-clearing price."

When supply becomes balanced with demand, the market is said to have reached equilibrium. At equilibrium, resources are used at their maximum efficiency. The study of economics is largely a study in how market economies can best achieve equilibrium, which is why economists spend a great deal of time analyzing the relationship between supply and demand.

The law of supply and demand explains why people behave in certain ways within a market economy, and can even be used to predict behavior and, thereby, economic outcomes. Manufacturers who want the highest price possible for their products, utilize inventory management protocols and invest in advertising to encourage consumers to buy. Consumers who value a low price over the quality or popularity of a product shop at outlets and discount stores, while those who favor popularity over price purchase goods from retail stores at the height of the market.

The law of supply and demand is not just limited to the sale of products, however. It can be used to explain almost any economic phenomenon, such as a rise or drop in employment, increased or decreased enrollment in colleges, the expansion or shrinking of government programs, and increases or reductions in available resources. Therefore, the law of supply and demand is not only vital to economic theory, it is the foundation of economics itself.

The law of supply and demand is the theory explaining the interaction between the supply of a resource and the demand for that resource. The law of supply and demand defines the effect that the availability of a particular product and the desire (or demand) for that product has on price. Generally, if there is a low supply and a high demand, the price will be high. In contrast, the greater the supply and the lower the demand, the lower the price will be.

The law of supply and demand is not an actual law but it is well confirmed and understood realization that if you have a lot of one item, the price for that item should go down. At the same time you need to understand the interaction; even if you have a high supply, if the demand is also high, the price could also be high. In the world of stock investing, the law of supply and demand can contribute to explaining a stocks price at any given time. It is the base to any economic understanding.

3.3 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.

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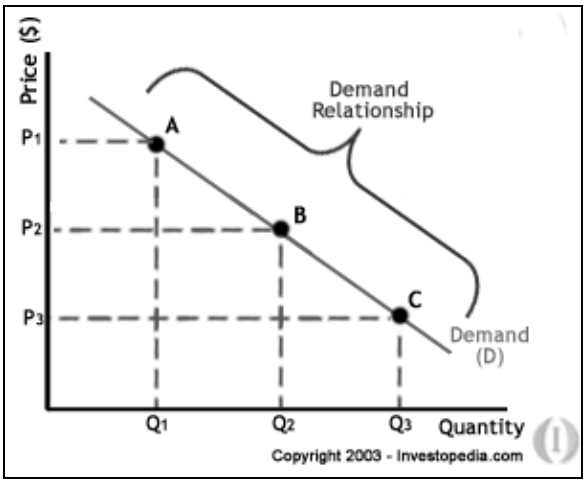
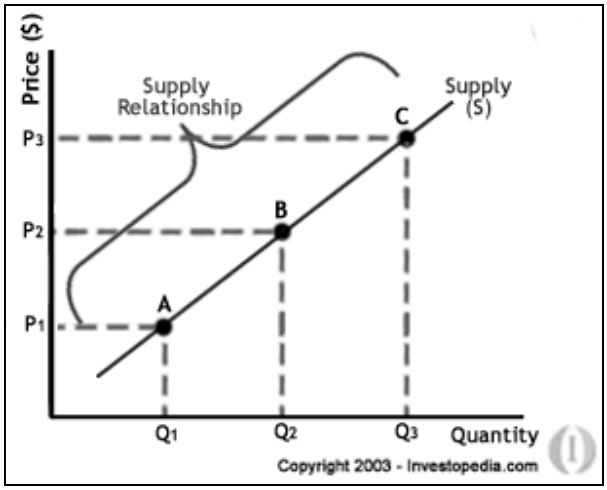


A, B and C are points on the demand curve. Each point on the curve reflects a direct correlation between quantity demanded (Q) and price (P). So, at point A, the quantity demanded will be Q1 and the price will be P1, and so on. The demand relationship curve illustrates the negative relationship between price and quantity demanded. The higher the price of a good the lower the quantity demanded (A), and the lower the price, the more the good will be in demand (C).

3.4 The Law of Supply

Like the law of demand, the law of supply demonstrates the quantities that will be sold at a certain price. But unlike the law of demand, the supply relationship shows an upward slope. This means that the higher the price, the higher the quantity supplied. Producers supply more at a higher price because selling a higher quantity at higher price increases revenue.



A, B and C are points on the supply curve. Each point on the curve reflects a direct correlation between quantity supplied (Q) and price (P). At point B, the quantity supplied will be Q2 and the price will be P2, and so on.

Features

The demand for a commodity is its quantity which consumers are able and willing to buy at various prices during a given period of time. So, for a commodity to have demand, the consumer must possess willingness to buy it, the ability or means to buy it, and it must be related to per unit of time i.e. per day, per week, per month or per year.

The demand function is an algebraic expression of the relationship between demand for a com-modity and its various determinants that affect this quantity.

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The basic assumption in demand schedule and demand curve has been the relationship between price and quantity of a commodity signifying a change in price to bring a change in quantity demanded with all other variables assumed constant and unchanged. In demand function this assumption is relaxed and it is held emphatically that besides change in price there are other variables which influence the demand for a particular commodity.

Demand function makes use of mathematical formulation to arrive at cor-rect results. Recently more sophisticated methods have been developed for the study like simultaneous equation and mathematical programming which helps in arriving at precise results.

3.5 Meaning of utility

Utility is an economic term referring to the total satisfaction received from consuming a good or service.

A company that generates, transmits and/or distributes electricity, water and/or gas from facilities that it owns and/or operates.

A consumer's utility is hard to measure. However, we can determine it indirectly with consumer behavior theories, which assume that consumers will strive to maximize their utility. Utility is a concept that was introduced by Daniel Bernoulli. He believed that for the usual person, utility increased with wealth but at a decreasing rate.

Utility analysis, a subset of consumer demand theory, provides insight into an understanding of market demand and forms a cornerstone of modern microeconomics. In particular, this analysis investigates consumer behavior, especially market purchases, is based on the satisfaction of wants and needs (that is, utility) generated from the consumption of a good.

Although the concept of ‘taste’ and ‘satisfaction’ are familiar for all of us, it is much more difficult to express these concepts in concrete terms. For example, suppose you have just eaten an ice-cream and a chocolate.

Utility refers to want satisfying power of a commodity. It is the satisfaction, actual or expected, derived from the consumption of a commodity. Utility differs from person- to-person, place-to-place and time-to-time. In the words of Prof. Hobson, “Utility is the ability of a good to satisfy a want”.

In short, when a commodity is capable of satisfying human wants, we can conclude that the commodity has utility.

How to Measure Utility?

After understanding the meaning of utility, the next big question is: How to measure utility? According to classical economists, utility can be measured, in the same way, as weight or height is measured. For this, economists assumed that utility can be measured in cardinal (numerical) terms. By using cardinal measure of utility, it is possible to numerically estimate utility, which a person derives from consumption of goods and services. But, there was no standard unit for measuring utility. So, the economists derived an imaginary measure, known as ‘Util’.

Utils are imaginary and psychological units which are used to measure satisfaction (utility) obtained from consumption of a certain quantity of a commodity.

Example – Measurement of satisfaction in utils:

Suppose you have just eaten an ice-cream and a chocolate. You agree to assign 20 utils as utility derived from the ice-cream. Now the question is: how many utils be assigned to the chocolate? If you liked the chocolate less, then you may assign utils less than 20.

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However, if you liked it more, you would give it a number greater than 20. Suppose, you assign 10 utils to the chocolate, then it can be concluded that you liked the ice-cream twice as much as you liked the chocolate.

One more way to measure utility

Utils cannot be taken as a standard unit for measurement as it will vary from individual to individual. Hence, several economists including Marshall, suggested the measurement of utility in monetary terms. It means, utility can be measured in terms of money or price, which the consumer is willing to pay.

In the above example, suppose 1 util is assumed to be equal to Rs. 1. Now, an ice--cream will yield utility worth Rs. 20 (as 1 util = Rs. 1) and chocolate will give utility of Rs. 10. This utility of Rs. 20 from the ice-cream or f I0 from the chocolate is termed as value of utility in terms of money.

The advantage of using monetary values instead of utils is that it allows easy comparison between utility and price paid, since both are in the same units.

It must be noted that it is impossible to measure satisfaction of a person as it is inherent to the individual and differs greatly from person-to-person. Still, the concept of utility is very useful in explaining and understanding the behaviour of consumer.

Total Utility (TU)

Total utility refers to the total satisfaction obtained from the consumption of all possible units of a commodity. It measures the total satisfaction obtained from consumption of all the units of that good. For example, if the 1st ice-cream gives you a satisfaction of 20 utils and 2nd one gives 16 utils, then TU from 2 ice-creams is 20 + 16 = 36 utils. If the 3rd ice-cream generates satisfaction of 10 utils, then TU from 3 ice-creams will be 20+ 16 + 10 = 46 utils.

TU can be calculated as:

TUn = U1 + U2 + U3 +……. + Un

Where:

TUn = Total utility from n units of a given commodity

U1, U2, U3,……. Un = Utility from the 1st, 2nd, 3rd nth unit

n = Number of units consumed

Marginal Utility (MU)

Marginal utility is the additional utility derived from the consumption of one more unit of the given commodity. It is the utility derived from the last unit of a commodity purchased. As per given example, when 3rd ice-cream is consumed, TU increases from 36 utils to 46 utils. The additional 10 utils from the 3rd ice-cream is the MU.

In the words of Chapman, “Marginal utility is addition made to total utility by consuming one more unit of a commodity”.

MU can be calculated as: MUn = TUn – TUn-1

Where: MUn = Marginal utility from nth unit; TUn = Total utility from n units;

TUn-1 = Total utility from n – 1 units; n = Number of units of consumption

MU of 3rd ice-cream will be: MU3 = TU3 – TU2 = 46 – 36 = 10 utils One More way to Calculate MU

MU is the change in TU when one more unit is consumed. However, when change in units consumed is more than one, then MU can also be calculated as:

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ATU

MU = Change in Total Utility/ Change in number of units = $\Delta TU/\Delta Q$

Total Utility is Summation of Marginal Utilities:

Total utility can also be calculated as the sum of marginal utilities from all units, i.e.

TUn= MU1 + MU2 + MU3 +…… + MUn or simply,

TU = $\sum MU$

Satisfaction

A supply chain network comprises echelons such as plant, warehouse, distribution center and customer. This network flows the manufactured products from the plant to customers considering the customer satisfaction and optimum cost . There are researches for locating the facilities in the candidate regions of supply chain networks but the managers wish to check the efficacy of their system and other less costly configurations. For this purpose, some of the related questions for redesigning the facilities in each echelon are given as: "Which facilities should be retained, established, eliminated or consolidated?" All of the above questions and related concepts are integrated in a novel research area named relocation models.

Economic satisfaction is defined as a channel member's evaluation of the economic outcomes that flow from the relationship with its partner such as sales volume, margins, and discounts. According to Geyskens, Steenkamp, and Kumar (1999, p. 224), "an economically satisfied channel member considers the relationship to be a success with respect to goal attainment. It is satisfied with the general effectiveness and productivity of the relationship with its partner, as well as with the resulting financial outcomes." Researchers that have taken an economic view of satisfaction have defined it as a channel member's response to the perceived discrepancy between prior expectations and profits (Brown, Lusch, and Smith, 1991), the degree to which a firm's expectations concerning financial and behavioral goal attainment are met in the relationship (Brown and Frazier, 1978), and the degree of approval or disapproval of the role performance of the dyadic partner (Lewis and Lambert, 1991; Skinner and Guiltinan, 1985). Social satisfaction is defined as a channel member's evaluation of the psychosocial aspects of its relationship, in that interactions with the exchange partner are fulfilling, gratifying, and facile. A channel member satisfied with the social outcomes of the relationship "appreciates the contacts with its partner, and, on a personal level, likes working with it, because it believes the partner is concerned, respectful, and willing to exchange ideas" (Geyskens, Steenkamp, and Kumar, 1999, p. 224). Researchers that have considered satisfaction in more social terms have defined it as an evaluation of interaction experiences (Crosby, Evans, and Cowles, 1990; Scheer and Stern, 1992), the extent to which social interactions are gratifying (Dwyer and Gassenheimer, 1992; Gassenheimer and Ramsey, 1994), and a reflection of the psychosocial well-being of the firm (Gassenheimer et al., 1994). Insight can be obtained from assessing both economic and social satisfaction, because they are conceptually distinct, created through different practices, and has a different impact on channel relationships. Failure to distinguish between these two types of satisfaction will lead to contradictory research results and will reduce the firm's ability to effectively manage channel relationships. We now develop a nomological model involving partner's power use, economic and social satisfaction, and responses to relationship problems that we will use to demonstrate the relevance of distinguishing between economic and social satisfaction.

3.6 Measurement of Utility

3.6.1 Cardinal measurement

Cardinal utility analysis is based on the cardinal measurement of utility which assumes that utility is measurable and additive. This theory was developed by neo-classical economists like Marshall, Pigou, Robertson etc. It is expressed as a quantity measured

in hypothetical units which called utils. If a consumer imagines that one mango has 8 utils and an apple 4 utils, it implies that the utility of mango is twice than of an apple.

Notes

Assumptions of Cardinal Utility Analysis

1. **Rationality:** The consumer is assumed to the rational. He tries to maximize his total utility under the income constraint.
2. **Cardinal Utility:** The utility of each commodity is measurable. Utility is cardinal concept. The most convenient measure is money. Thus utility can be measured quantitatively in monetary units or cardinal units.
3. **Constant Marginal Utility of Money:** The utility derived from commodities are measured in terms of money. So, money is a unit of measurement in cardinal approach. Hence, marginal utility of money should be constant.
4. **Diminishing Marginal Utility:** If the stock of commodities increases with the consumer, each additional stock or unit of the commodity gives him less and less satisfaction. It means utility increases at a decreasing rate.
5. **Independent Utilities:** It means utility obtained from commodity X is not dependent on utility obtained from commodity Y. It does not affected by the consumption of other commodities.

It's difficult to measure a qualitative concept such as utility, but economists try to quantify it in two different ways: cardinal utility and ordinal utility. Both of these values are imperfect, but they provide an important foundation for studying consumer choice.

In economics, utility simply means the satisfaction that a consumer experiences from a product or service. Utility is an important factor in decision-making and product choice, but it presents a problem for economists trying to incorporate it into microeconomics models. Utility varies among consumers for the same product, and it can be influenced by other factors, such as price and the availability of alternatives.

Cardinal utility is the assignment of a numerical value to utility. Models that incorporate cardinal utility use the theoretical unit of utility, the util, in the same way that any other measurable quantity is used. In other words, a basket of bananas might give a consumer a utility of 10, while a basket of mangoes might give a utility of 20.

The downside to cardinal utility is that there is no fixed scale to work from. The idea of 10 utils is meaningless in and of itself, and the factors that influence the number might vary widely from one consumer to the next. If another consumer gives bananas a util value of 15, it doesn't necessarily mean that he likes bananas 50% than the first consumer. The implication is that there is no way to compare utility between consumers.

One important concept related to cardinal utility the law of diminishing marginal utility, which states that at a certain point every extra unit of a good will provide less and less utility. While a consumer might assign his first basket of bananas a value of 10 utils, after several baskets the additional utility of each new basket might decline significantly. The values that are assigned to each additional basket can be used to find the point at which utility is maximized or to estimate a customer's demand curve.

An alternative way to measure utility is the concept of ordinal utility, which uses rankings instead of values. The benefit is that the subjective differences between products and between consumers are eliminated and all that remains are the ranked preferences. One consumer might like mangoes more than bananas, and another might prefer bananas over mangoes. These are comparable, if subjective, preferences.

Utility is used in the development of indifference curves, which represent the combination of two products that a certain consumer values equally and independently of price. For example, a consumer might be equally happy with three bananas and one mango or one banana and two mangoes. These are thus two points on the consumer's indifference curve.

Notes

3.6.2 Law of diminishing marginal utility

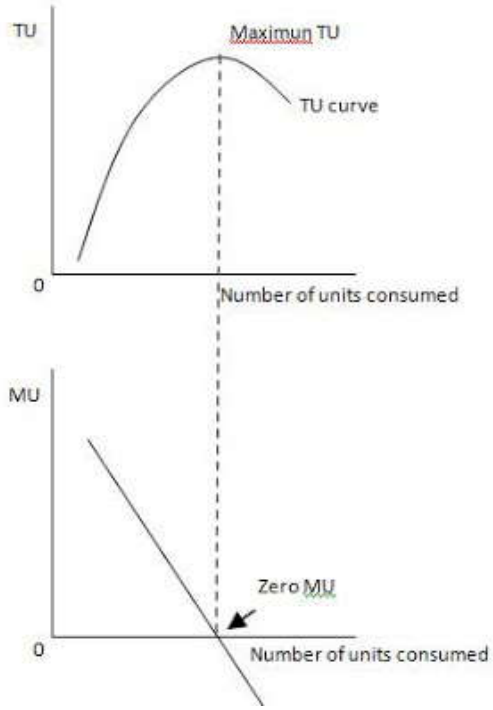
According to Marshall, “The additional benefit a person derives from a given increase of his stock of a thing diminishes with every increase in the stock that he already has”

1. **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
2. **Explanation:** As more and more quantity of a commodity is consumed, the intensity if 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 then the 1st bread. His Total utility and marginal utility can be put in the form of a following schedule.

Slices of Bread	Total utility	Marginal utility
0	0	-
1	70	70
2	110	40
3	130	20
4	140	10
5	145	5
6	140	-5

Plotting the above data on a graph gives



Notes

Here, from the MU curve we can see that MU is declinig as consumer consumes more of the commodity.

When TU is maximum, MU is Zero.

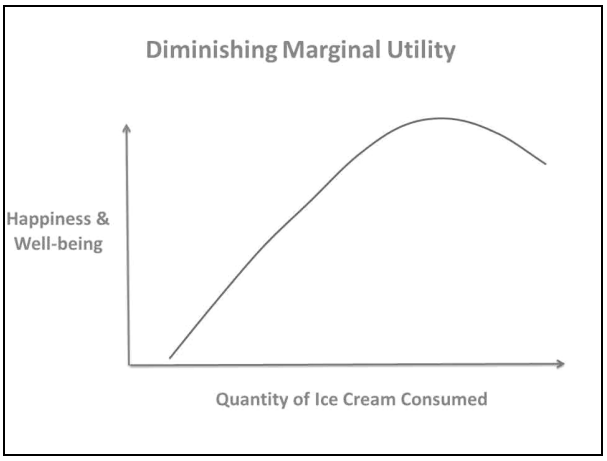
After that, TU starts declining and MU becomes negative.

The law of diminishing marginal utility is a law of economics stating that as a person increases consumption of a product, while keeping consumption of other products constant, there is a decline in the marginal utility that person derives from consuming each additional unit of that product.

This is the premise on which buffet-style restaurants operate. They entice you with "all you can eat," all the while knowing each additional plate of food provides less utility than the one before. And despite their enticement, most people will eat only until the utility they derive from additional food is slightly lower than the original.

For example, say you go to a buffet and the first plate of food you eat is very good. On a scale of ten you would give it a ten. Now your hunger has been somewhat tamed, but you get another full plate of food. Since you're not as hungry, your enjoyment rates at a seven at best. Most people would stop before their utility drops even more, but say you go back to eat a third full plate of food and your utility drops even more to a three. If you kept eating, you would eventually reach a point at which your eating makes you sick, providing dissatisfaction, or "dis-utility."

Law of diminishing marginal utility (DMU) states that as we consume more and more units of a commodity, the utility derived from each successive unit goes on decreasing.



In making choices, most people spread their incomes over different kinds of goods. People prefer a variety of goods because consuming more and more of any one good reduces the marginal satisfaction derived from further consumption of the same good. This law expresses an important relationship between utility and the quantity consumed of a commodity. Let us understand this law with the help of an example:

Suppose your father has just come from work and you offer him a glass of juice. The first glass of juice will give him great satisfaction. The satisfaction with the second glass of juice will be relatively lesser. With further consumption, a stage will come, when he would not need any more glass of juice, i.e. when the marginal utility drops to zero. After that point, if he is forced to consume even one more glass of juice, it will lead to disutility. Such a decrease in satisfaction with consumption of successive units occurs due to ‘Law of diminishing marginal utility’.

Law of DMU has universal applicability and applies to all goods and services. This law was first given by a German economist H.H. Gossen. That is why, it is also known as ‘Gossen’s first law of consumption’.

Notes

Assumptions of Law of Diminishing Marginal Utility

The law of DMU operates under certain specific conditions. Economists call them the 'assumptions' of this law.

These are as follows:

1. **Cardinal measurement of utility:** It is assumed that utility can be measured and a consumer can express his satisfaction in quantitative terms such as 1, 2, 3, etc.
2. **Monetary measurement of utility:** It is assumed that utility is measurable in monetary terms.
3. **Consumption of reasonable quantity:** It is assumed that a reasonable quantity of the commodity is consumed. For example, we should compare MU of glassfuls of water and not of spoonful's. If a thirsty person is given water in a spoon, then every additional spoon will yield him more utility. So, to hold the law true, suitable and proper quantity of the commodity should be consumed.
4. **Continuous consumption:** It is assumed that consumption is a continuous process. For example, if one ice-cream is consumed in the morning and another in the evening, then the second ice-cream may provide equal or higher satisfaction as compared to the first one.
5. **No change in Quality:** Quality of the commodity consumed is assumed to be uniform. A second cup of ice-cream with nuts and toppings may give more satisfaction than the first one, if the first ice-cream was without nuts or toppings.
6. **Rational consumer:** The consumer is assumed to be rational who measures, calculates and compares the utilities of different commodities and aims at maximising total satisfaction.
7. **Independent utilities:** It is assumed that all the commodities consumed by a consumer are independent. It means, MU of one commodity has no relation with MU of another commodity. Further, it is also assumed that one person's utility is not affected by the utility of any other person.
8. **MU of money remains constant:** As a consumer spends money on the commodity, he is left with lesser money to spend on other commodities. In this process, the remaining money becomes dearer to the consumer and it increases MU of money for the consumer. But, such an increase in MU of money is ignored. As MU of a commodity has to be measured in monetary terms, it is assumed that MU of money remains constant.
9. **Fixed Income and prices:** It is assumed that income of the consumer and prices of the goods which the consumer wishes to purchase remain constant.

It must be noted that 'Utility approach to Consumer's Equilibrium' is based on all these assumptions.

3.6.3 Consumer Surplus

Consumer surplus is the difference between the maximum price a consumer is willing to pay and the actual price they do pay. If a consumer would be willing to pay more than the current asking price, then they are getting more benefit from the purchased product than they spent to buy it. Consumer surplus plus producer surplus equals the total economic surplus in the market.

Consumer surplus is derived whenever the price a consumer actually pays is less than they are prepared to pay.

For example, at price P, the total private benefit in terms of utility derived by consumers from consuming quantity, Q is shown as the area ABQC in the diagram.

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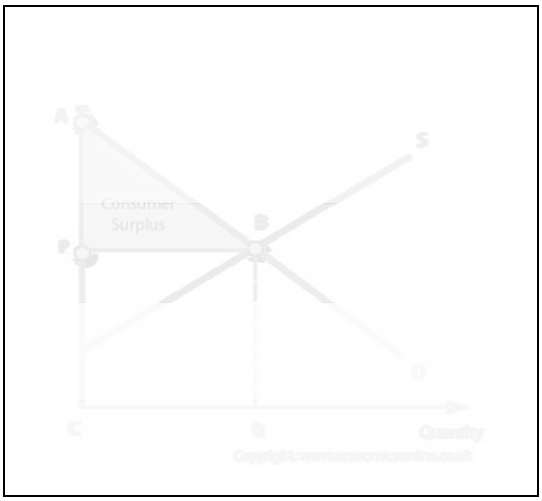


The amount consumers actually spend is determined by the market price they pay, P, and the quantity they buy, Q - namely, P x Q, or area PBQC. This means that there is a net gain to the consumer, because area ABQC is greater that area PBQC. This net gain is called consumer surplus, which is the total benefit, area ABQC, less the amount spent, area PBQC. Hence ABQC - PBQC = area ABP.

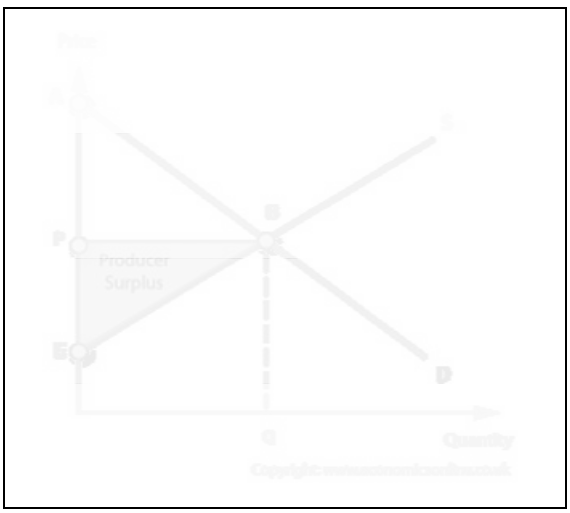
Declining consumer surplus

Consumer surplus generally declines with consumption. One explanation for this is the law of diminishing marginal utility, which suggests that the first unit of a good or service consumed generates much greater utility than the second, which generates greater utility than the third and subsequent units. A very thirsty consumer will be prepared to pay a relatively high price for their first soft drink, but, as they drink more, less utility is derived and the price they would be prepared to pay falls. Therefore, in the above diagram, as consumption rises from zero, at C, to Q, marginal utility falls. As utility falls, the price that consumers are prepared to pay declines, causing the demand curve to slope down from A to B.

Producer surplus

Producer surplus is the additional private benefit to producers, in terms of profit, gained when the price they receive in the market is more than the minimum they would be prepared to supply for. In other words they received a reward that more than covers their costs of production.

The producer surplus derived by all firms in the market is the area from the supply curve to the price line, EPB.

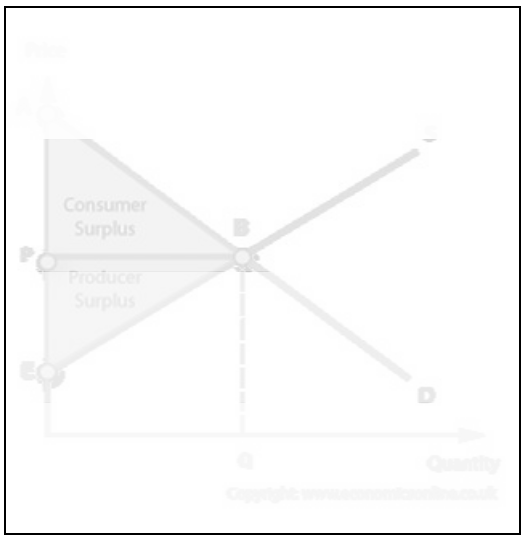


Notes

Economic welfare

Economic welfare is the total benefit available to society from an economic transaction or situation.

Economic welfare is also called community surplus. Welfare is represented by the area ABE in the diagram below, which is made up of the area for consumer surplus, ABP plus the area for producer surplus, PBE.



In market analysis economic welfare at equilibrium can be calculated by adding consumer and producer surplus.

Welfare analysis considers whether economic decisions by individuals, organisations, and the government increase or decrease economic welfare.

Consumer surplus is an economic measure of consumer satisfaction, which is calculated by analyzing the difference between what consumers are willing to pay for a good or service relative to its market price. A consumer surplus occurs when the consumer is willing to pay more for a given product than the current market price.

Consumers always like to feel like they are getting a good deal on the goods and services they buy and consumer surplus is simply an economic measure of this satisfaction. For example, assume a consumer goes out shopping for a CD player and he or she is willing to spend $250. When this individual finds that the player is on sale for $150, economists would say that this person has a consumer surplus of $100.

Consumer surplus is defined as the difference between the consumers' willingness to pay for a commodity and the actual price paid by them, or the equilibrium price.

Total social surplus is composed of consumer surplus and producer surplus. It is a measure of consumer satisfaction in terms of utility.

Graphically, it can be determined as the area below the demand curve (which represents the consumer's willingness to pay for a good at different prices) and above the price line. It reflects the benefit gained from the transaction based on the value the consumer places on the good. It is positive when what the consumer is willing to pay for the commodity is greater than the actual price.

Consumer surplus is infinite when the demand curve is inelastic and zero in case of a perfectly elastic demand curve.

Consumer surplus, also called social surplus and consumer's surplus, in economics, the difference between the price a consumer pays for an item and the price he would be willing to pay rather than do without it. As first developed by Jules Dupuit, French civil engineer and economist, in 1844 and popularized by British economist

Notes

Alfred Marshall, the concept depended on the assumption that degrees of consumer satisfaction (utility) are measurable. Because the utility yielded by each additional unit of a commodity usually decreases as the quantity purchased increases, and because the commodity's price reflects only the utility of the last unit purchased rather than the utility of all units, the total utility will exceed total market value. A telephone call that costs only 20 cents, for example, is often worth much more than that to the caller. According to Marshall, this excess utility, or consumer surplus, is a measure of the surplus benefits an individual derives from his environment.

If the marginal utility of money is assumed to be constant for consumers of all income levels and money is accepted as a measure of utility, the consumer surplus can be shown as the shaded area under the consumer demand curve in the figure. If the consumer purchases MO of the commodity at a price of ON or ME, the total market value, or amount he pays, is MONE, but the total utility is MONY. The differences between them are the shaded area NEY, the consumer surplus.

The concept fell into disrepute when many 20th-century economists realized that the utility derived from one item is not independent of the availability and price of other items; in addition, there are difficulties in the assumption that degrees of utility are measurable.

The concept is still retained by economists, in spite of the difficulties of measurement, to describe the benefits of purchasing mass-produced goods at low prices. It is used in the fields of welfare economics and taxation.

3.7 Ordinal Measurement

Cardinal utility approach is based on the fact that the exact or absolute measurement of utility is not possible. However, modern economists rejected the cardinal utility approach and introduced the concept of ordinal utility for the analysis of consumer behavior.

According to them, it may not be possible to measure exact utility, but it can be expressed in terms of less or more useful good. For instance, a consumer consumes coconut oil and mustard oil. In such a case, the consumer cannot say that coconut oil gives 10 utils and mustard oil gives 20 utils.

Instead he/she can say that mustard oil gives more utility to him/her than coconut oil. In such a case, mustard oil would be given rank 1 and coconut oil would be given rank 2 by the consumer. This assumption lays the foundation for the ordinal theory of consumer behavior.

The utility analysis suffers from a defect of subjective nature of utility i.e., utility cannot be measured precisely in quantitative terms. In order to overcome this difficulty, the economists have evolved an alternative approach based on indifference curves. According to this indifference curve analysis, the utility cannot be measured precisely but the consumer can state which of the two combinations of goods he prefers without describing the magnitude of strength of his preference. This means that if the consumer is presented with a number of various combinations of goods, he can order or rank them in a 'scale of preferences'. If the various combinations are marked A, B, C, D, E etc., the consumer can tell whether he prefers A to B, or B to A or is indifferent between them. Similarly, he can indicate his preference or indifference between any other pairs or combinations. The concept of ordinal utility implies that the consumer cannot go beyond stating his preference or indifference. In other words, if a consumer prefers A to B, he cannot tell by 'how much' he prefers A to B. The consumer cannot state the 'quantitative differences' between various levels of satisfaction; he can simply compare them 'qualitatively', that is, he can merely judge whether one level of satisfaction is higher than, lower than or equal to another. The basic tool of Hicks - Allen ordinal analysis of demand is the indifference curve that represents all those combinations of goods that give same satisfaction to the consumer. In other words, all combinations of the goods lying on a consumer's indifference curve are equally preferred by him.

Notes

Indifference curve is also called Iso-utility curve. Indifference schedule is the tabular statement that shows the different combinations of two commodities yielding the same level of satisfaction.

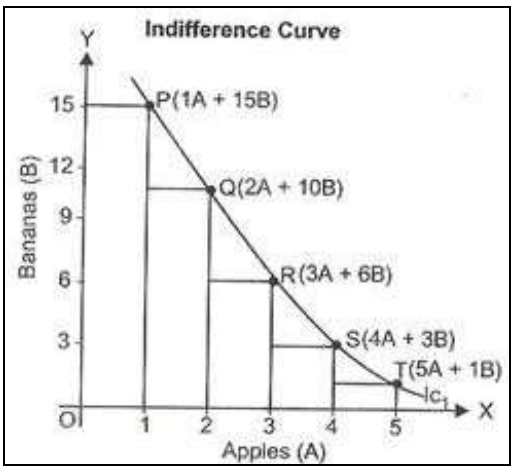
3.7.1 Indifference curves

When a consumer consumes various goods and services, then there are some combinations, which give him exactly the same total satisfaction. The graphical representation of such combinations is termed as indifference curve.

Indifference curve refers to the graphical representation of various alternative combinations of bundles of two goods among which the consumer is indifferent. Alternately, indifference curve is a locus of points that show such combinations of two commodities which give the consumer same satisfaction. Let us understand this with the help of following indifference schedule, which shows all the combinations giving equal satisfaction to the consumer.

Indifference Schedule

Combination of Apples and Bananas	Apples (A)	Bananas (B)
P	1	15
Q	2	10
R	3	6
S	4	3
T	5	1



As seen in the schedule, consumer is indifferent between five combinations of apple and banana. Combination 'P' (1A + 15B) gives the same utility as (2A + 10B), (3A + 6B) and so on. When these combinations are represented graphically and joined together, we get an indifference curve 'IC1'.

In the diagram, apples are measured along the X-axis and bananas on the Y-axis. All points (P, Q, R, S and T) on the curve show different combinations of apples and bananas. These points are joined with the help of a smooth curve, known as indifference curve (IC1). An indifference curve is the locus of all the points, representing different combinations, that are equally satisfactory to the consumer.

Every point on IC1, represents an equal amount of satisfaction to the consumer. So, the consumer is said to be indifferent between the combinations located on Indifference Curve 'IC1'. The combinations P, Q, R, S and T give equal satisfaction to the consumer

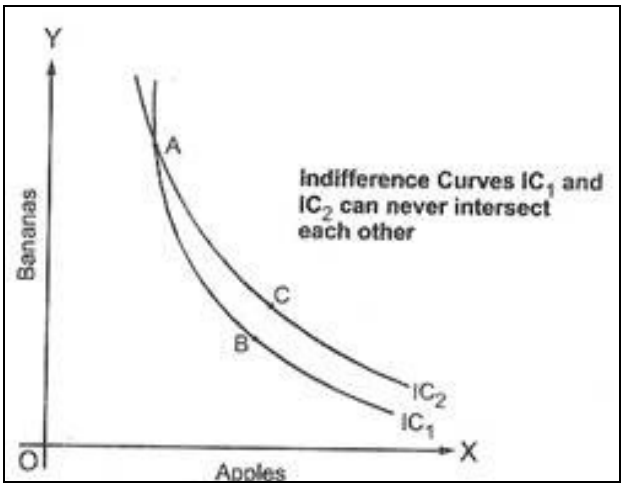
and therefore he is indifferent among them. These combinations are together known as 'Indifference Set'.

Notes

Features and Properties

1. **Indifference curves are always convex to the origin:** An indifference curve is convex to the origin because of diminishing MRS. MRS declines continuously because of the law of diminishing marginal utility. As seen in Table, when the consumer consumes more and more of apples, his marginal utility from apples keeps on declining and he is willing to give up less and less of bananas for each apple. Therefore, indifference curves are convex to the origin.
2. **Indifference curve slope downwards:** It implies that as a consumer consumes more of one good, he must consume less of the other good. It happens because if the consumer decides to have more units of one good (say apples), he will have to reduce the number of units of another good (say bananas), so that total utility remains the same.
3. **Higher Indifference curves represent higher levels of satisfaction:** Higher indifference curve represents large bundle of goods, which means more utility because of monotonic preference. Consider point 'A' on IC_X and point 'B' on IC_2 in. At 'A', consumer gets the combination (OR, OP) of the two commodities X and Y. At 'B', consumer gets the combination (OS, OP). As OS > OR, the consumer gets more satisfaction at IC_2.
4. **Indifference curves can never intersect each other:** As two indifference curves cannot represent the same level of satisfaction, they cannot intersect each other. It means, only one indifference curve will pass through a given point on an indifference map. In Fig., satisfaction from point A and from B on IC_1 will be the same.

Similarly, points A and C on IC_2 also give the same level of satisfaction. It means, points B and C should also give the same level of satisfaction. However, this is not possible, as B and C lie on two different indifference curves, IC_1 and IC_2 respectively and represent different levels of satisfaction. Therefore, two indifference curves cannot intersect each other.



3.8 Complements and Substitutes

A Substitute for something else. Broadly speaking, oranges and apples could be classified as substitutes. Obviously, oranges and apples are not that similar, which is why they are not classified as "perfect substitutes". When the price increases for one good, the demand for the substitute will increase (assuming that price remains constant). What does this look like?

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Imagine you are going grocery shopping, and have included on your list oranges and apples. You get to the grocery store and see that prices of apples have doubled, while oranges cost the same. So, you decide to just buy more oranges instead of some of both.

Obviously, this decision will also be affected by how much the price increases and the amount of money you have to spend. For a wealthy shopper, a change from $1 to $2 an apple won't be a huge deal. A person who loves apples more than oranges may also decide not to change their purchase plan. But, consider this analogy on a larger scale—say that the cost of an SUV doubles, so you instead buy a small car. Both goods accomplish the same function, meaning they are substitutes. As long as you don't have very strong preferences, you will change your demand for small cars due to changes in the price of SUVs.

Let's trace back to the aforementioned concept of "perfect substitutes", again, which is defined like it sounds—two items that are perfectly indistinguishable in the eyes of the consumer. Perfect substitutes used to be a commonly found thing, but as marketing and advertising have created brand loyalty, differentiating traits, and premium qualities ("organic", "recycled", etc.) consumers no longer view many goods as perfectly alike. The most relevant examples of perfect substitutes come in the form of commodities—fruit, vegetables, wheat, and more. You don't care if you are getting a tomato from one farmer or the other, so the vendors are providing perfect substitutes. Branded items versus their generics are also often perfectly elastic—they accomplish the exact same function, so if the price skyrockets for the brand-name item, most people will just buy the generic instead (increased demand).

The idea of two tomatoes as perfect substitutes is contingent upon the idea that they have identical qualities. If one is locally raised and organic, and the other just a plain old tomato, there are people out there who will prefer the organic one. How much more are they willing to pay for these preferences? We can evaluate this through a number known as the elasticity of demand.

With the increased amount of products available to us today, the amount of complements available has also increased. Most importantly, substitutes and complements interact to allow the consumer to adjust to price changes. Let me give a few examples:

The price of gas increases. Gas is a complement to your car. But, your car is a substitute to the city bus or subway. So, to adjust for the price in gas you simply switch to public transportation in the mean time.

Two goods (A and B) are complementary if using more of good A requires the use of more good B. For example, ink jet printer and ink cartridge are complements.

Two goods (C and D) are substitutes if using more of good C replaces the use of good D. For example, Pepsi Cola and Coca Cola are substitutes.

Complementary goods and substitute goods are good examples to illustrate the difference between changes in demand vs changes in quantity demanded.

3.8.1 Complementary Goods

Here we have the demand curves for two complementary goods (A and B). Suppose the price good A goes down on the right panel. The law of demand tells us that more of good A will be purchased by moving down the demand curve. In other words, the quantity demanded for good A will increase.

Since goods A and B are complementary, more good A requires the use of more good B. But the price of good B has not changed. So more good B would be bought only if the demand for good B increases by shifting to the right.

A price increase in good A, on the other hand, will lead to a decrease in quantity demanded for good A and a decrease in demand for good B.

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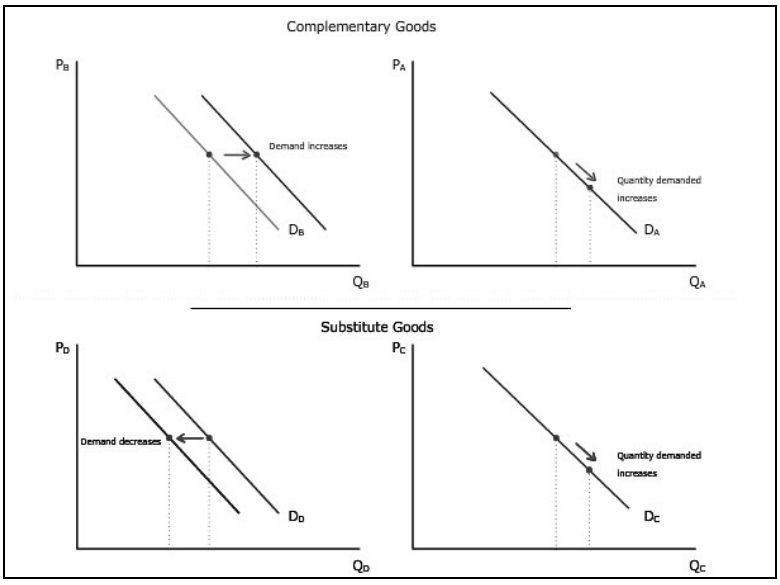
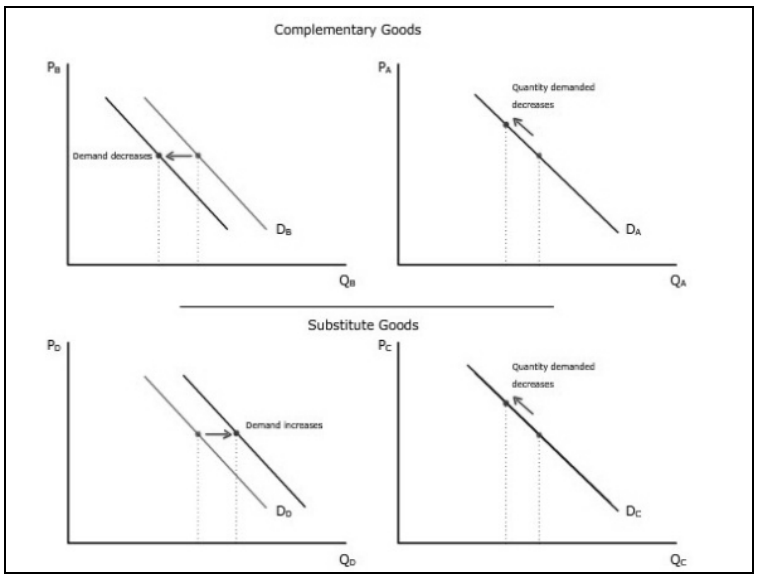


3.8.2 Substitute goods

On the lower panels, we have two substitute goods (C and D). Suppose there is a price decrease in the price of good C on the right panel. The law of demand tells us that more of good C will be purchased by moving down the demand curve. In other words, the quantity demanded for good C will increase.

Since goods C and D are substitutes, more good C will replace the use of good D. But the price of good D has not changed. So less good D would be bought only if the demand for good D decreases by shifting to the left.

A price increase in good C, on the other hand, will lead to a decrease in quantity demanded for good C and an increase in demand for good D.



3.9 Consumer Equilibrium

When consumers make choices about the quantity of goods and services to consume, it is presumed that their objective is to maximize total utility. In maximizing total utility, the consumer faces a number of constraints, the most important of which are the consumer's income and the prices of the goods and services that the consumer wishes to consume. The consumer's effort to maximize total utility, subject to these constraints,

Notes

is referred to as the consumer's problem. The solution to the consumer's problem, which entails decisions about how much the consumer will consume of a number of goods and services, is referred to as consumer equilibrium.

Determination of consumer equilibrium. Consider the simple case of a consumer who cares about consuming only two goods: good 1 and good 2. This consumer knows the prices of goods 1 and 2 and has a fixed income or budget that can be used to purchase quantities of goods 1 and 2. The consumer will purchase quantities of goods 1 and 2 so as to completely exhaust the budget for such purchases. The actual quantities purchased of each good are determined by the condition for consumer equilibrium, which is

$$\frac{\text{marginal utility of good 1}}{\text{price of good 1}} = \frac{\text{marginal utility of good 2}}{\text{price of good 2}} = \cdots = \frac{\text{marginal utility of good } N}{\text{price of good } N}$$

This condition states that the marginal utility per dollar spent on good 1 must equal the marginal utility per dollar spent on good 2. If, for example, the marginal utility per dollar spent on good 1 were higher than the marginal utility per dollar spent on good 2, then it would make sense for the consumer to purchase more of good 1 rather than purchasing any more of good 2. After purchasing more and more of good 1, the marginal utility of good 1 will eventually fall due to the law of diminishing marginal utility, so that the marginal utility per dollar spent on good 1 will eventually equal that of good 2. Of course, the amount purchased of goods 1 and 2 cannot be limitless and will depend not only on the marginal utilities per dollar spent, but also on the consumer's budget.

An example: To illustrate how the consumer equilibrium condition determines the quantity of goods 1 and 2 that the consumer demands, suppose that the price of good 1 is $2 per unit and the price of good 2 is $1 per unit. Suppose also that the consumer has a budget of $5. The marginal utility (MU) that the consumer receives from consuming 1 to 4 units of goods 1 and 2 is reported in Table . Here, marginal utility is measured in fictional units called utils, which serve to quantify the consumer's additional utility or satisfaction from consuming different quantities of goods 1 and 2. The larger the number of utils, the greater is the consumer's marginal utility from consuming that unit of the good. Table also reports the ratio of the consumer's marginal utility to the price of each good. For example, the consumer receives 24 utils from consuming the first unit of good 1, and the price of good 1 is $2. Hence, the ratio of the marginal utility of the first unit of good 1 to the price of good 1 is 12.

TABLE 1 Illustration of Consumer Equilibrium. Price of good 1 = $2, Price of good 2 = $1, Budget = $5

Units of good 1	*MU* of good 1	*MU*/price of good 1	Units of good 2	*MU* of good 2	*MU*/price of good 2
1	24	12	1	9	9
2	18	9	2	8	8
3	12	6	3	5	5
4	6	3	4	1	1

The consumer equilibrium is found by comparing the marginal utility per dollar spent (the ratio of the marginal utility to the price of a good) for goods 1 and 2, subject to the constraint that the consumer does not exceed her budget of $5. The marginal utility per

Notes

dollar spent on the first unit of good 1 is greater than the marginal utility per dollar spent on the first unit of good 2(12 utils > 9 utils). Because the price of good 1 is $2 per unit, the consumer can afford to purchase this first unit of good 1, and so she does. She now has $5 − $2 = $3 remaining in her budget. The consumer's next step is to compare the marginal utility per dollar spent on the second unit of good 1 with marginal utility per dollar spent on the first unit of good 2. Because these ratios are both equal to 9 utils, the consumer is indifferent between purchasing the second unit of good 1 and first unit of good 2, so she purchases both. She can afford to do so because the second unit of good 1 costs $2 and the first unit of good 2 costs $1, for a total of $3. At this point, the consumer has exhausted her budget of $5 and has arrived at the consumer equilibrium, where the marginal utilities per dollar spent are equal. The consumer's equilibrium choice is to purchase 2 units of good 1 and 1 unit of good 2.

3.10 Summary

Demand analysis is a study of sales generated by a good or service to determine the reasons for its success or failure, and how its sales performance can be improved.

Demand analysis is to find out the customer demand for a product or service in a particular market.

Demand analysis is one of the important consideration for a variety of business decisions like determining sales forecasting, pricing products/services, marketing and advertisement spending, manufacturing decisions, expansion planning etc.

For a new company, the demand analysis can tell whether a substantial demand exists for the product/service and given the other information like number of competitors, size of competitors, industry growth etc it helps to decide if the company could enter the market and generate enough returns to sustain and advance its business.

Demand analysis helps in identifying key business areas where demand is highest and areas which needs attention as very low demand indicates different problems like either the customers are not aware of the product/service and more focus must be in advertisement and promotion or the customer needs are not met by current product/service and improvements are needed or competitors have sprung up with better offerings etc.

3.11 Check Your Progress

Multiple Choice Questions

1. An indifference curve is ..... to the origin:
   a) Convex
   b) Concave
   c) Both of these
   d) none of these
2. Which approach is based on the fact that the exact or absolute measurement of utility is not possible:
   a) Ordinal
   b) cardinal utility
   c) consumer equilibrium
   d) demand analysis
3. Higher Indifference curves represent:
   a) higher satisfaction
   b) lower satisfaction

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c) higher dissatisfaction
d) lower dissatisfaction

4. Which of the following generally declines with consumption:
   a) consumer equilibrium
   b) producer surplus
   c) consumer surplus
   d) cardinal approach
5. Economic welfare is also called:
   a) consumer surplus
   b) community surplus
   c) producer surplus
   d) none of these
6. Which of the following analysis is to find out the customer demand for a product or service in a particular market:
   a) consumer surplus
   b) cardinal approach
   c) ordinal approach
   d) demand
7. Among which of these is derived by all firms in the market is the area from the supply curve to the price line.
   a) consumer equilibrium
   b) producer surplus
   c) consumer surplus
   d) cardinal approach
8. ..... is the difference between the maximum price a consumer is willing to pay and the actual price they do pay.
   a) consumer equilibrium
   b) producer surplus
   c) consumer surplus
   d) cardinal approach
9. When TU is maximum MU is:
   a) zero
   b) one
   c) two
   d) three
10. When TU starts declining MU becomes:
    a) positive
    b) negative
    c) zero
    d) none of these

3.12 Descriptive Questions:

1. What is consumer surplus?
2. What do you mean by producer surplus?

Notes

3. Explain consumer equilibrium.
4. Explain law of diminishing marginal utility.
5. What are complements and substitutes?
6. What is Indifference curve?
7. State the properties of IC.
8. What is Utility?
9. What do you mean by ordinal measurement?
10. What is Cardinal measurement?

3.13 Key Terms

- **Annual percentage yield (APY):** A percentage by which an investment grows over one year. Unlike APR, APY indicates the affect of the compounding periods. APY will be larger than APR any time interest is compounded more frequently than once a year.
- **Business Cycle Frequency:** The business cycle frequency is oftenconsidered to be three to five periods.
- **Consumers' willingness and ability to spend:** The maximum amount that consumers say they will spend and/or actually spend for a certain quantity of goods or services.
- **Costs and Efficiency:** A cost is a foregone opportunity. Comparative advantage is the ability to perform a given task at a lower cost. An individual/country is said to be more efficient if it has a comparative advantage in the production of some good. In other words it is said to be more efficient.

Check Your Progress: Answers

1.a, 2.b, 3.a, 4.c, 5.b, 6.d, 7.b, 8.c, 9.a, 10.b.

3.14 Further Readings

- Principles of Economics, Alfred Marshall - 2013.
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- Basic Economics, Thomas Sowell – 2014.
- Ecological Economics, Second Edition: Principles and Herman E. Daly, Joshua Farley – 2011.
- Handbook of Regional and Urban Economics: Regional economics, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- Principles of Economics - Volume 1, N. Gregory Mankiw – 2008.
- Economics: The User's Guide: A Pelican Introduction, Ha-Joon Chang – 2014.
- Economics: A New Introduction, Hugh Stretton – 1999.
- Principles of Microeconomics - Volume 1, N. Gregory Mankiw – 1998.

Notes

Unit 4: Production Analysis

Structure

Objectives

After studying this unit, you should be able to understand the following topics:

- Production Analysis
- Production function inputs and output
- Total, average and marginal products and Law of diminishing marginal returns
- Returns to scale
- Profits, revenue and costs
- Isoquant, isocost and producers equilibrium

4.1 Introduction

Production processes can be studied empirically in terms of either production functions or cost functions. Estimates of the parameters of these functions provide valuable insights into the technology of firms and industries. The central questions relating to technology are (1) whether production processes display decreasing, constant, or increasing returns to scale; (2) how technological progress affects the parameters of production processes; and (3) at what rate technological progress has occurred. Estimation and interpretation of the estimates is complicated by the fact that observations on inputs, outputs, and costs reflect not only the state of technology but also the economic decisions made by producers and factor suppliers. Assumptions regarding economic behavior and competition in input and output markets often play a crucial role in the statistical analyses, and it is not always easy to determine whether the results reveal the nature of technology or serve instead to test the validity of the economic assumptions.

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Production functions: The fundamental productive organization is the firm, which enters into contractual arrangements in buying, transforming, and selling goods and services. The production set of a firm describes at a given time the possible relationships between inputs and outputs. For the single-product firm, the production function describes the maximum output that can be produced from given quantities of inputs. Let *X* denote output in physical homogeneous units, and let L and K denote two inputs—labor and capital—in homogeneous units; then the production function is Xmax = *f*(*K,L*), or simply *X* = *f*(*K,L*). The numbers X, K, and L can take on positive or zero values only, and for a given technology the function is normally specified as univalued.

An important practical distinction in statistical studies is between the ex ante (or planning) production or cost function and the ex post (or realized) function. Decisions about the type and scale of plant are made years before the plant is completed. Expectations, formed in previous years, about prices and output levels determine the quantity and character of new capital employed in the current period. The ex post function is the realized relationship and is the one that is normally measured in practice. If all plans and expectations are perfectly realized, the ex ante and ex post functions are equivalent.

In economics, production theory explains the principles in which the business has to take decisions on how much of each commodity it sells and how much it produces and also how much of raw material ie., fixed capital and labor it employs and how much it will use. It defines the relationships between the prices of the commodities and productive factors on one hand and the quantities of these commodities and productive factors that are produced on the other hand.

Production is a process of combining various inputs to produce an output for consumption. It is the act of creating output in the form of a commodity or a service which contributes to the utility of individuals.

In other words, it is a process in which the inputs are converted into outputs.

Function

The Production function signifies a technical relationship between the physical inputs and physical outputs of the firm, for a given state of the technology.

$$Q = f(a, b, c, \ldots\ldots z)$$

Where a,b,c ....z are various inputs such as land, labor ,capital etc. Q is the level of the output for a firm.

If labor (L) and capital (K) are only the input factors, the production function reduces to −

$$Q = f(L, K)$$

Production Function describes the technological relationship between inputs and outputs. It is a tool that analysis the qualitative input – output relationship and also represents the technology of a firm or the economy as a whole.

Production Analysis

Production analysis basically is concerned with the analysis in which the resources such as land, labor, and capital are employed to produce a firm's final product. To produce these goods the basic inputs are classified into two divisions −

Variable Inputs

Inputs those change or are variable in the short run or long run are variable inputs.

Notes

Fixed Inputs

Inputs that remain constant in the short term are fixed inputs.

Cost Function

Cost function is defined as the relationship between the cost of the product and the output. Following is the formula for the same −

$$C = F [Q]$$

Cost function is divided into namely two types −

Short Run Cost

Short run cost is an analysis in which few factors are constant which won't change during the period of analysis. The output can be changed ie., increased or decreased in the short run by changing the variable factors.

4.2 Production Function Inputs and Output

Suppose we want to produce apples. We need land, seedlings, fertilizer, water, labour, and some machinery. These are called inputs or factors of production. The output is apples. In general a given output can be produced with different combinations of inputs. A production function is the functional relationship between inputs and output. It shows the maximum output which can be obtained for a given combination of inputs. It expresses the technological relationship between inputs and output of a product. In general, we can represent the production function for a firm as: Q = f (x1, x2, ….,xn)

Where Q is the maximum quantity of output, x1, x2, ….,xn are the quantities of various inputs, and f stands for functional relationship between inputs and output. For the sake of clarity, let us restrict our attention to only one product produced using either one input or two inputs. If there are only two inputs, capital (K) and labour (L), we write the production function as: Q = f (L, K) This function defines the maximum rate of output (Q) obtainable for a given rate of capital and labour input. It may be noted here that outputs may be tangible like computers, television sets, etc., or it may be intangible like education, medical care, etc. Similarly, the inputs may be other than capital and labour. Also, the principles discussed in this unit apply to situations with more than two inputs as well.

There exists some relationship between inputs and output of a firm. In Economics, such a relationship is known as production function.

Production function is an expression of the technological relation between physical inputs and output of a good.

Symbolically: Ox = f i1, i2, i3……. in)

{Where: Ox = Output of commodity x; f = Functional relationship; i1, i2, …. in = Inputs needed for Ox}

Example of Production function:

Suppose a firm is manufacturing chairs with the help of two inputs, say labour (L) and capital (K). Then, production function can be written as: OChairs = f (L, K)

Production function defines the maximum chairs (OChairs), which can be produced with the given capital and labour inputs. If production functions is expressed as: 250 = (7L, 2K). It means, 7 units of labour and 2 units of capital can produce maximum of 250 chairs.

Notes

More about Production Function

1. The production function specifies either the maximum output that can be produced with the given inputs or the minimum quantity of inputs needed to produce a given level of output.
2. Production function establishes a relation between inputs and output, which is technical in nature.

   Production function is not economical in nature as we do not consider the value of inputs and output.
3. Production function is always defined with respect to a given technology. If there is an improvement in the technique of production, then increased output can be obtained with the same physical inputs.
4. The production function includes only the technically efficient methods of production as no rational entrepreneur will use inefficient methods.

4.2.1 Production Function with one Variable Input

Consider the simplest two input production process - where one input with a fixed quantity and the other input with is variable quantity. Suppose that the fixed input is the service of machine tools, the variable input is labour, and the output is a metal part. The production function in this case can be represented as: Q = f (K, L) Where Q is output of metal parts, K is service of five machine tools (fixed input), and L is labour (variable input). The variable input can be combined with the fixed input to produce different levels of output. Total, Average, and Marginal Products The production function given above shows us the maximum total product (TP) that can be obtained using different combinations of quantities of inputs. Suppose the metal parts company decides to know the output level for different input levels of labour using fixed five machine tools. Table explains the total output for different levels of variable input. In this example, the TP rises with increase in labour up to a point (six workers), becomes constant between sixth and seventh workers, and then declines.

Number of workers (L)	Total output (TP) (thousands per year) (Q)	Marginal product (MP_L = WQ/WL)	Average product (AP_L = Q/L)
0	0	—	—
1	10	10	10
2	28	18	14
3	54	26	18
4	76	22	19
5	90	14	18
6	96	6	16
7	96	0	13.5
8	92	–4	11.5

Two other important concepts are the average product (AP) and the marginal product (MP) of an input. The AP of an input is the TP divided by the amount of input used to produce this amount of output. Thus AP is the output-input ratio for each level of variable input usage. The MP of an input is the addition to TP resulting from the addition of one unit of input, when the amounts of other inputs are constant. In our example of machine parts production process, the AP of labour is the TP divided by the number of workers.APL = Q/L As shown in Table, the APL first rises, reaches maximum at 19, and the declines thereafter. Similarly, the MP of labour is the additional output attributable to using one additional worker with use of other input (service of five machine tools) fixed. MPL = W Q/WL Where W means 'the change in'. For example, from Table for MP4 (marginal product of 4th worker) WQ = 76–54 = 22 and WL = 4–3 =1. Therefore, MP4 = (22/1) = 22. Note that although the MP first increases with

Notes

addition of workers, it declines later and for the addition of 8th worker it becomes negative (–4).

1 a) If MP > 0, TP will be rising as L increases. The TP curve begins at the origin, increases at an increasing rate over the range 0 to 3, and then increases at a decreasing rate. The MP reaches a maximum at 3, which corresponds to an inflection point (x) on the TP curve. At the inflection point, the TP curve changes from increasing at an increasing rate to increasing at a decreasing rate.

b) If MP = 0, TP will be constant as L increases. The TP is constant between workers 6 and 7.

c) If MP < 0, TP will be declining as L increases. The TP declines beyond 7. Also, the TP curve reaches a maximum when MP = 0 and then starts declining when MP < 0.

2. MP intersects AP (MP = AP) at the maximum point on the AP curve.

This occurs at labour input rate 4.5. Also, observe that whenever MP > AP, the AP is rising (upto number of workers 4.5) — it makes no difference whether MP is rising or falling. When MP < AP (from number of workers 4.5), the AP is falling. Therefore, the intersection must occur at the maximum point of AP. It is important to understand why. The key is that AP increases as long as the MP is greater than AP. And AP decreases as long as MP is less than AP. Since AP is positively or negatively sloped depending on whether MP is above or below AP, it follows that MP = AP at the highest point on the AP curve.

4.2.2 Production Function with two Variable Inputs

Now we turn to the case of production where two inputs (say capital and labour) are variable. Although, we restrict our analysis to two variable inputs, all of the results hold for more than two also. We are restricting our analysis to two variable inputs because it simply allows us the scope for graphical analysis. When analysing production with more than one variable input, we cannot simply use sets of AP and MP curves like those discussed in section, because these curves were derived holding the use of all other inputs fixed and letting the use of only one input vary. If we change the level of fixed input, the TP, AP and MP curves would shift. In the case of two variableinputs, changing the use of one input would cause a shift in the MP and AP curves of the other input. For example, an increase in capital would probably result in an increase in the MP of labour over a wide range of labour use.Production Isoquants. In Greek the word ‘iso’ means ‘equal’ or ’same’. A production isoquant(equal output curve) is the locus of all those combinations of two inputs which yields a given level of output. With two variable inputs, capital and labour, the isoquant gives the different combinations of capital and labour, that produces the same level of output. For example, 5 units of output can be produced using either 15 units of capital (K) or 2 units of labour (L) or K=10 and L=3 or K=5and L=5 or K=3 and L=7. These four combinations of capital and labour are four points on the isoquant associated with 5 units of output as shown in Figure. And if we assume that capital and labour are continuously divisible, there would be many more combinations on this isoquant. Now let us assume that capital, labour, and output are continuously divisible in order to set forth the typically assumed characteristics of isoquants. Figure illustrates three such isoquants. Isoquant I shows all the combinations of capital and labour that will produce 10 units of output. According to this isoquant, it is possible to obtain this output if K0 units of capital and L0 units of

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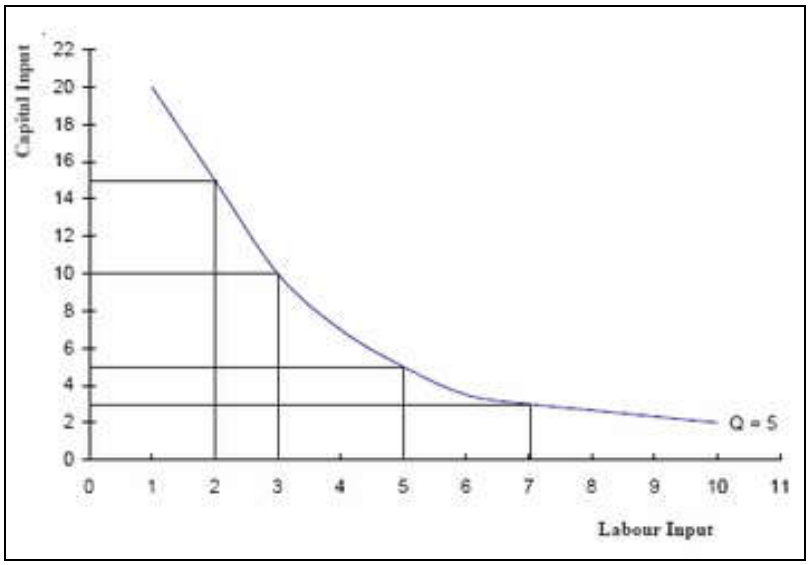
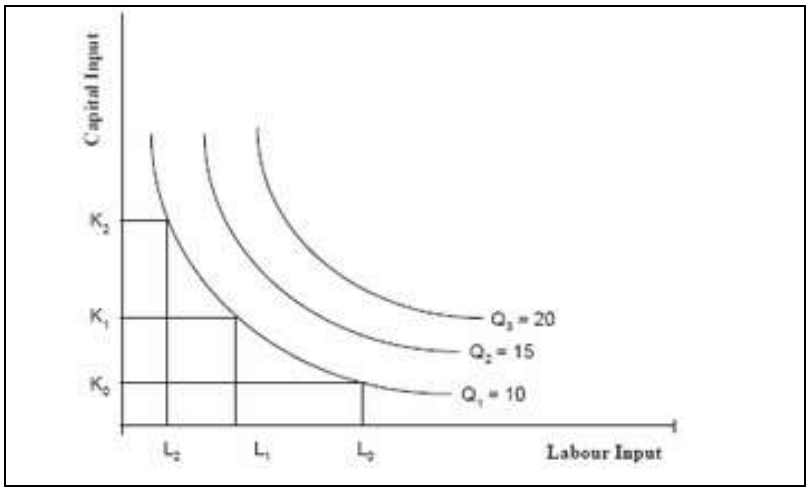


Isoquant Map: These isoquants shows various combinations of capital labour imports that can produced 10,1 5 and 20 units of output



labour inputs are used. Alternately, this output can also be obtained if K1 units of capital and L1 units of labour inputs or K2 units of capital and L2 units of labour are used. Similarly, isoquant II shows the various combinations of capital and labour that can be used to produce 15 units of output. Isoquant III shows all combinations that can produce 20 units of output. Each capital labour combination can be on only one isoquant. That is, isoquants cannot intersect. These isoquants are only three of an infinite number of isoquants that could be drawn. A group of isoquants is called an isoquant map. In an isoquant map, all isoquants lying above and to the right of a given isoquant indicate higher levels of output.

4.3 Total, average and marginal products

Total product (also known TPP) is defined as the total quantity of output produced by a firm in the given inputs. Total product identifies the specific outputs which are possible using variable levels of counts. An understanding of total product is essential to the short-run analysis of a firm's production. Changes in total product are taken into account closely when there are changes in variable costs (labor) of production .

Average Product is defined as the product produced by every worker.

when we divide the total product by output we get average product

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(Total Product)/(Variable Inputs Employed

220px-Average and marginal product curves small

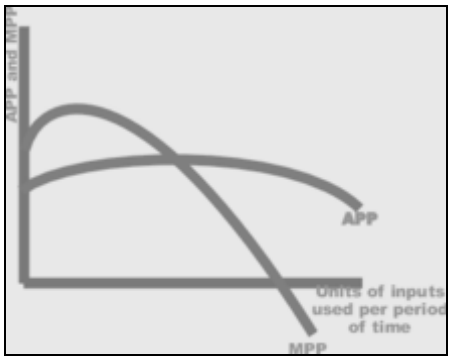
Graph of Average and Marginal Output)=Average Product

Marginal Product

"The net change in total production by using the additional units of labor is known as Marginal Product of Labor" 'Marginal Product is similar to average product but is looked at from another perspective. Discrete marginal product is defined as the change in total product that comes as a result of a one unit increase in the variable input/capital level of a firm. Continuous marginal product is calculated as the derivative of total product with respect to the variable input employed. This can be represented as: Therefore allowing one to attain the following results:

$$(dTP)/(dVI)=MP$$

where TP is total product, MP is marginal product and VI is variable inputs. The analysis of marginal product is foundational to explaining the law of supply (upward-sloping supply curve) via the Law of Diminishing Marginal Returns.



One way of looking at a production function is to consider how output changes as we vary one input, holding the other inputs fixed. This view of a production function is especially useful if we are studying the decision-making of a firm that can vary only one input.

Consider the production function F (z1, z2). Assume that the amount of input 2 is fixed at k. Then the amount of output the firm can produce as it varies the amount of input 1 is given by the function F (z1,k). For no very good reason, this function is known as a total product function and is denoted TP(z1) (or TPk(z1) when we want to make it clear that z2 is fixed at k).

A "typical" total product function

Total product functions may take a wide variety of forms. However, we think of the "typical" total product function as increasing slowly for small values of the input, then increasing more rapidly, then increasing slowly again.

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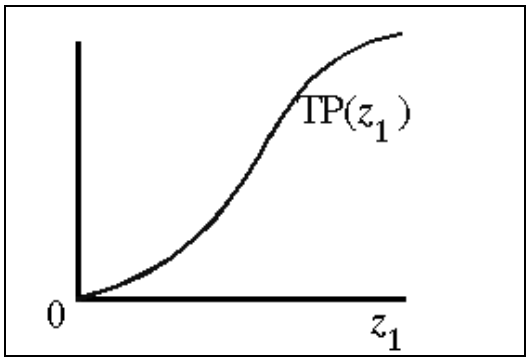


The marginal product function

A useful concept when thinking about how the output of a firm varies as it changes one input, holding all other inputs fixed, is the rate of increase of the total product, known as the marginal product of the variable input. The marginal product for any value of the variable input is the slope of the total product function at that point. In particular, if the total product function is differentiable, the marginal product is the derivative of the total product function.

The average product function

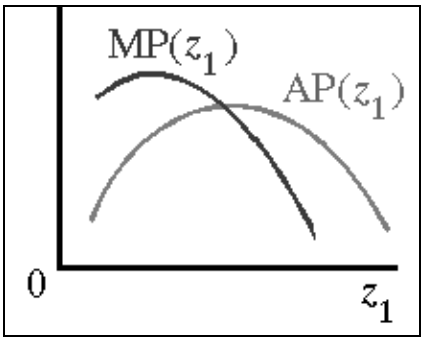
The average product of input 1 is defined to be the average output per unit of input 1:

$$AP(z1) = TP(z1)/z1.$$

Total product, marginal product, and average product for a typical production function

Geometrically, the marginal product for any value of z1 is the slope of the total product function at z1; the average product is the slope of a line from the origin to the point (z1,TP(z1)) on the total product function.

Given the relation between marginals and averages, the marginal product and average product curves for a "typical" total product function thus look like this:



4.4 Law of Diminishing Marginal Returns

In economics, diminishing returns (also called diminishing marginal returns) is the decrease in the marginal output of a production process as the amount of a single factor of production is increased, while the amounts of all other factors of production stay constant. The law of diminishing returns states that in all productive processes, adding more of one factor of production, while holding all others constant ("ceteris paribus"), will at some point yield lower per-unit returns . The law of diminishing returns does not imply that adding more of a factor will decrease the total production, a condition known as negative returns, though in fact this is common.

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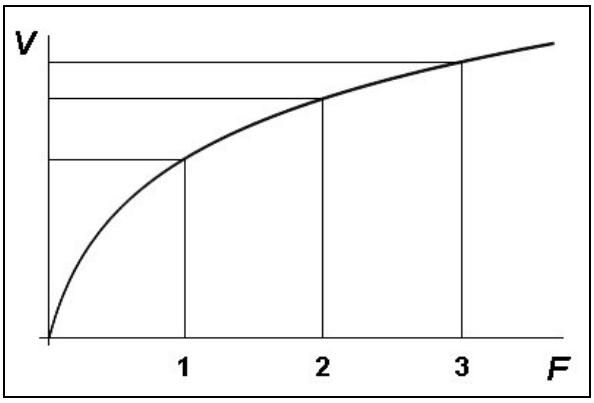

For example, the use of fertilizer improves crop production on farms and in gardens; but at some point, adding more and more fertilizer improves the yield less per unit of fertilizer, and excessive quantities can even reduce the yield. A common sort of example is adding more workers to a job, such as assembling a car on a factory floor. At some point, adding more workers causes problems such as workers getting in each other's way or frequently finding themselves waiting for access to a part. In all of these processes, producing one more unit of output will eventually cost increasingly more, due to inputs being used less and less effectively.

This increase in the marginal cost of output as production increases can be graphed as the marginal cost curve, with quantity of output on the x axis and marginal cost on the y axis. For many firms, the marginal cost curve will initially be downward sloping, representing added efficiency as production increases. If the law of diminishing returns holds, however, the marginal cost curve will eventually slope upward and continue to rise, representing the higher and higher marginal costs associated with additional output.

The Law of Diminishing Returns and Average Cost

The average total cost of production is the total cost of producing all output divided by the number of units produced. For example, if the car factory can produce 20 cars at a total cost of $200,000, the average cost of production is $10,000. Average total cost is interpreted as the the cost of a typical unit of production. So in our example each of the 20 cars produced had a typical cost per unit of $10,000. Average total cost can also be graphed with quantity of output on the x axis and average cost on the y-axis.

What will this average total cost curve look like? In the short run, a firm has a set amount of capital and can only increase or decrease production by hiring more or less labor. The fixed costs of capital are high, but the variable costs of labor are low, so costs increase more slowly than output as production increases. As long as the marginal cost of production is lower than the average total cost of production, the average cost is decreasing. However, as marginal costs increase due to the law of diminishing returns, the marginal cost of production will eventually be higher than the average total cost and the average cost will begin to increase. The short run average total cost curve (SRAC) will therefore be U-shaped for most firms.

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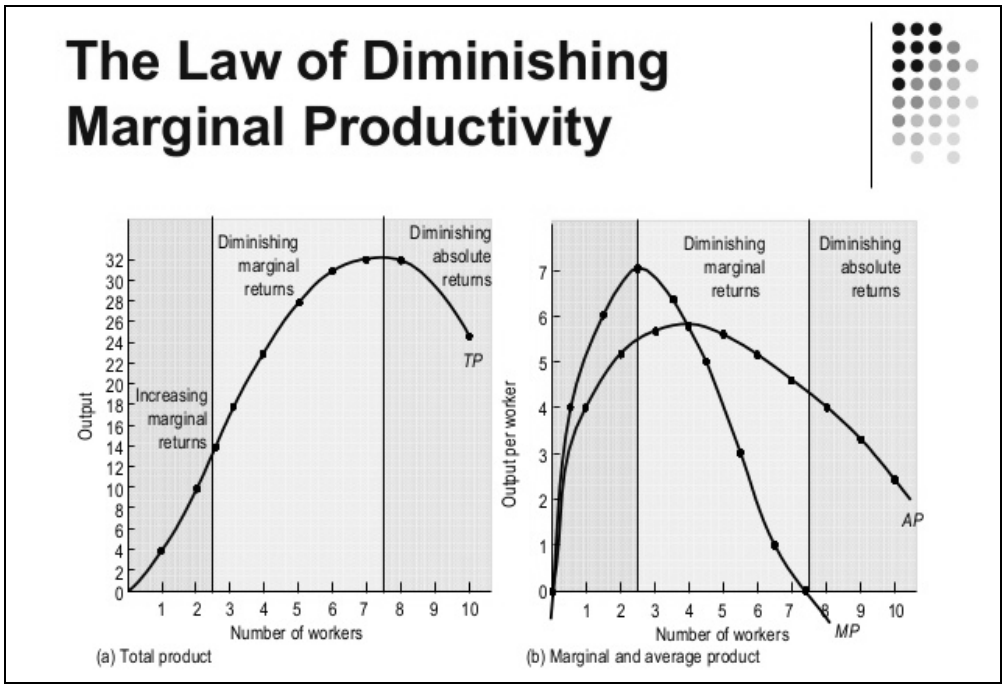


4.5 Returns to scale

In economics, returns to scale and economies of scale are related but different terms that describe what happens as the scale of production increases in the long run, when all input levels including physical capital usage are variable (chosen by the firm). The term returns to scale arises in the context of a firm's production function. It explains the behavior of the rate of increase in output (production) relative to the associated increase in the inputs (the factors of production) in the long run. In the long run all factors of production are variable and subject to change due to a given increase in size (scale). While economies of scale show the effect of an increased output level on unit costs, returns to scale focus only on the relation between input and output quantities

The laws of returns to scale are a set of three interrelated and sequential laws: Law of Increasing Returns to Scale, Law of Constant Returns to Scale, and Law of Diminishing returns to Scale. If output increases by that same proportional change as all inputs change then there are constant returns to scale (CRS). If output increases by less than that proportional change in inputs, there are decreasing returns to scale (DRS). If output increases by more than that proportional change in inputs, there are increasing returns to scale (IRS). A firm's production function could exhibit different types of returns to scale in different ranges of output. Typically, there could be increasing returns at relatively low output levels, decreasing returns at relatively high output levels, and constant returns at one output level between those ranges.

Formally, a production function \ F(K,L) is defined to have:

Constant returns to scale if (for any constant a greater than 0) \ F(aK,aL)=aF(K,L)

Increasing returns to scale if (for any constant a greater than 1) \ F(aK,aL)>aF(K,L),

Decreasing returns to scale if (for any constant a greater than 1) \ F(aK,aL)<aF(K,L)

where K and L are factors of production—capital and labor, respectively.

In a more general set-up, for a multi-input-multi-output production processes, one may assume technology can be represented via some technology set, call it \ T, which must satisfy some regularity conditions of production theory. In this case, the property of constant returns to scale is equivalent to saying that technology set \ T is a cone, i.e.,

Notes

satisfies the property $aT = T$, $\forall a > 0$. In turn, if there is a production function that will describe the technology set T it will have to be homogeneous of degree 1.

4.6 Profits

The firm's primary objective in producing output is to maximize profits. The production of output, however, involves certain costs that reduce the profits a firm can make. The relationship between costs and profits is therefore critical to the firm's determination of how much output to produce.

Explicit and implicit costs. A firm's explicit costs comprise all explicit payments to the factors of production the firm uses. Wages paid to workers, payments to suppliers of raw materials, and fees paid to bankers and lawyers are all included among the firm's explicit costs.

A firm's implicit costs consist of the opportunity costs of using the firm's own resources without receiving any explicit compensation for those resources. For example, a firm that uses its own building for production purposes forgoes the income that it might receive from renting the building out. As another example, consider the owner of a firm who works along with his employees but does not draw a salary; the owner forgoes the opportunity to earn a wage working for someone else. These implicit costs are not regarded as costs in an accounting sense, but they are a part of the firm's costs of doing business, nonetheless. When economists discuss costs, they have in mind both explicit and implicit costs.

Accounting profits, economic profits, and normal profits. The difference between explicit and implicit costs is crucial to understanding the difference between accounting profits and economic profits. Accounting profits are the firm's total revenues from sales of its output, minus the firm's explicit costs. Economic profits are total revenues minus explicit and implicit costs.

4.7 Revenue and Costs

The difference between revenue and cost in gross margin, simply explained, is that revenue is what is earned, and cost is what is spent. Companies commonly use gross margin to examine only their basic production costs.

Gross margin is the total revenue generated by a company's sales minus the cost of goods (COGS) directly required for production, which is then divided by the overall sales revenue. The result is given in the form of a percentage. The calculation for gross margin is expressed by the following equation:

Gross margin (%) = Revenue - Cost of Goods Sold / Revenue

Gross margin is expressed in percentage form, and gross profit is expressed as an absolute dollar amount.

Gross margin is only one measurement of profitability for a company, as it includes only part of the company's costs of doing business: those directly related to production. To further refine the measure of profitability, a company generally next deducts all of its common overhead and operating expenses. These expenses include wages, various administrative costs, cost of facilities, and all marketing or advertising costs.

How can you be certain that you make the best financial decision when evaluating whether to take a job or invest in a new business opportunity? Your friends might tell you to calculate the profit you think you can make in both opportunities and compare them to see which one is better. What they are most likely referring to is accounting profit. What they don't realize is that there is another way to analyze your situation that takes into consideration the alternatives you may be giving up. The other way is to calculate the economic profit of the two scenarios.

Notes

Economic profit is the difference between the total revenue received by a business and the total implicit and explicit costs of a firm. It's often the extra profit left over after considering the next best alternative investment, and can be either positive or negative in value.

Economic Profit vs. Accounting Profit

Economic profit should not be confused with accounting profit, which is a firm's revenue minus its explicit costs. Explicit costs are what most people think of as regular business expenses. These are actual payments made to others for running a business, such as paying rent, wages, utilities, and purchasing IT equipment.

Economic profit differs from accounting profit because it also includes implicit costs, which are the opportunity costs equal to what a business or individual gave up in order to do something else. These costs are deducted from revenues and are the alternative returns you decided not to pursue. Adding implicit costs to your profit calculation gives you another way to compare financial alternatives.

So, is it possible to have a positive accounting profit and a negative economic profit for a business? The answer is absolutely. A negative economic profit implies that you could be financially better off by engaging in a different opportunity. A positive economic profit implies that there is no available or comparable opportunities that are more financially profitable because you have already factored those in to your calculation. Let's look at the formula and an example of how to calculate economic profit to help clarify.

Formulas

Here's how you can write the formulas for calculating account and economic profit. I'd suggest pausing the video to write these down:

Accounting Profit = Total Revenues - Explicit Costs

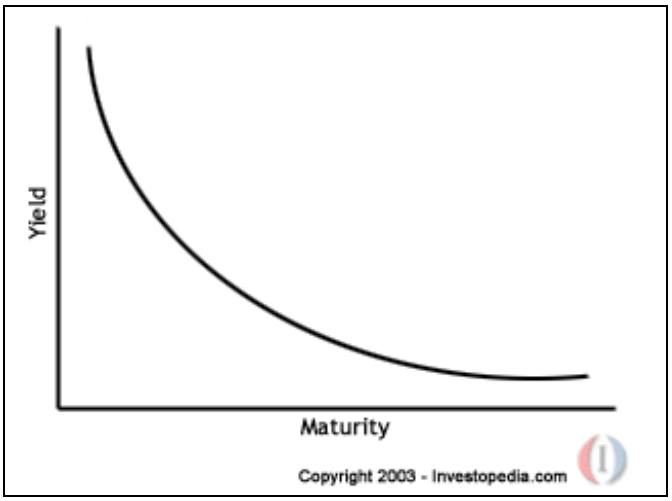
Economic Profit = Accounting Profit - Implicit Costs

Another way people write this is:

Economic Profit= Total Revenue – (Explicit Costs + Implicit Costs)

4.8 Isoquant

The Isoquant curve is a graph of all possible combinations of inputs that result in the production of a given level of output. Used in the study of microeconomics to measure the influence of inputs on the level of production or output that can be achieved.



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In Latin, "iso" means equal and "quant" refers to quantity. This translates to "equal quantity". The isoquant curve helps firms to adjust their inputs to maximize output and profits. At some point, the returns of adding another worker or piece of equipment will start to hurt output.

Isoquant is also called as equal product curve or production indifference curve or constant product curve. Isoquant indicates various combinations of two factors of production which give the same level of output per unit of time. The significance of factors of productive resources is that, any two factors are substitutable e.g. labour is substitutable for capital and vice versa. No two factors are perfect substitutes. This indicates that one factor can be used a little more and other factor a little less, without changing the level of output.

It is a graphical representation of various combinations of inputs say Labour(L) and capital (K) which give an equal level of output per unit of time. Output produced by different combinations of L and K is say, Q, then Q=f (L, K). Just as we demonstrate the MRSxy in respect of indifference curves through hypothetical data, we demonstrate the Marginal Rate of Technical Substitution of factor L for K (MRTS L,K)

An isoquant is defined as the set of all possible bundles of productive inputs exactly sufficient to produce a given quantity of output.

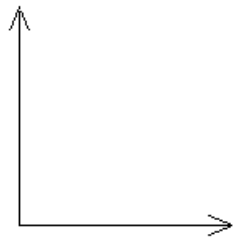
Productive inputs are the necessary ingredients for obtaining a good (as milk and coffee to obtain milk & coffee) as well as the work and the machines involved.

Isoquants are easy to draw in diagrams when productive inputs are just two, whereas when there is only one productive input the production function we describe here is more relevant.

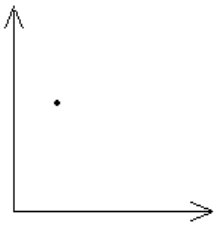
The isocost curve is defined as the set of all possible bundles of productive inputs whose cost is the same. Depending on the price of inputs (say wages for labour), the slope of the isocost curve will be steeper or flatter.

How to use this software

The software considers the case of 2 productive inputs, whose quantities are represented as axes in a bi-dimensional Cartesian space.



A point in the space is the bundle of the quantity of the 2 inputs used in production.



The theory goes as every point in the diagram were technically feasible, so that for each point there is a production level of the output. Every point has also a cost (the product of the prices of the input for the respective quantities).

The curve made up of all points corresponding to the same level of production is the isoquant (just click on Draw button to see an example).

Notes

In the boxes you see while using the software, you can modify the target level of production, click again the Draw button and obtain the graph of the new isoquant.

The optimal choice is the intersection between the lowest possible isocost curve with the isoquant corresponding to the target production level.

This theoretical sequence perfectly mirrors the neoclassical theory of consumer.

4.9 Isocost and Producers Equilibrium

These curves are also known as outlay lines, price lines, input-price lines, factor-cost lines, constant-outlay lines, etc. Each isocost curve represents the different combinations of two inputs that a firm can buy for a given sum of money at the given price of each input.

Figure, shows three isocost curves AB, CD and EF, each represents a total outlay of 50, 75 and 100 respectively. The firm can hire OC of capital or OD of labour with Rs. 75. OC is 2/3 of OD which means that the price of a unit of labour is 1½ times less than that of a unit of capital. The line CD represents the price ratio of capital and labour. Prices of factors remaining the same, if the total outlay is raised, the isocost curve will shift upward to the right as EF parallel to CD, and if the total outlay is reduced it will shift downwards to the left as AB. The isocosts are straight lines because factor prices remain the same whatever the outlay of the firm on the two factors. The isocost curves represent the locus of all combinations of the two input factors which result in the same total cost. If the unit cost of labour (L) is w and the unit cost of capital (C) is r, then the total cost: TC = wL + rC. The slope of the isocost line is the ratio of prices of labour and capital i.e., w/r.

The point where the isocost line is tangent to an isoquant represents the least cost combination of the two factors for producing a given output. If all points of tangency like LMN are joined by a line, it is known as an output- factor curve or least-outlay curve or the expansion path of a firm. Salvatore defines expansion path as “the locus of points of producer’s equilibrium resulting from changes in total outlays while keeping factor prices constant.” It shows how the proportions of the two factors used might be changed as the firm expands.

For example, in Figure shows the proportions of capital and labour used to produce 200 (IQ1) units of the product are different from the proportions of these factors used to produce 300 (IQ2) units or 100 (OQ) units at the lowest cost.

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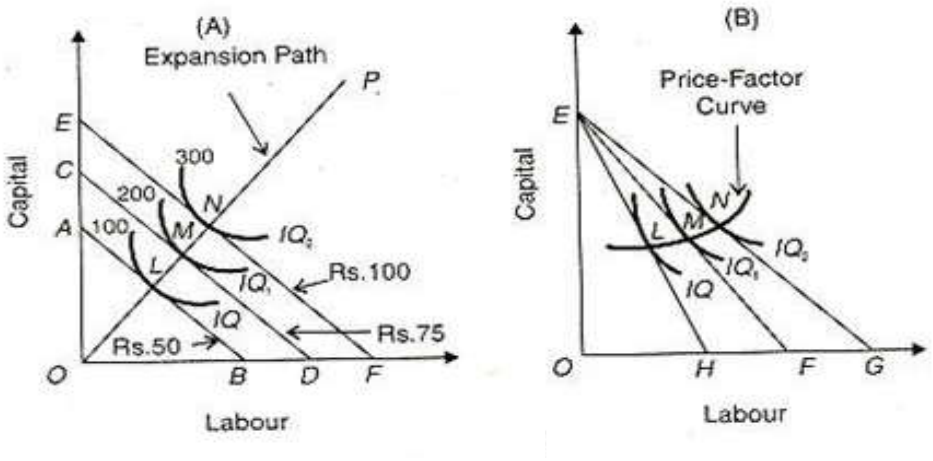

Like the price-income line in the indifference curve analysis, a relative cheapening of one of the factors to that of another will extend the isocost line to the right. If one of the factors becomes relatively dearer, the isocost line will contract inward to the left. Given the price of capital, if the price of labour falls, the isocost line EF in Panel (B) will extend to the right as EG and if the price of labour rises, the isocost line EF will contract inward to the left as EH. if the equilibrium points L, M, and N are joined by a line, it is called the price-factor curve.

In economics an isocost line shows all combinations of inputs which cost the same total amount. Although similar to the budget constraint in consumer theory, the use of the isocost line pertains to cost-minimization in production, as opposed to utility-maximization. For the two production inputs labour and capital, with fixed unit costs of the inputs, the equation of the isocost line is

$$rK+wL = C\backslash,$$

where w represents the wage rate of labour, r represents the rental rate of capital, K is the amount of capital used, L is the amount of labour used, and C is the total cost of acquiring those quantities of the two inputs.

The absolute value of the slope of the isocost line, with capital plotted vertically and labour plotted horizontally, equals the ratio of unit costs of labour and capital. The slope is:

$$-w/r. \backslash,$$

The isocost line is combined with the isoquant map to determine the optimal production point at any given level of output. Specifically, the point of tangency between any isoquant and an isocost line gives the lowest-cost combination of inputs that can produce the level of output associated with that isoquant. Equivalently, it gives the maximum level of output that can be produced for a given total cost of inputs. A line joining tangency points of isoquants and isocosts (with input prices held constant) is called the expansion path.

The cost-minimization problem of the firm is to choose an input bundle (K,L) feasible for the output level y that costs as little as possible. A cost-minimizing input bundle is a point on the isoquant for the given y that is on the lowest possible isocost line. Put differently, a cost-minimizing input bundle must satisfy two conditions:

1. it is on the y-isoquant
2. no other point on the y-isoquant is on a lower isocost line.

4.10 Summary

The entire production process begins with the supply of factors of production or inputs used towards the production of a final good we all consume in the final good market.

Some examples of these factors of production are the labor you will supply when you graduate, machines, raw materials such as pulp, power (such as gas, electricity), machines, factory complex, research laboratory etc. We will begin by assuming that the prices of factors of production are constant first. The reason for this initial simplification is that we want to understand first how and why firms choose a particular way of producing given those prices.

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4.11 Check Your Progress

Multiple Choice Questions

1. Which is defined as the total quantity of output produced by a firm in the given inputs:
   a) Total product
   b) average product
   c) marginal product
   d) none of these
2. Which of the following is also called as equal product curve:
   a) isocost
   b) producer equilibrium
   c) isoquants
   d) total cost
3. The firm's primary objective in producing output is to:
   a) maximize price
   b) minimize price
   c) maximize profits
   d) minimize profits
4. The laws of returns to scale are a set of how many interrelated and sequential laws:
   a) one
   b) two
   c) three
   d) four
5. Which is similar to average product but is looked at from another perspective:
   a) marginal product
   b) total product
   c) average product
   d) all of these
6. Which term arises in the context of a firm's production function:
   a) return to scale
   b) producer equilibrium
   c) isoquants
   d) isocost
7. TP will be rise if MP is:
   a) greater than 0
   b) lower than 0
   c) equal to 0
   d) equal to 1

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8. TP will be constant if MP is:
   a) greater than 0
   b) lower than 0
   c) equal to 0
   d) equal to 1
9. Graph of Average and marginal outputs is equal to
   a) average product
   b) marginal product
   c) total product
   d) none of these
10. A firms ..... cost comprises all the explicit payments to the factors of production on the firms uses:
   a) implicit
   b) explicit
   c) both a and b
   d) neither a nor b

4.12 Questions and Exercises

1. Define Average product.
2. Define total product.
3. Explain Return to scale.
4. What are revenue and cost?
5. What is Isoquant?
6. What is Isocost?
7. What do you mean by Profits?
8. Describe marginal product.
9. What is Production analysis?
10. What is Production function inputs and output

4.13 Key Terms

- **Average cost :** The total production cost divided by the number of units produced.
- **Break-even point:** The number of units (produced or sold) for which revenue equals cost so that profit is zero.
- **Capital allocation:** A process of choosing what ventures, deals or trades to engage in, usually based upon some cost or risk-return analysis.
- **Capital asset pricing model:** A model for valuing financial assets based upon their systematic risk.

Check Your Progress: Answers

1.a, 2.c, 3.c, 4.c, 5.d, 6.a, 7.a, 8.c, 9.a, 10.b.

4.14 Further Readings

- Principles of Economics, Alfred Marshall – 2013.
- Economics,Paul A. Samuelson – 2010.
- Basic Economics, Thomas Sowell – 2014.

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- Ecological Economics, Second Edition: Principles and Herman E. Daly, Joshua Farley – 2011.
- Handbook of Regional and Urban Economics: Regional economics, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- Principles of Economics - Volume 1, N. Gregory Mankiw – 2008.
- Economics: The User's Guide: A Pelican Introduction, Ha-Joon Chang – 2014.
- Economics: A New Introduction, Hugh Stretton – 1999.
- Principles of Microeconomics - Volume 1, N. Gregory Mankiw – 1998.

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Unit 5: Macroeconomics

Structure

Objectives

After studying this unit, you should be able to understand the following topics:

- Macroeconomics (GDP GNP) Measurement of national income
- Role of government and economic activities
- Savings, investment and the financial system (RBI, Public and Private banks)
- Money and inflation
- Business cycle and its phases
- Macroeconomic policies: Fiscal and Monetary policies

5.1 Introduction

Macroeconomics is concerned primarily with the forecasting of national income, through the analysis of major economic factors that show predictable patterns and trends, and of their influence on one another. These factors include level of employment/ unemployment, gross national product (GNP), balance of payments position, and prices (deflation or inflation).

Macroeconomics also covers role of fiscal and monetary policies, economic growth, and determination of consumption and investment levels.

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Macroeconomics is focused on the movement and trends in the economy as a whole, while in microeconomics the focus is placed on factors that affect the decisions made by firms and individuals. The factors that are studied by macro and micro will often influence each other, such as the current level of unemployment in the economy as a whole will affect the supply of workers which an oil company can hire from, for example.

5.2 (GDP GNP) Measurement of national income

Measures of national income and output are used in economics to measure a nation's economic activity by totaling the value of goods and services produced in its economy. Simon Kuznets developed the system of national accounting in the 1940s and 1960s. Some of the more common measures are Gross National Product (GNP), Gross Domestic Product (GDP), Net National Product (NNP), and Net National Income (NNI).

5.2.1 Gross National Product

Gross National Product (GNP) is the total value of final goods and services produced in a year by domestically owned factors of production. Final goods are goods that are ultimately consumed rather than used in the production of another good.

Example: A car sold to a consumer is a final good; the components such as tires sold to the car manufacturer are not; they are intermediate goods used to make the final good. The same tires, if sold to a consumer, would be a final good. Only final goods are included when measuring national income. If intermediate goods were included too, this would lead to double counting; for example, the value of the tires would be counted once when they are sold to the car manufacturer, and again when the car is sold to the consumer.

5.2.2 Real and nominal values

Nominal GNP measures the value of output during a given year using the prices prevailing during that year. Over time, the general level of prices rise due to inflation, leading to an increase in nominal GNP even if the volume of goods and services produced is unchanged.

Real GNP measures the value of output in two or more different years by valuing the goods and services produced at the same prices. For example, GNP might be calculated for 2000, 2001, and 2002 using the prices prevailing in 2002 for all of the calculations. This gives a measure of national income which is not distorted by inflation.

5.2.3 Depreciation and Net National Product

Not all GNP data show the production of final goods and services—part represents output that is set aside to maintain the nation's productive capacity. Capital goods, such as buildings and machinery, lose value over time due to wear and tear and obsolescence.

Depreciation (also known as consumption of fixed capital) measures the amount of GNP that must be spent on new capital goods to maintain the existing physical capital stock.

5.2.4 Gross Domestic Product

Gross Domestic Product (GDP) is the total value of final goods and services produced within a country's borders in a year. GDP counts income according to where it is earned rather than who owns the factors of production.

Example: In the above case of a German-owned car factory operating in the U.S., all of the income from the car factory would be counted as U.S. GDP rather than German GDP.

Notes

Measuring GDP

There are two ways to measure GDP. The most common approach to measuring and understanding GDP is the expenditure method. The other is the income method.

Expenditure method

Measured according to the expenditure method, GDP is equal to consumption + investment + government expenditures + exports - imports, which can be written as

$$GDP = C + I + G + NX$$

where:

C = Consumption

I = Investments

G = Government spending

NX = net exports (exports minus imports)

Example: If an individual spends money to renovate their hotel so that occupancy rates increase, that is private investment, but if they buy shares in a consortium to do the same thing it is saving. The former is included when measuring GDP (in I), the latter is not. However, when the consortium conducts the renovation the expenditure involved would be included in GDP.

5.2.5 Income Method

The income approach focuses on finding the total output of a nation by finding the total income of a nation. This is acceptable, because all money spent on the production of a good—the total value of the good—is paid to workers as income.

The main types of income that are included in this measurement are rent (the money paid to owners of land), salaries and wages (the money paid to workers who are involved in the production process, and those who provide the natural resources), interest (the money paid for the use of man-made resources, such as machines used in production), and profit (the money gained by the entrepreneur—the businessman who combines these resources to produce a good or service).

National income is an uncertain term which is used interchangeably with national dividend, national output and national expenditure. On this basis, national income has been defined in a number of ways. In common parlance, national income means the total value of goods and services produced annually in a country.

In other words, the total amount of income accruing to a country from economic activities in a year's time is known as national income. It includes payments made to all resources in the form of wages, interest, rent and profits.

Definitions of National Income

The definitions of national income can be grouped into two classes: One, the traditional definitions advanced by Marshall, Pigou and Fisher; and two, modern definitions.

The Marshallian Definition

According to Marshall: "The labour and capital of a country acting on its natural resources produce annually a certain net aggregate of commodities, material and immaterial including services of all kinds. This is the true net annual income or revenue of the country or national dividend." In this definition, the word 'net' refers to deductions from the gross national income in respect of depreciation and wearing out of machines. And to this, must be added income from abroad.

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It's Defects

Though the definition advanced by Marshall is simple and comprehensive, yet it suffers from a number of limitations. First, in the present day world, so varied and numerous are the goods and services produced that it is very difficult to have a correct estimation of them.

Consequently, the national income cannot be calculated correctly. Second, there always exists the fear of the mistake of double counting, and hence the national income cannot be correctly estimated. Double counting means that a particular commodity or service like raw material or labour, etc. might get included in the national income twice or more than twice.

For example, a peasant sells wheat worth Rs.2000 to a flour mill which sells wheat flour to the wholesaler and the wholesaler sells it to the retailer who, in turn, sells it to the customers. If each time, this wheat or its flour is taken into consideration, it will work out to Rs.8000, whereas, in actuality, there is only an increase of Rs.2000 in the national income.

Third, it is again not possible to have a correct estimation of national income because many of the commodities produced are not marketed and the producer either keeps the produce for self-consumption or exchanges it for other commodities. It generally happens in an agriculture- oriented country like India. Thus the volume of national income is underestimated.

Concepts of National Income

There are a number of concepts pertaining to national income and methods of measurement relating to them.

(A) Gross Domestic Product (GDP):

GDP is the total value of goods and services produced within the country during a year. This is calculated at market prices and is known as GDP at market prices. Dernberg defines GDP at market price as "the market value of the output of final goods and services produced in the domestic territory of a country during an accounting year."

There are three different ways to measure GDP:

Product Method, Income Method and Expenditure Method.

These three methods of calculating GDP yield the same result because National Product = National Income = National Expenditure.

1. **The Product Method:** In this method, the value of all goods and services produced in different industries during the year is added up. This is also known as the value added method to GDP or GDP at factor cost by industry of origin. The following items are included in India in this: agriculture and allied services; mining; manufacturing, construction, electricity, gas and water supply; transport, communication and trade; banking and insurance, real estates and ownership of dwellings and business services; and public administration and defense and other services (or government services). In other words, it is the sum of gross value added.
2. **The Income Method:** The people of a country who produce GDP during a year receive incomes from their work. Thus GDP by income method is the sum of all factor incomes: Wages and Salaries (compensation of employees) + Rent + Interest + Profit.
3. **Expenditure Method:** This method focuses on goods and services produced within the country during one year.

GDP by expenditure method includes

(1) Consumer expenditure on services and durable and non-durable goods (C),

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(2) Investment in fixed capital such as residential and non-residential building, machinery, and inventories (I),

(3) Government expenditure on final goods and services (G),

(4) Export of goods and services produced by the people of country (X),

(5) Less imports (M). That part of consumption, investment and government expenditure which is spent on imports is subtracted from GDP. Similarly, any imported component, such as raw materials, which is used in the manufacture of export goods, is also excluded.

Thus GDP by expenditure method at market prices = C+ I + G + (X – M), where (X-M) is net export which can be positive or negative.

(B) GDP at Factor Cost:

GDP at factor cost is the sum of net value added by all producers within the country. Since the net value added gets distributed as income to the owners of factors of production, GDP is the sum of domestic factor incomes and fixed capital consumption (or depreciation).

Thus GDP at Factor Cost = Net value added + Depreciation.

GDP at factor cost includes:

(i) Compensation of employees i.e., wages, salaries, etc.

(ii) Operating surplus which is the business profit of both incorporated and unincorporated firms. [Operating Surplus = Gross Value Added at Factor Cost—Compensation of Employees—Depreciation]

(iii) Mixed Income of Self- employed.

Conceptually, GDP at factor cost and GDP at market price must be identical/This is because the factor cost (payments to factors) of producing goods must equal the final value of goods and services at market prices. However, the market value of goods and services is different from the earnings of the factors of production.

In GDP at market price are included indirect taxes and are excluded subsidies by the government. Therefore, in order to arrive at GDP at factor cost, indirect taxes are subtracted and subsidies are added to GDP at market price.

Thus, GDP at Factor Cost = GDP at Market Price – Indirect Taxes + Subsidies.

(C) Net Domestic Product (NDP):

NDP is the value of net output of the economy during the year. Some of the country's capital equipment wears out or becomes obsolete each year during the production process. The value of this capital consumption is some percentage of gross investment which is deducted from GDP. Thus Net Domestic Product = GDP at Factor Cost – Depreciation.

(D) Nominal and Real GDP:

When GDP is measured on the basis of current price, it is called GDP at current prices or nominal GDP. On the other hand, when GDP is calculated on the basis of fixed prices in some year, it is called GDP at constant prices or real GDP.

Nominal GDP is the value of goods and services produced in a year and measured in terms of rupees (money) at current (market) prices. In comparing one year with another, we are faced with the problem that the rupee is not a stable measure of purchasing power. GDP may rise a great deal in a year, not because the economy has been growing rapidly but because of rise in prices (or inflation).

On the contrary, GDP may increase as a result of fall in prices in a year but actually it may be less as compared to the last year. In both 5 cases, GDP does not show the

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real state of the economy. To rectify the underestimation and overestimation of GDP, we need a measure that adjusts for rising and falling prices.

This can be done by measuring GDP at constant prices which is called real GDP. To find out the real GDP, a base year is chosen when the general price level is normal, i.e., it is neither too high nor too low. The prices are set to 100 (or 1) in the base year.

Now the general price level of the year for which real GDP is to be calculated is related to the base year on the basis of the following formula which is called the deflator index:

$$\text{Real GDP} = \frac{\text{GDP for the Current Year}}{\text{Base Year } (=100)} \times \frac{\text{Base Year } (=100)}{\text{Current Year Index}}$$

Suppose 1990-91 is the base year and GDP for 1999-2000 is Rs. 6, 00,000 crores and the price index for this year is 300.

Thus, Real GDP for 1999-2000 = Rs. 6, 00,000 x 100/300 = Rs. 2, 00,000 crores

(E) GDP Deflator

GDP deflator is an index of price changes of goods and services included in GDP. It is a price index which is calculated by dividing the nominal GDP in a given year by the real GDP for the same year and multiplying it by 100. Thus,

$$\text{GDP Deflator} = \frac{\text{National (or Current Prices) GDP}}{\text{Real (or Constant Prices) GDP}} \times 100$$

$$\text{For example, GDP Deflator in 1997-98} = \frac{1426.7 \text{th. crores}}{1049.2 \text{th. crores at}} \times 100$$

$$= 135.9$$

It shows that at constant prices (1993-94), GDP in 1997-98 increased by 135.9% due to inflation (or rise in prices) from Rs. 1049.2 thousand crores in 1993-94 to Rs. 1426.7 thousand crores in 1997-98.

(F) Gross National Product (GNP):

GNP is the total measure of the flow of goods and services at market value resulting from current production during a year in a country, including net income from abroad.

GNP includes four types of final goods and services:

(1) Consumers' goods and services to satisfy the immediate wants of the people;

(2) Gross private domestic investment in capital goods consisting of fixed capital formation, residential construction and inventories of finished and unfinished goods;

(3) Goods and services produced by the government; and

(4) Net exports of goods and services, i.e., the difference between value of exports and imports of goods and services, known as net income from abroad.

In this concept of GNP, there are certain factors that have to be taken into consideration: First, GNP is the measure of money, in which all kinds of goods and services produced in a country during one year are measured in terms of money at current prices and then added together.

But in this manner, due to an increase or decrease in the prices, the GNP shows a rise or decline, which may not be real. To guard against erring on this account, a particular year (say for instance 1990-91) when prices be normal, is taken as the base year and the GNP is adjusted in accordance with the index number for that year. This will be known as GNP at 1990-91 prices or at constant prices.

Notes

Second, in estimating GNP of the economy, the market price of only the final products should be taken into account. Many of the products pass through a number of stages before they are ultimately purchased by consumers.

If those products were counted at every stage, they would be included many a time in the national product. Consequently, the GNP would increase too much. To avoid double counting, therefore, only the final products and not the intermediary goods should be taken into account.

Third, goods and services rendered free of charge are not included in the GNP, because it is not possible to have a correct estimate of their market price. For example, the bringing up of a child by the mother, imparting instructions to his son by a teacher, recitals to his friends by a musician, etc.

Fourth, the transactions which do not arise from the produce of current year or which do not contribute in any way to production are not included in the GNP. The sale and purchase of old goods, and of shares, bonds and assets of existing companies are not included in GNP because these do not make any addition to the national product, and the goods are simply transferred.

Fifth, the payments received under social security, e.g., unemployment insurance allowance, old age pension, and interest on public loans are also not included in GNP, because the recipients do not provide any service in lieu of them. But the depreciation of machines, plants and other capital goods is not deducted from GNP.

Sixth, the profits earned or losses incurred on account of changes in capital assets as a result of fluctuations in market prices are not included in the GNP if they are not responsible for current production or economic activity.

5.3 Role of government and economic activities

In order to restore economic stability, policymakers must focus on restoring the institutional role of governing. Government can provide a stable environment for economic growth when it can be depended upon to maintain the stability of the currency, enforce and defend property rights, and provide oversight that assures private citizens that their transaction partners in the marketplace are held accountable. This will allow market participants to begin putting their resources back to work in the areas where they are most beneficial.

Government spending and government deficits automatically increase during economic downturns due to more demands on social-safety-net provisions and falling tax revenues. Such spending can have a stabilizing effect on the economy because it happens automatically rather than through legislative acts, and the money is spent at times it is needed most. Borrowing and spending to stimulate the economy using legislative discretion is much more difficult to time for the right moment, and is thus much riskier. The funds are often not spent until long after the downturn has taken place, and can prolong the downturn by crowding out productive investment and spending that would have otherwise occurred.

Economic downturns, while painful, do afford an opportunity to root out waste and inefficient spending both in the public and private sectors. This is because the opportunity cost of making fundamental reforms is lower during downturns. This opportunity to reassess processes and undertake reforms that make better use of resources should not be wasted.

5.4 Savings

Saving is what households (i.e. participants in the consumption account) do. The level of saving in the economy depends on a number of factors:

A higher real interest rate will give a greater return on saving as banks offer more favourable rates.

Notes

Poor returns on risky forms of saving, e.g. stocks and bonds, make it more advantageous to hold money savings.

Poor expectation for future economic growth, increase households' savings as a precaution for a grim future.

More disposable income after fixed expenditures (such as mortgage, heating bill, basic goods purchases) have been made.

These factors affect the marginal propensity to save (MPS) - the greater this MPS, the more saving households will do as a proportion of each additional increment of income.

5.5 Investment and the financial system (RBI, Public and Private banks)

5.5.1 Investment

Investment is made into capital (ie. plant and machinery, also 'human capital' - training and education), with intent to increase productivity, efficiency and output of goods and services

In national accounting terms, stocks, bonds, mutual funds, and other items whose value is risky, are NOT investments. They fall into the savings account, not the investment account.

In monetary terms, the relationship between savings and investment is modeled, rather than being an accounting identity. Stocks and bonds are considered to be important intermediary forms of savings as it gets transformed into a capital investment that produces value. Mutual funds, CDs, BICs, GICs, pension obligations, insurance annuities, and other forms of savings marketed by financial intermediaries, all consist of stocks, bonds, and cash balances, which in turn pay for the capital that increases productivity, efficiency and output of goods and services.

5.5.2 Financial System

A financial system can be defined at the global, regional or firm specific level. The firm's financial system is the set of implemented procedures that track the financial activities of the company. On a regional scale, the financial system is the system that enables lenders and borrowers to exchange funds. The global financial system is basically a broader regional system that encompasses all financial institutions, borrowers and lenders within the global economy.

There are multiple components making up the financial system of different levels: Within a firm, the financial system encompasses all aspects of finances. For example, it would include accounting measures, revenue and expense schedules, wages and balance sheet verification. Regional financial systems would include banks and other financial institutions, financial markets, financial services In a global view, financial systems would include the International Monetary Fund, central banks, World Bank and major banks that practice overseas lending.

RBI

In every country there is one organization which works as the central bank. The function of the central bank of a country is to control and monitor the banking and financial system of the country. In India, the Reserve Bank of India (RBI) is the Central Bank.

The RBI was established in 1935. It was nationalised in 1949. The RBI plays role of regulator of the banking system in India. The Banking Regulation Act 1949 and the RBI Act 1953 has given the RBI the power to regulate the banking system.

The RBI has different functions in different roles.

Notes

5.5.3 RBI is the Regulator of Financial System

The RBI regulates the Indian banking and financial system by issuing broad guidelines and instructions. The objectives of these regulations include:

1. Controlling money supply in the system,
2. Monitoring different key indicators like GDP and inflation,
3. Providing different tools for customers' help, such as acting as the "Banking Ombudsman."

RBI is the Issuer of Monetary Policy

The RBI formulates monetary policy twice a year. It reviews the policy every quarter as well. The main objectives of monitoring monetary policy are:

1. Inflation control
2. Control on bank credit
3. Interest rate control

The tools used for implementation of the objectives of monetary policy are:

1. Cash Reserve Ratio (CRR) and Statutory Liquidity Ratio (SLR),
2. Open market operations,
3. Different Rates such as repo rate, reverse repo rate, and bank rate.

RBI is the Issuer of Currency

Section 22 of the RBI Act gives authority to the RBI to issue currency notes. The RBI also takes action to control circulation of fake currency.

RBI is the Controller and Supervisor of Banking Systems

The RBI has been assigned the role of controlling and supervising the bank system in India. The RBI is responsible for controlling the overall operations of all banks in India. These banks may be:

1. Public sector banks
2. Private sector banks
3. Foreign banks
4. Co-operative banks, or
5. Regional rural banks

The control and supervisory roles of the Reserve Bank of India is done through the following:

1. **Issue of Licence:** Under the Banking Regulation Act 1949, the RBI has been given powers to grant licenses to commence new banking operations. The RBI also grants licenses to open new branches for existing banks. Under the licensing policy, the RBI provides banking services in areas that do not have this facility.
2. **Prudential Norms:** The RBI issues guidelines for credit control and management. The RBI is a member of the Banking Committee on Banking Supervision (BCBS). As such, they are responsible for implementation of international standards of capital adequacy norms and asset classification.
3. **Corporate Governance:** The RBI has power to control the appointment of the chairman and directors of banks in India. The RBI has powers to appoint additional directors in banks as well.
4. **KYC Norms:** To curb money laundering and prevent the use of the banking system for financial crimes, The RBI has "Know Your Customer" guidelines. Every bank has to ensure KYC norms are applied before allowing someone to open an account.

Notes

5.5.4 Public Banks

A commercial bank is a financial institution that is authorized by law to receive money from businesses and individuals and lend money to them. Commercial banks are open to the public and serve individuals, institutions, and businesses. A commercial bank is almost certainly the type of bank you think of when you think about a bank because it is the type of bank that most people regularly use.

Functions

A commercial bank is authorized to serve the following functions:

1. Receive deposits - take money in from individuals and businesses (called depositors)
2. Disburse payments - make payments upon the direction of its depositors, such as honoring a check
3. Collections - a bank will act as your agent to collect funds from another bank payable to you, such as when someone pays you by check drawn on an account from a different bank
4. Invest funds in securities for a return
5. Safeguard money - banks are considered a safe place to store your wealth
6. Lend Money

5.5.5 Private Banks

Money serves multiple functions in an economy. Money is first and foremost a medium of exchange. When all parties in an economy will accept money, it eliminates the need for a double coincidence of wants that goes with barter – that is, both parties have to want what the other is offering. Accordingly, money as a medium of exchange is much faster and more convenient in commerce.

In most countries, money is supplied by the central bank. In the United States the central bank is the Federal Reserve. The Federal Reserve not only supplies money and sets the price of money through a variety of mechanisms, but also regulates the banking system of the United States.

The United States, and virtually all Western economies, operates a fractional reserve banking system. This is a banking system where banks hold a government-determined minimum amount of cash or "safe" securities (called the required reserve) determined as a percentage of the bank's deposits. Banks are then free to loan the remainder to customers.

Required reserves also lead to an economic concept called the money multiplier. As the name suggests, a multiplier is a system where an initial is magnified through the system. The money multiplier is expressed as the equation: 1 / required reserve ratio. In the case of a banking system with a 10% required reserve, for instance, every $1 deposited with a bank ultimately leads to $10 in the money supply (1 / 0.10) as the deposited money is loaned out, re-deposited, loaned out again and so on.

5.6 Money and Inflation

Of course the world is more complicated than this, and monetary policy consists of more than just currency exchanges, but some of the same reasoning applies more generally. The so-called quantity theory of money is the result of two ideas: that money is not fundamental (pieces of paper don't change the effectiveness of GM's manufacturing processes or marketing strategies), and that its usefulness is in executing transactions. Let's start with the latter. Suppose we think of Y as all the transactions in the economy and PY is the dollar value of all these transactions (sales revenue). Then we need M dollars of money to make all these transactions each period, or

Notes

$$M = P Y.$$

This equation has the stock-split property: if we double M then we double PY. We can make this more specific by associating transactions Y with real GDP, PY with nominal GDP, and P with the GDP deflator.

A slight generalization is that money can be used several times each period for transactions, as it goes from one person to another. That is,

$$M V = P Y,$$

where V is the velocity of money, the number of times each period a unit of money is in a transaction. The assumption of the quantity theory, which dates back at least three hundred years (a long time in economics), is that velocity is approximately constant. This equation maintains the stock-split property, that increases in M are associated with proportionate increases in PY.

The same theory can be reinterpreted in terms of the inflation rate, the rate of growth of the price level. To see this, we need to covert the quantity theory relation to growth rates. We take the quantity equation at two different dates and divide, getting

$$(Mt /Mt\text{-}1) (Vt /Vt\text{-}1) = (Pt /Pt\text{-}1) (Yt /Yt\text{-}1).$$

$$(Mt -Mt\text{-}1)/Mt\text{-}1 + (Vt -Vt\text{-}1)/Vt\text{-}1 = (Pt -Pt\text{-}1)/Pt\text{-}1 + (Yt -Yt\text{-}1)/Yt\text{-}1$$

or

$$m + v = p + y$$

where lower case characters represent the rate of growth of upper case variables (i.e, m is the rate of growth of money M).

If velocity is constant we get, approximately, the growth rate of money equals the growth rate of prices (inflation) plus the growth rate of output

$$(Mt -Mt\text{-}1)/Mt\text{-}1 = (Pt -Pt\text{-}1)/Pt\text{-}1 + (Yt -Yt\text{-}1)/Yt\text{-}1$$

or

$$m = p + y$$

If money growth does not influence output, then higher money growth leads to higher inflation. Period. This prediction is overly strong, but the simplicity has some value of its own, including making it easy to remember. As Milton Friedman put it: "Inflation is always and everywhere a monetary phenomena." It's only after you think about that sentence for a while that you realize it's not as informative as it first sounds.

The real rate of interest is the difference between expected inflation and the nominal rate of interest that we see quoted in the paper, or in letters,

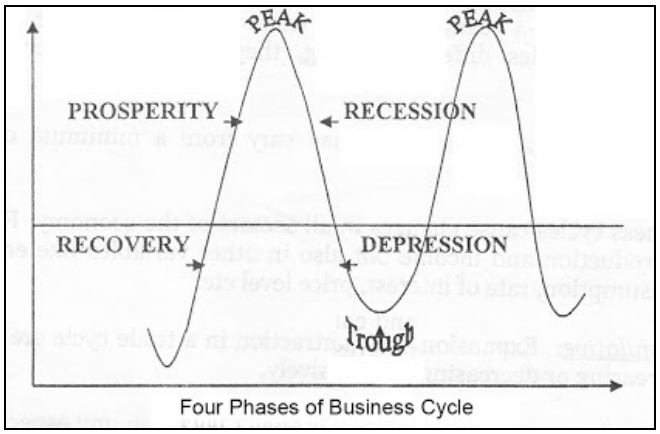
$$it = rt + pte.$$

5.7 Business cycle and its phases

Business Cycle (or Trade Cycle) is divided into the following four phases :-

1. **Prosperity Phase:** Expansion or Boom or Upswing of economy.
2. **Recession Phase:** from prosperity to recession (upper turning point).
3. **Depression Phase:** Contraction or Downswing of economy.
4. **Recovery Phase:** from depression to prosperity (lower turning Point)

Notes



Four Phases of Business Cycle

The business cycle starts from a trough (lower point) and passes through a recovery phase followed by a period of expansion (upper turning point) and prosperity. After the peak point is reached there is a declining phase of recession followed by a depression. Again the business cycle continues similarly with ups and downs.

1. **Prosperity Phase:** When there is an expansion of output, income, employment, prices and profits, there is also a rise in the standard of living. This period is termed as Prosperity phase.

   The features of prosperity are:

   - High level of output and trade.
   - High level of effective demand.
   - High level of income and employment.
   - Rising interest rates.
   - Inflation.
   - Large expansion of bank credit.

   Due to full employment of resources, the level of production is Maximum and there is a rise in GNP (Gross National Product). Due to a high level of economic activity, it causes a rise in prices and profits. There is an upswing in the economic activity and economy reaches its Peak. This is also called as a Boom Period.

2. **Recession Phase:** The turning point from prosperity to depression is termed as Recession Phase.

   During a recession period, the economic activities slow down. When demand starts falling, the overproduction and future investment plans are also given up. There is a steady decline in the output, income, employment, prices and profits. The businessmen lose confidence and become pessimistic (Negative). It reduces investment. The banks and the people try to get greater liquidity, so credit also contracts. Expansion of business stops, stock market falls. Orders are cancelled and people start losing their jobs. The increase in unemployment causes a sharp decline in income and aggregate demand. Generally, recession lasts for a short period.

3. **Depression Phase:** When there is a continuous decrease of output, income, employment, prices and profits, there is a fall in the standard of living and depression sets in.

   The features of depression are :-

   - Fall in volume of output and trade.
   - Fall in income and rise in unemployment.
   - Decline in consumption and demand.
   - Fall in interest rate.
   - Deflation.

Notes

- Contraction of bank credit.

In depression, there is under-utilization of resources and fall in GNP (Gross National Product). The aggregate economic activity is at the lowest, causing a decline in prices and profits until the economy reaches its Trough (low point).

4. **Recovery Phase:** The turning point from depression to expansion is termed as Recovery or Revival Phase.

During the period of revival or recovery, there are expansions and rise in economic activities. When demand starts rising, production increases and this causes an increase in investment. There is a steady rise in output, income, employment, prices and profits. The businessmen gain confidence and become optimistic (Positive). This increases investments. The stimulation of investment brings about the revival or recovery of the economy. The banks expand credit, business expansion takes place and stock markets are activated. There is an increase in employment, production, income and aggregate demand, prices and profits start rising, and business expands. Revival slowly emerges into prosperity, and the business cycle is repeated.

5.8 Macroeconomic policies: Fiscal and Monetary Policies

Monetary policy is a term used to refer to the actions of central banks to achieve macroeconomic policy objectives such as price stability, full employment, and stable economic growth. In the United States, the Congress established maximum employment and price stability as the macroeconomic objectives for the Federal Reserve; they are sometimes referred to as the Federal Reserve's dual mandate. Apart from these overarching objectives, the Congress determined that operational conduct of monetary policy should be free from political influence. As a result, the Federal Reserve is an independent agency of the federal government. Fiscal policy is a broad term used to refer to the tax and spending policies of the federal government. Fiscal policy decisions are determined by the Congress and the Administration; the Federal Reserve plays no role in determining fiscal policy.

The Federal Reserve uses a variety of policy tools to foster its statutory objectives of maximum employment and price stability. One of its main policy tools is the target for the federal funds rate (the rate that banks charge each other for short-term loans), a key short-term interest rate. The Federal Reserve's control over the federal funds rate gives it the ability to influence the general level of short-term market interest rates. By adjusting the level of short-term interest rates in response to changes in the economic outlook, the Federal Reserve can influence longer-term interest rates and key asset prices. These changes in financial conditions then affect the spending decisions of households and businesses.

The monetary policymaking body within the Federal Reserve System is the Federal Open Market Committee (FOMC). The FOMC currently has eight scheduled meetings per year, during which it reviews economic and financial developments and determines the appropriate stance of monetary policy. In reviewing the economic outlook, the FOMC considers how the current and projected paths for fiscal policy might affect key macroeconomic variables such as gross domestic product growth, employment, and inflation. In this way, fiscal policy has an indirect effect on the conduct of monetary policy through its influence on the aggregate economy and the economic outlook. For example, if federal tax and spending programs are projected to boost economic growth, the Federal Reserve would assess how those programs would affect its key macroeconomic objectives--maximum employment and price stability--and make appropriate adjustments to its monetary policy tools.

5.9 Summary

Macroeconomics is the study of the behavior of the entire economy: It analyzes long-run growth as well as the cyclical movements in total output, unemployment and inflation, and international trade and finance. This contrasts with microeconomics, which studies the behavior of individual markets, prices, and outputs.

Economic Growth

Potential output is the output an economy produces when operating at its full productive capacity, at the target rate of unemployment. Potential outputs are points on the production possibility curve.

Gross National Product – This is the most common measure of economic productivity for an aggregate population. GNP is defined as the total value of all goods and services produced in final form during a specific period of time (usually 1 year).

Inflation – Inflation is defined as a condition of generally increasing prices. The term used for measuring these prices can vary according to the desires of the individual, government or institution doing the evaluation.

The principles of Macroeconomics are important in analyzing and understanding longer-term trends and aggregate market behavior. Therefore, for the individual managing his own portfolio it may be helpful to know the current fiscal policy and how it may affect the value of any government bond holdings. One of the ways the government will manage fiscal policy is to buy back these bonds or issue more depending on their objective. This is just one example of the way in which Macroeconomics affects the individual investor.

5.10 Check Your Progress

Multiple Choice Questions

1. Business Cycle (or Trade Cycle) is divided into how many phases:
   a) One
   b) two
   c) three
   d) four
2. Receive deposits is the function of:
   a) RBI
   b) commercial bank
   c) public bank
   d) all of these
3. Which has been assigned the role of controlling and supervising the bank system in India:
   a) RBI
   b) foreign banks
   c) private banks
   d) public banks
4. High level of effective demand is a feature of:
   a) recession phase
   b) depression phase
   c) recovery phase
   d) prosperity phase
5. Decline in consumption and demand is a feature of:
   a) recession phase
   b) depression phase
   c) recovery phase
   d) prosperity phase

Notes

Notes

6. The tools used for implementation of the objectives of monetary policy are:
   a) repo rate
   b) CRR
   c) SLR
   d) all of these
7. The RBI formulates monetary policy:
   a) once a year
   b) twice a year
   c) thrice a year
   d) four times a year
8. Contraction of bank credit is a feature of:
   a) recession phase
   b) depression phase
   c) recovery phase
   d) prosperity phase
9. Which of the following is made into capital:
   a) profit
   b) investment
   c) saving
   d) none of these
10. RBI established in:
   a) 1935
   b) 1945
   c) 1955
   d) 1965

5.11 Questions and Exercises

1. What are the functions of Public banks?
2. What are real and nominal values?
3. What are the measurements of national income?
4. What do you mean by savings?
5. What do you understand by financial systems>?
6. Explain the function of private banks.
7. What are the functions of RBI?
8. Explain the monetary and fiscal policies.
9. Explain business cycle and its phases.
10. What are money and inflation?

5.12 Key Terms

- **Black-Scholes Theory:** Another name for option pricing theory. Differential equations approach is an informal name for derivatives pricing models based upon the original Black-Scholes methodology.
- **Bias:** Bias is the difference between the parameter and the expected value of the estimator of the parameter. considered to be three to five periods.

Notes

- **Buyer's Market:** A buyer's market is a market for a good (stocks, housing, etc.) where prices are falling and there are more parties interested in selling than in buying.
- **Business risk:** Exposure to uncertainty in economic value that cannot be marked-to-market.

Check Your Progress: Answers

1.d, 2.b, 3.a, 4.d, 5.b, 6.d, 7.b, 8.b, 9.b, 10.d.

5.13 Further Readings

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- Handbook of Regional and Urban Economics: Regional economics, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
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Notes

MODULE- II: MANAGERIAL ECONOMICS

Unit 6: Managerial Economics

Structure

Objectives

After studying this unit, you should be able to understand:

- The concept of Managerial economics
- What are the Roles and responsibilities of a managerial economist
- The Relationship to economic theory, decision sciences, statistics, accounting and functional areas of business

6.1 Introduction

Managerial economics is the science of directing scarce resources to manage cost effectively. It consists of three branches: competitive markets, market power, and imperfect markets. A market consists of buyers and sellers that communicate with each other for voluntary exchange. Whether a market is local or global, the same managerial economics apply.

A seller with market power will have freedom to choose suppliers, set prices, and use advertising to influence demand. A market is imperfect when one party directly conveys a benefit or cost to others, or when one party has better information than others.

Notes

An organization must decide its vertical and horizontal boundaries. For effective management, it is important to distinguish marginal from average values and stocks from flows. Managerial economics applies models that are necessarily less than completely realistic. Typically, a model focuses on one issue, holding other things equal.

The science of Managerial Economics has emerged only recently. With the growing variability and unpredictability of the business environment, business managers have become increasingly concerned with finding rational and ways of adjusting to an exploiting environmental change.

The problems of the business world attracted the attentions of the academicians from 1950 onwards. Managerial economics as a subject gained popularity in the USA after the publication of the book “Managerial Economics” by Joel Dean in 1951.

Managerial economics generally refers to the integration of economic theory with business practice. Economics provides tools and managerial economics applies these tools to the management of business. In simple terms, managerial economics means the application of economic theory to the problem of management.

It enables the business executive to assume and analyse things. Every firm tries to get satisfactory profit, even though economics emphasises maximizing of profit. Hence, it becomes neces-sary to redesign economic ideas to the practical world. This function is being done by managerial economics

6.2 Definition

According to E.F. Brigham and J. L. Pappar, Managerial Economics is “the application of economic theory and methodology to business administration practice.”

To Christopher Savage and John R. Small: “Managerial Economics is concerned with business efficiency”.

Milton H. Spencer and Lonis Siegelman define Managerial Economics as “the integration of **economic** theory with business practice for the purpose of facilitating decision making and forward **planning** by management.”

In the words of Me Nair and Meriam, “Managerial Economics consists of the use of economic modes of thought to analyse business situations.”

D.C. Hague describes Managerial Economics as “a fundamental academic subject which seeks to understand and analyse the problems of business decision making.”

In the opinion of W.W. Haynes “Managerial Economics is the study of the allocation of resources available to a firm of other unit of management among the activities of that unit.”

According to Floyd E. Gillis, “Managerial Economics deals almost exclusively with those busi-ness situations that can be quantified and dealt with in a model or at least approximated quantitatively.”

6.3 Nature and scope

6.3.1 Nature of Managerial Economics

Managerial economics is a science applied to decision making. It bridges the gap between abstract theory and managerial practice. It concentrates more on the method of reasoning. In short, managerial economics is “Economics applied in decision making”.

The primary function of management executive in a business organisation is decision making and forward planning.

Notes

Decision making and forward planning go hand in hand with each other. Decision making means the process of selecting one action from two or more alternative courses of action. Forward planning means establishing plans for the future to carry out the decision so taken.

The problem of choice arises because resources at the disposal of a business unit (land, labour, capital, and managerial capacity) are limited and the firm has to make the most profitable use of these resources.

6.3.2 Managerial Economics is a Science

Managerial Economics is an essential scholastic field. It can be compared to science in a sense that it fulfils the criteria of being a science in following sense:

Science is a Systematic body of Knowledge. It is based on the methodical observation. Managerial economics is also a science of making decisions with regard to scarce resources with alternative applications. It is a body of knowledge that determines or observes the internal and external environment for decision making.

In science any conclusion is arrived at after continuous experimentation. In Managerial economics also policies are made after persistent testing and trailing. Though economic environment consists of human variable, which is unpredictable, thus the policies made are not rigid. Managerial economist takes decisions by utilizing his valuable past experience and observations.

Science principles are universally applicable. Similarly policies of Managerial economics are also universally applicable, partially if not fully. The policies need to be changed from time to time depending on the situation and attitude of individuals to those particular situations. Policies are applicable universally but modifications are required periodically.

6.3.3 Managerial Economics requires Art

Managerial economist is required to have an art of utilizing his capability, knowledge and understanding to achieve the organizational objective. Managerial economist should have an art to put in practice his theoretical knowledge regarding elements of economic environment.

Managerial Economics for administration of organization

Managerial economics helps the management in decision making. These decisions are based on the economic rationale and are valid in the existing economic environment.

Managerial economics is helpful in optimum resource allocation

The resources are scarce with alternative uses. Managers need to use these limited resources optimally. Each resource has several uses. It is manager who decides with his knowledge of economics that which one is the preeminent use of the resource.

Managerial Economics has components of micro economics

Managers study and manage the internal environment of the organization and work for the profitable and long-term functioning of the organization. This aspect refers to the micro economics study. The managerial economics deals with the problems faced by the individual organization such as main objective of the organization, demand for its product, price and output determination of the organization, available substitute and complimentary goods, supply of inputs and raw material, target or prospective consumers of its products etc.

Managerial Economics has components of macro economics

None of the organization works in isolation. They are affected by the external environment of the economy in which it operates such as government policies, general

Notes

price level, income and employment levels in the economy, stage of business cycle in which economy is operating, exchange rate, balance of payment, general expenditure, saving and investment patterns of the consumers, market conditions etc. These aspects are related to macro economics.

Managerial Economics is dynamic in nature

Managerial Economics deals with human-beings (i.e. human resource, consumers, producers etc.). The nature and attitude differs from person to person. Thus to cope up with dynamism and vitality managerial economics also changes itself over a period of time.

Decision Making

Managerial economics is supposed to enrich the conceptual and technical skill of a manager. It is concerned with economic behaviour of the firm. It concentrates on the decision process, decision model and decision variables at the firm level. It is the application of economic analysis to evaluate business decisions.

After taking the decision about the particular output, pricing, capital, raw-materials and power etc., are prepared. Forward planning and decision-making thus go on at the same time.

The primary function of a manager in business organisation is decision making and forward planning under uncertain business conditions. Some of the important management decisions are production decision, inventory decision, cost decision, marketing decision, financial decision, personnel decision and miscellaneous decisions. One of the hallmarks of a good executive is the ability to take quick decision. He must have the clarity of goals, use all the information he can get, weigh pros and cons and make fast decisions.

The decisions are taken to achieve certain objectives. Objectives are the motivating factors in taking decision. Several acts are performed to attain the objectives quantitative techniques are also used in decision making. But it may be noted that acts and quantitative techniques alone will not produce desirable results.

In fulfilling the function of decision-making in an uncertainty framework, economic theory can be, pressed into service with considerable advantage as it deals with a number of concepts and principles which can be used to solve or at least throw some light upon the problems of business management. E.g. are: profit, demand, cost, pricing, production, competition, business cycles, national income etc. The way economic analysis can be used towards solving business problems, constitutes the subject-matter of Managerial Economics.

Thus in brief we can say that Managerial Economics is both a science and an art.

6.3.4 Scope of Marginal Economics

The scope of managerial economics is not yet clearly laid out because it is a developing science. Even then the following fields may be said to generally fall under Managerial Economics:

1. Demand Analysis and Forecasting
2. Cost and Production Analysis
3. Pricing Decisions, Policies and Practices
4. Profit Management
5. Capital Management

These divisions of business economics constitute its subject matter.

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Recently, managerial economists have started making increased use of Operation Research methods like Linear programming, inventory models, Games theory, queuing up theory etc., have also come to be regarded as part of Managerial Economics.

Managerial Economics is a developing subject. The scope of managerial economics refers to its area of study. Managerial economics has its roots in economic theory. The empirical nature of managerial economics makes its scope wider. Managerial economics provides management with strategic **planning** tools that can be used to get a clear perspective of the way the business world works and what can be done to maintain profitability in an ever changing environment.

- **Positive Economics:** Economics is neutral between ends. The economist has no right to pass judgment on the wisdom or folly of the ends itself. Positive Economics is simply concerned with the problem of resources in relation to the ends desired. The manufacture and sale of cigarettes and wine may be injurious to health and therefore morally unjustifiable, but the economist has no right to pass judgment on these since both satisfy human wants and involve economic activity.
- **Normative Economics:** Normative economics is concerned with describing what should be the things. It is, therefore, also called prescriptive economics. What price for a product should be fixed, what wage should be paid, how income should be distributed and so on, fall within the purview of normative economics

  It should be noted that normative economics involves value judgments. Almost all the leading managerial **economists** are of the opinion that managerial economics is fundamentally normative and prescriptive in nature.

  It refers mostly to what ought to be and cannot be neutral about the ends. The application of managerial economics is inseparable from consideration of values, or norms for it is always concerned with the achievement of objectives or the optimization of goals.

Managerial Economics deals with allocating the scarce resources in a manner that minimizes the cost. As we have already discussed, Managerial Economics is different from microeconomics and macro-economics. Managerial Economics has a more narrow scope - it is actually solving managerial issues using micro-economics. Wherever there are scarce resources, managerial economics ensures that managers make effective and efficient decisions concerning customers, suppliers, competitors as well as within an organization. The fact of scarcity of resources gives rise to three fundamental questions.

1. What to produce?
2. How to produce?
3. For whom to produce?

To answer these questions, a firm makes use of managerial economics principles.

The first question relates to what goods and services should be produced and in what amount/quantities. The managers use demand theory for deciding this. The demand theory examines consumer behaviour with respect to the kind of purchases they would like to make currently and in future; the factors influencing purchase and consumption of a specific good or service; the impact of change in these factors on the demand of that specific good or service; and the goods or services which consumers might not purchase and consume in future. In order to decide the amount of goods and services to be produced, the managers use methods of demand forecasting.

The second question relates to how to produce goods and services. The firm has now to choose among different alternative techniques of production. It has to make decision regarding purchase of raw materials, capital equipments, manpower, etc. The managers can use various managerial economics tools such as production and cost analysis (for hiring and acquiring of inputs), project appraisal methods (for long term investment decisions), etc. for making these crucial decisions.

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The third question is regarding who should consume and claim the goods and services produced by the firm. The firm, for instance, must decide which is its niche market-domestic or foreign? It must segment the market. It must conduct a thorough analysis of market structure and thus take price and output decisions depending upon the type of market.

Managerial economics helps in decision-making as it involves logical thinking. Moreover, by studying simple models, managers can deal with more complex and practical situations. Also, a general approach is implemented. Managerial Economics take a wider picture of firm, i.e., it deals with questions such as what is a firm, what are the firm's objectives, and what forces push the firm towards profit and away from profit. In short, managerial economics emphasizes upon the firm, the decisions relating to individual firms and the environment in which the firm operates. It deals with key issues such as what conditions favour entry and exit of firms in market, why are people paid well in some jobs and not so well in other jobs, etc. Managerial Economics is a great rational and analytical tool.

Managerial Economics is not only applicable to profit-making business organizations, but also to non- profit organizations such as hospitals, schools, government agencies, etc.

6.4 Roles and Responsibilities of a Managerial Economist

A managerial economist helps the management by using his analytical skills and highly developed techniques in solving complex issues of successful decision-making and future advanced planning.

The role of managerial economist can be summarized as follows:

1. An Economist studies the economic patterns at macro-level and analysis it's significance to the specific firm he is working in.
2. An Economist also carries cost-benefit analysis.
3. In addition, a managerial economist has to analyze changes in macro- economic indicators such as national income, population, business cycles, and their possible effect on the firm's functioning.
4. An Economist is also involved in advising the management on public relations, foreign exchange, and trade. An Economist guides the firm on the likely impact of changes in monetary and fiscal policy on the firm's functioning.
5. An Economist also makes an economic analysis of the firms in competition. An Economist has to collect economic data and examine all crucial information about the environment in which the firm operates.
6. The most significant function of a managerial economist is to conduct a detailed research on industrial market.
7. In order to perform all these roles, a managerial economist has to conduct an elaborate statistical analysis.
8. An Economist also provides management with economic information such as tax rates, competitor's price and product, etc. They give their valuable advice to government authorities as well.
9. An Economist has to consistently examine the probabilities of transforming an ever-changing economic environment into profitable business avenues.
10. An Economist assists the business planning process of a firm.
11. An Economist assists the management in the decisions pertaining to internal functioning of a firm such as changes in price, investment plans, type of goods /services to be produced, inputs to be used, techniques of production to be employed, expansion/ contraction of firm, allocation of capital, location of new plants, quantity of output to be produced, replacement of plant equipment, sales forecasting, inventory forecasting, etc.

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12. An Economist must be vigilant and must have ability to cope up with the pressures.
13. At times, a managerial economist has to prepare speeches for top management.

6.5 Relationship to Economic Theory

Managerial Economics can be defined as amalgamation of economic theory with business practices so as to ease decision-making and future planning by management. Managerial Economics assists the managers of a firm in a rational solution of obstacles faced in the firm's activities. It makes use of economic theory and concepts. It helps in formulating logical managerial decisions. The key of Managerial Economics is the micro-economic theory of the firm. It lessens the gap between economics in theory and economics in practice. Managerial Economics is a science dealing with effective use of scarce resources. It guides the managers in taking decisions relating to the firm's customers, competitors, suppliers as well as relating to the internal functioning of a firm. It makes use of statistical and analytical tools to assess economic theories in solving practical business problems.

As stated earlier that managerial economics is an application of economic theory into business practices / management. Managerial economics uses both micro and macro economics-their concepts, theories, tools and techniques. In managerial economics, we also use various types of models such as schematic models (diagrams) analog models (flow charts) and mathematical models and stochastic models. The roots of most of these models lie in economic logic.

Economics also tells us the art of constructing models. Empirically estimated functions, which are being used in managerial economics are basically econometric estimates.

The use of Managerial Economics is not limited to profit-making firms and organizations. But it can also be used to help in decision-making process of non-profit organizations (hospitals, educational institutions, etc). It enables optimum utilization of scarce resources in such organizations as well as helps in achieving the goals in most efficient manner. Managerial Economics is of great help in price analysis, production analysis, capital budgeting, risk analysis and determination of demand.

Managerial economics uses both Economic theory as well as Econometrics for rational managerial decision making. Econometrics is defined as use of statistical tools for assessing economic theories by empirically measuring relationship between economic variables. It uses factual data for solution of economic problems. Managerial Economics is associated with the economic theory which constitutes "Theory of Firm".

Managerial economics is the "application of the economic concepts and economic analysis to the problems of formulating rational managerial decisions". It is sometimes referred to as business economics and is a branch of economics that applies microeconomic analysis to decision methods of businesses or other management units. As such, it bridges economic theory and economics in practice. It draws heavily from quantitative techniques such as regression analysis, correlation and calculus. If there is a unifying theme that runs through most of managerial economics, it is the attempt to optimize business decisions given the firm's objectives and given constraints imposed by scarcity, for example through the use of operations research, mathematical programming, game theory for strategic decisions, and other computational methods.

Managerial decision areas include:

- assessment of investible funds
- selecting business area
- choice of product
- determining optimum output
- Sales promotion.

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Almost any business decision can be analyzed with managerial economics techniques, but it is most commonly applied to:

- **Risk analysis** - various models are used to quantify risk and asymmetric information and to employ them in decision rules to manage risk.
- **Production analysis** - microeconomic techniques are used to analyze production efficiency, optimum factor allocation, costs, and economies of scale and to estimate the firm's cost function.
- **Pricing analysis** - microeconomic techniques are used to analyze various pricing decisions including transfer pricing, joint product pricing, price discrimination, price elasticity estimations, and choosing the optimum pricing method.
- **Capital budgeting** - Investment theory is used to examine a firm's capital purchasing decisions.

6.6 Decision sciences

The Decision Sciences major delivers a variety of modeling techniques for use in diverse industries. The subject matter is meant to give students a "mathematical toolbox" usable across many disciplines - whether using regression to forecast sales, designing spreadsheets for portfolio optimization or constructing decision tree models to evaluate different R&D alternatives. Because of its flexibility, the major is an ideal complement to majors in finance, economics, operations or marketing. In recent years decision science techniques have been especially relevant for (but not limited to) companies in the following areas: general consulting, oil & natural gas, automotive, pharmaceuticals and **transportation.**

The process of decision making can be divided into five basic steps:

- **Step 1: Establish the Objectives:** Management should determine the firm's objectives.

  Example: increase company's profit in order to maintain a 5% annual growth rate to expand into the global market
- **Step 2: Define the Problem:** It is very important to determine exactly what the problem is.

  Example: Too much international competition

  Regulations in foreign market establishing potential safety restrictions.
- **Step 3: Identify Possible Solutions:** Once the problem is defined, management should try to create possible solutions.

  Example: Purchase an established firm in the market you are trying to enter that would be in direct competition.
- **Step 4: Select the Best Possible Solution:** Taking your set of alternative possible solutions, you must evaluate each one and determine which is best, conditional on the objectives of the firm.
- **Step 5: Implement the Decision:** The solution must be implemented properly in order to be effective.

6.7 Statistics

Statistics is important to managerial economics in several ways. Managerial economics calls for the organizing quantitative data and deriving a useful measure of appropriate functional relationships involved in decision-making. For instance, in order to base its pricing decisions on demand and cost considerations, a firm should have statistically derived or calculated demand and cost functions. Managerial economics also employs statistical methods for experimental testing of economic generalizations. The generalizations can be accepted in practice only when they are checked against the data from the world of reality and are found valid. Managers do not have exact

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information about the variables affecting decisions and have to deal with the uncertainty of future events. The theory of probability, upon which statistics is based, provides logic for dealing with such uncertainties.

Statistical tools are a great aid in business decision making. Statistical techniques are used in collecting processing and analyzing business data, testing and validity of economics laws with the real economic phenomenon before they are applied to business analysis. The statistical tools for e.g. theory of probability, forecasting techniques, and regression analysis help the decision makers in predicting the future course of economic events and probable outcome of their business decision. Statistics is important to managerial economics in several ways. ME calls for marshalling of quantitative data and reaching useful measures of appropriate relationship involves in decision making. In order to base its price decision on demand and cost consideration, a firm should have statistically derived or calculated demand and cost function.

The marginal rate of substitution is the amount of a good that a consumer is willing to give up for another good, as long as the new good is equally satisfying. It's used in indifference theory to analyze consumer behavior. The marginal rate of substitution (MRS) is calculated between two goods placed on an indifference curve, displaying a frontier of equal utility for each combination of "good A" and "good B". The marginal rate of substitution is always changing for a given point on the curve, and mathematically represents the slope of the curve at that point. MRS is calculated using the following formula:

$$MRS_x^y = \frac{dx}{dy}$$

The Law of Diminishing Marginal Rates of Substitution states that MRS decreases as one moves down the standard convex-shaped curve, which is the indifference curve.

For example, a consumer chooses between hamburgers and hotdogs. In order to determine the marginal rate of substitution, the consumer is asked what combinations of hamburgers and hotdogs provide the same level of satisfaction. When these combinations are graphed, the slope of the resulting line is negative. This means that the consumer faces a diminishing marginal rate of substitution: the more hamburgers they have relative to hotdogs, the fewer hotdogs the consumer is willing to give up for more hamburgers. If the marginal rate of substitution of hamburgers for hot dogs is 2, then the individual would be willing to give up 2 hotdogs in order to obtain 1 extra hamburger.

The marginal rate of substitution does not examine a combination of goods that a consumer would prefer more or less than another combination, but examines which combinations of goods the consumer would prefer just as much. It also does not examine marginal utility – how much better or worse off a consumer would be with one combination of goods rather than another – because all combinations of goods along the indifference curve are valued the same by the consumer.

6.8 Accounting and functional areas of business

Managerial Economics is also closely related to accounting, which is concerned with recording the financial operations of a business firm. Indeed, accounting information is one of the principal sources of data required by a managerial economist for his decision making purpose. For instance, the profit and loss statement of a firm tells how well the firm has done and the information it contains can be used by managerial economist to throw significant light on the future course of action - whether it should improve or close down. Of course, accounting data call for careful interpretation. Recasting and adjustment before they can be used safely and effectively.

It is in this context that the growing link between management accounting and managerial economics deserves special mention. The main task of management accounting is now seen as being to provide the sort of data which managers need if

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they are to apply the ideas of managerial economics to solve business problems correctly; the accounting data are also to be provided in a form so as to fit easily into the concepts and analysis of managerial economics.

A business is started with the main aim of earning profit. Capital is invested it is employed for purchasing properties such as building, furniture, etc and for meeting the current expenses of the business.

Goods are bought and sold for cash as well as credit. Cash is paid to credit sellers. It is received from credit buyers. Expenses are met and incomes derived. This goes on the daily routine work of the business. The buying of goods, sale of goods, payment of cash, receipt of cash and similar dealings are called business transactions.

The business transactions are varied and multifarious. They are too numerous to be kept in one's memory. This has given rise to the necessity of recording business transaction in books. They are writ-ten in a set of books in a systematic manner so as to facilitate proper study of their results.

There are three classes of accounts:

1. Personal account,
2. Property accounts, and
3. Nominal accounts.

Man-agement accounting provides the accounting data for taking business decisions. The accounting tech-niques are very essential for the success of the firm because profit maximisation is the major objective of the firm.

6.9 Summary

A close interrelationship between management and economics had led to the development of managerial economics. Economic analysis is required for various concepts such as demand, profit, cost, and competition. In this way, managerial economics is considered as economics applied to "problems of choice'' or alternatives and allocation of scarce resources by the firms.

Managerial economics is a discipline that combines economic theory with managerial practice. It helps in covering the gap between the problems of logic and the problems of policy. The subject offers powerful tools and techniques for managerial policy making.

The most important function in managerial economics is decision-making. It involves the complete course of selecting the most suitable action from two or more alternatives. The primary function is to make the most profitable use of resources which are limited such as labor, capital, land etc.

A manager is very careful while taking decisions as the future is uncertain; he ensures that the best possible plans are made in the most effective manner to achieve the desired objective which is profit maximization.

1. Economic theory and economic analysis are used to solve the problems of managerial economics.
2. Economics basically comprises of two main divisions namely Micro economics and Macro economics.
3. Managerial economics covers both macroeconomics as well as microeconomics, as both are equally important for decision making and business analysis.
4. Macroeconomics deals with the study of entire economy. It considers all the factors such as government policies, business cycles, national income, etc.

All the economic theories, tools, and concepts are covered under the scope of managerial economics to analyze the business environment. The scope of managerial economics is a continual process, as it is a developing science. Demand analysis and

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forecasting, profit management, and capital management are also considered under the scope of managerial economics. Managerial economics leverages economic concepts and decision science techniques to solve managerial problems. It provides optimal solutions to managerial decision making issues.

6.10 Check Your Progress

Multiple Choice Questions

1. Managerial economics is a science applied to:
   (a) Profit making
   (b) Decision making
   (c) Investment
   (d) None of these
2. The most important function in managerial economics is:
   (a) Profit making
   (b) Decision making
   (c) Investment
   (d) None of these
3. Economic analysis is required for various concepts such as:
   (a) Demand
   (b) Profit
   (c) Cost \
   (d) all of these
4. Managerial economics is considered as economics applied to:
   (a) problem of choice
   (b) Decision making
   (c) Money making
   (d) Profit making
5. Managerial Economics is also closely related to:
   (a) Mathematics
   (b) Arts
   (c) Accounting
   (d) None of these
6. Which of the following is the statistical tools:
   (a) Probability
   (b) Forecasting techniques
   (c) Both a and b
   (d) Neither a nor b
7. The primary function is to make the most profitable use of:
   (a) Money
   (b) Capital
   (c) Investment

(d) Resources

8. Managerial Economics assists the _____ of a firm in a rational solution of obstacles faced in the firm's activities:
   (a) Employees
   (b) Managers
   (c) Directors
   (d) Owner
9. Which of the following is important management decisions:
   (a) Production
   (b) Marketing
   (c) Cost
   (d) all of these
10. Managerial Economics is associated with the economic theory which constitutes:
   (a) Theory of firm
   (b) Theory of economics
   (c) Decision making
   (d) None of these

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6.11 Questions and Exercises

1. Define Managerial economics.
2. What is the nature of managerial economic?
3. What is the scope of managerial economics?
4. What do you understand by decision making?
5. What is positive economic?
6. What is the meaning of normative economics?
7. Describe the role of Economists.
8. What do you understand by decision sciences?
9. Explain managerial economics as accounting.
10. What do you mean by statistics?

6.12 Key Terms

- **Absolute minimum:** The output value of the lowest point on a graph over a given input interval or over all possible input values. An absolute minimum point is a local minimum point and occurs at an endpoint of the given input interval.
- **Data:** Real-world information recorded as numerical values.
- **Demand:** The amount of a good or service that an individual is willing and able to buy at each possible price.
- **Demand curve:** A graph illustrating demand, with prices on the vertical axis and quantity demanded on the horizontal axis. Demand curve slopes downward because of the negative relationship between price and quantity demanded.
- **Macro Economics:** Macro Economic is a branch of economics dealing with the performance, structure, behavior, and decision-making of an economy as a whole, rather than individual markets. This includes national, regional, and global economies.
- **Micro Ecnomics** Macro Economics is a branch of economics that studies the behavior of individuals and firms in making decisions regarding the allocation of limited resources.

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- **Decision sciences:** Decision sciences is a collaborative approach involving mathematical formulae, business tactics, technological applications and behavioural sciences to help senior management make data driven decisions.

Check Your Progress: Answers

1. b, 2. b, 3. d, 4. a, 5. c, 6. c, 7. d, 8. b, 9. d, 10. a.

6.13 Further Readings

- *Principles of Economics*, Alfred Marshall – 2013.
- *Economics*, Paul A. Samuelson – 2010.
- *Basic Economics*, Thomas Sowell – 2014.
- *Ecological Economics, Second Edition*: Principles and Herman E. Daly, Joshua Farley – 2011.
- *Handbook of Regional and Urban Economics: Regional economics*, Peter Nijkamp – 1986.

Unit 7: Theory of the Firm

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Structure

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Objectives

After studying this unit, you should be able to understand:

- The Theory of the firm
- The Constraints to the operation of the firm
- What are the limitations of the theory of the firm
- The nature and functions of profits
- The various business sources of economic profits, theory and functions of profits
- Concept of Economic forecasting
- Various Competitions in the age of liberalization, privatization and globalization.

7.1 Introduction

According to Bartlett and Ghoshal (1993), a ""managerial theory of the firm"" would be more attuned to the premises of the key actors within the firm so as to be able to illuminate the corporate world as seen by managers and encompass the issues that they perceive to be important. The form of the firm resulting from this managerial theory is a radical departure from the dominant **M-form (Multidivisional Form)** of the firm**.**

The theory of the firm is the microeconomic concept founded in neoclassical economics that states that firms (corporations) exist and make decisions in order to maximize profits. Businesses interact with the market to determine pricing and demand and then allocate resources according to models that look to maximize net profits.

The theory of the firm goes along with the theory of the consumer, which states that consumers seek to maximize their overall utility. Modern theory of the firm sometimes distinguish between long-run motivations (sustainability) and short-run motivations (profit maximization).

The theory of the firm is always being re-analyzed and adapted to suit changing economies and markets. Early economic analysis focused on broad industries, but as the nineteenth century progressed, more economists began to look at the firm level to answer basic questions about why companies produce what they do, and what motivates their choices when allocating capital and labor.

Modern theory of the firm take such facts as low equity ownership by many decision-makers into account; some feel that CEOs of publicly held companies are interested not only in profit maximization, but also in goals based on sales maximization, public relations and market share.

Economic theories of the firm have provided much of the language and concepts of modern corporate governance and corporate law discourse.

Alternative mechanism: According to economic theories of the firm, the default form of economic exchanges is through the market. The mechanism of market prices is assumed to allocate resources to their most effective uses. The firm is an alternative mechanism.

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Variation: There are various competing theories of this alternative mechanism. This is partly caused by the nature of economics. Whereas law is normative and must be applied by people and firms in the complex circumstances of real life, economists have more discretion as economic theories are not applied in a normative way. The firms studied by economists are firms reduced to certain aspects. One can therefore say that economists study fictive rather than real firms. This can contribute to the existence of large differences between the competing theories.

Categories: Economic theories of the firm can be categorized in various ways. If it is assumed that market contracting solves everything, there is no room for the firm. A theory based on such an assumption cannot tell us why firms exist. There are nevertheless theories that go further.

One can broadly distinguish between theories of the existence of firms and theories of the limits of the firm. Theories of the existence of firms focus on market exchange and regard the firm as a production structure. Theories of the limits of the firm focus on internal exchange and regard the firm as a governance structure and an organizational construction. One can thus regard the firm as a production function or as an organizational structure. This distinction is also the distinction between (a) the classical or neoclassical theory of the firm and (b) the institutional theory or new institutional economics. The neoclassical theory started with the publication of two articles: Alchian and Demsetz (1972) and Jensen and Meckling (1976). Williamson (1981) is an example of the institutional theory of the firm. In addition, management theorists champion (c) the resource-based theory of the firm.

7.2 Objectives

The theory of the firm is based on the assumption that all businesses will operate to make a profit.

Economists have been interested in the objectives of firms, and individuals who control firms, for centuries. The original theory developed was a profit maximization theory which is attributed to Marshall (1897, 1890). In profit maximization theory marginal differentiation is used as the method for measuring the point where this maximum level of profits is attained. The use of marginal analysis in economics can be traced back to Cournot (1838).

The assumption was made that firms, or owners of firms, would set the marginal cost (MC) of production, i.e. the cost of the last unit of production, to equal the marginal revenue (MR), i.e. the revenue received from selling that last unit of production. Mathematically this gives a maximum amount of profit, if profit is defined as total revenue minus total costs (over a given period of time). The focus of this analysis was not on the characteristics of individual firms, instead Marshall focused on general characteristics of the average firm thus developing the idea of the “representative firm”. Important contributions have been made by Chamberlain: monopolistic competition (1933), Robinson: monopolistic competition (1933) and Coase: Transaction costs (1937). The central focus of all these theories is profit maximization. The firms act as “black boxes” and are influenced by simple supply side variables (MC) and simple demand side variables (MR).

If the classical theory of the firm is accepted then the main objective for owners/ managers of firms is profit maximization.

Businesses face upward sloping total cost and revenue curves – as more is produced costs increase and as more is sold revenue increases

Marginal Costs and Revenues

If a business has a downward sloping demand curve revenue will rise at a decreasing rate as production rises until marginal revenue equals zero. At this point any additional units don’t add anything to total revenue.

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1. **Profit Satisficing:** In many firms there is separation of ownership and control. Those who own the company (shareholders) often do not get involved in the day to day running of the company.

   This is a problem because although the owners may want to maximize profits, the managers have much less incentive to maximize profits because they do not get the same rewards, (share dividends)

   Therefore managers may create a minimum level of profit to keep the shareholders happy, but then maximize other objectives, such as enjoying work, getting on with other workers. (E.g. not sacking them) This is the problem of separation between owners and managers.

   This 'principal agent' problem can be overcome, to some extent, by giving mangers share options and performance related pay although in some industries it is difficult to measure performance.

2. **Sales Maximization:** Firms often seek to increase their market share – even if it means less profit. This could occur for various reasons:

   (a) Increased market share increases monopoly power and may enable the firm to put up prices and make more profit in the long run.

   (b) Managers prefer to work for bigger companies as it leads to greater prestige and higher salaries.

   (c) Increasing market share may force rivals out of business. E.g. supermarkets have led to the demise of many local shops. Some firms may actually engage in predatory pricing which involves making a loss to force a rival out of business.

3. **Growth Maximization:** This is similar to sales maximization and may involve mergers and takeovers. With this objective, the firm may be willing to make lower levels of profit in order to increase in size and gain more market share.

4. **Long Run Profit Maximization:** In some cases, firms may sacrifice profits in the short term to increase profits in the long run. For example, by investing heavily in new capacity, firms may make a loss in the short run, but enable higher profits in the future.

5. **Social/ Environmental concerns:** A firms may incur extra expense to choose products which don't harm the environment or products not tested on animals.

   Alternatively, firms may be concerned about local community / charitable concerns.

   Many companies who have adopted such strategies have been quite successful. This has encouraged more firms to consider these over objectives, but a cynic may argue they see it as another opportunity to increase profits rather than a genuine sacrificing of profits in order to promote other objectives.

6. **Co-operatives:** Co-operatives may have completely different objectives to a typical PLC. A co-operative is run to maximize the welfare of all stakeholders – especially workers. Any profit the co-operative makes will be shared amongst all members.

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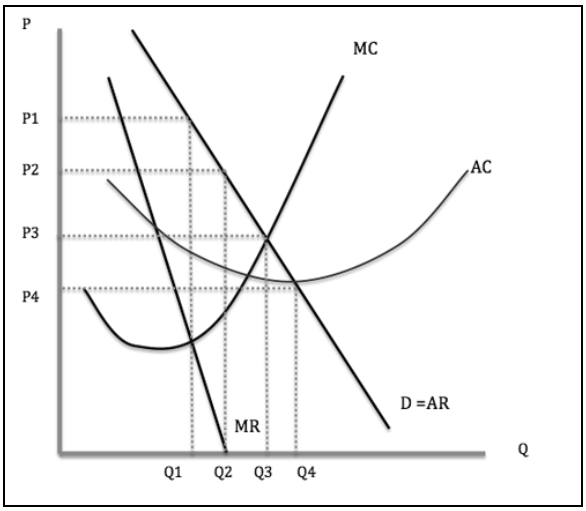

Diagram Showing Different Objectives of Firms

Q1 = Profit maximization (MR=MC)

Q2 = Revenue Maximization (MR=0)

Q3 = Marginal cost pricing (P=MC) – allocative efficiency

Q4 = Sales maximization – maximum sales whilst still making normal profit (AR=ATC)

7.3 Alternative objectives

The standard textbook assumption that businesses are driven by the need to maximize profits and achieve a unique profit maximizing equilibrium price and output where marginal revenue equates with marginal cost is false. Although there are good reasons to support the argument that private sector businesses must strive to meet commercial aims and objectives. And that the discipline of the market for corporate control e.g. the stock market is hugely important for listed companies, especially in a world of private equity and active hedge funds. Nonetheless we can find many reasons to question the assumption of profit maximization.

Questioning profit maximization

7. Information failures
   - Lack of accurate and detailed information to undertake optimal maximizing behaviour
   - Few firms have the market intelligence to calculate demand curves, marginal revenue curves or have full information on their marginal costs of production
   - Most modern businesses are multi-product firms operating in a range of separate markets in different countries. The amount of information that they have to handle can be vast.

8. **Behavioral theories of the modern corporation**
   - Modern businesses / corporations are **complex** organizations
   - Frequently shareholders (owners) have little day-to-day control over the management decisions of the business e.g. decisions on product pricing / product development / marketing
   - This is known as the **divorce between ownership and control**
   - Managers may have **different objectives** than the principal shareholders and may not always work in their best interests i.e. seeking to maximize shareholder value / profit streams

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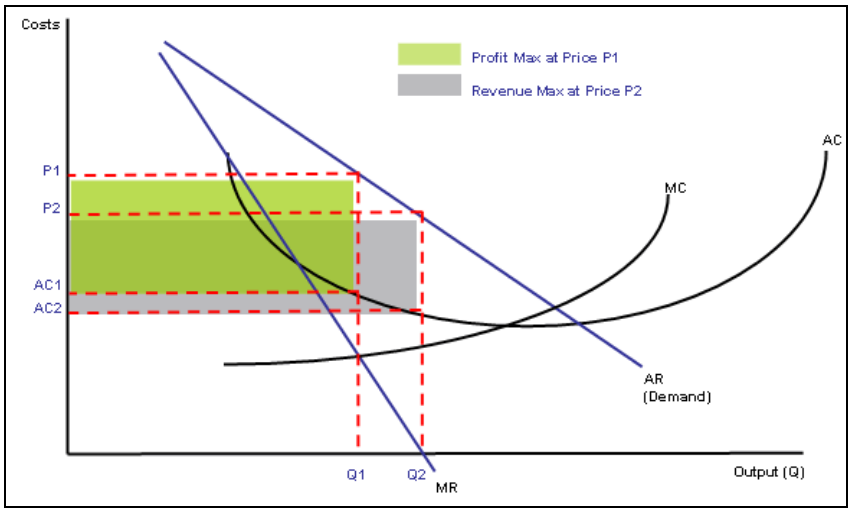
- The owners may not be able to monitor the decisions taken by manager (**principal-agent problem**)
- Their behaviour may involve pursuing **alternative objectives** such as
  - **Satisficing behaviour** involves the owners setting minimum acceptable levels of achievement in terms of business revenue and profit.
  - **Sales revenue maximization** – at an output where marginal revenue = zero
- Different objectives can lead to different price and output combinations – as shown in the diagram
- **Evaluation**:
  - This has implications for consumer and producer welfare / economic welfare
  - The expansion of private equity and the takeover boom may be placing businesses under greater pressures to maximize profits and shareholder returns
  - Profit-related pay and other forms of incentives can also change the behaviour of managers



9. **Changing objectives at different times:** Many profit-driven businesses may opt to depart from pure profit maximization strategies at different times
   - **Economic Cycles:** During a recession or economic slowdown – when the priority may be to generate strong cash flow or keep sales volumes high by deep discounting of prices and lower profit margins
   - **Fresh competition:** When a new rival enters the market
   - **Dynamic market conditions**: When there is an **unexpected cost shock** e.g. higher oil prices and they decide to absorb the cost rise in lower profits
10. **The rise of social entrepreneurs – "not just for profit" businesses:** Underneath the surface of an economy dominated by global corporate giants, a new breed of business is flourishing, where profit is not always the bottom line; these are entrepreneurs operating for a social purpose not just for profit. A **social enterprise** is a business that has social objectives whose surpluses are reinvested for that purpose in the business or the community, rather than being driven by the need to seek profit to satisfy investors. Rather than maximize shareholder value and distribute rising dividends, a social enterprise is looking to achieve social and environmental aims over the long term.

    Examples

    - Café Direct

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- Fair Trade
- Tradecraft
- Divine Chocolate
- The Eden Project
- Fifteen Foundation (Jamie Oliver)
- Housing Associations
- Micro-credit developed by the Grameen Bank and its founder, the Nobel-Prize winner Muhammad Yunus

An example from India

Devi Prasad Shetty strives to make sophisticated health care in India available to all irrespective of their economic situation or geographic location. He founded the Narayana Hrudayalaya Hospital in Bangalore in 2001 and previously co-founded the Asia Heart Foundation. In addition, Shetty has built a network of 39 telemedicine centers to reach out to patients in remote rural areas. Together, the network of hospitals performs 32 heart surgeries a day, making it one of the busiest in the world. Almost half the patients are children and babies. Sixty percent of the treatments are provided below cost or for free.

11. **Not for Profit Business:** Charities, community organizations run on commercial lines - another example is Network Rail

    Network Rail

    - Took over the rail network in October 2002
    - Stated purpose is to deliver a safe, reliable and efficient railway for Britain.
    - It is a company limited by guarantee – whose debts are secured by the government
    - A private company operating as a commercial business and regulated by the Office of Rail Regulation
    - Train operating companies pay Network Rail for use of the rail infrastructure

12. **Businesses required to main a loss-making service on social grounds:** A good example here is the Royal Mail which is required to maintain a universal national postal delivery service throughout the UK for a uniform price. Household mail makes a loss, cross-subsidized by business mail – although this market is shrinking for the Royal Mail because of the introduction of fresh competition from Jan 2006. The Post Office Ltd is a subsidiary of the Royal Mail Group plc – it runs substantial losses on the network or rural post offices and has been under great pressure to close hundreds of off

7.4 Value of the Firm

Enlightened value maximization recognizes that communication with and motivation of an organization's managers, employees, and partners is extremely difficult. What this means in practice is that if we tell all participants in an organization that its sole purpose is to maximize value, we would not get maximum value for the organization.

Value maximization is not a vision or a strategy or even a purpose, it is the scorecard for the organization. We must give people enough structure to understand what maximizing value means in such a way that they can be guided by it and therefore have a chance to actually achieve it. They must be turned on by the vision or the strategy in the sense that it taps into some desire deep in the passions of human beings—for example a desire to build the world's best automobile or to create a movie or play that will affect humans for centuries. All these can be consistent with value maximization.

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Defining what it means to score a goal in football or soccer, for example, tells the players nothing about how to win the game. It just tells them how the score will be kept. That is the role of value maximization in organizational life. It doesn't tell us how to have a great defense or offense, or what kind of plays to create or practice, or how much to train and practice, or whom to hire, and so on. All of these critical functions are part of the competitive and organizational strategy of any team or organization. Adopting value creation as the scorekeeping measure does nothing to relieve us of the responsibility to do all these things and more in order to survive and dominate our sector of the competitive landscape.

The value of a firm is linked to profit maximization. A firm looking to maximize their profits is actually concerned with maximizing its value. As such, it is important for a firm to be able to determine its present value accurately.

The value of a firm can be simplified using time value of money principles. Thus, the value of a firm is defined as the present value of expected future cash flows plus current cash flows. In this case, we will assume the expected cash flows to be equal to the expected profits for the firm. In order to calculate the value of the firm most companies discount the expected future profits to today using a given interest rate, i, and then add in the current profits.

This means, for example, that we must give employees and managers a structure that will help them resist the temptation to maximize the short-term financial performance (usually profits, or sometimes even more silly, earnings per share) of the organization. Such short-term profit maximization is a sure way to destroy value. This is where enlightened stakeholder theory can play an important role. We can learn from the stakeholder theorists how to lead managers and participants in an organization to think more generally and creatively about how the organization's policies treat all important constituencies of the firm. This includes not just financial markets, but employees, customers, suppliers, the community in which the organization exists, and so on.

The equations below can be used to determine the PV of a firm based on current and future profits:

Equation #1: General Equation:

PV(firm)= p(0) + [p(1) / (1+i)]+ [p(2) / (1+i)^2]+ [p(3) / (1+i)^3].....[p(x) / (1+i)^x]

p (0) = profit

p(x) = profit for X years out

i = interest rate

The equation above gives the best estimate of a firm’s value. However, the firm must have estimates of future profits to use the equation. If the firm does not have future profit estimates, they can determine its value using the constant growth equation. Because firms do not have a "maturity" like other profit streams may, we can consider this to be a perpetuity (extending forever - or at least for an indefinite time period).

In order to understand how the value of a firm can change and what variables are linked to value of a firm, we must make a few assumptions. First, we assume that the company's profits will grow at a constant rate indefinitely (g). Also, we must assume that profit growth is less than the interest rate (g < i). We can then use with the constant growth equation.

Equation #2: Constant Growth Equation:

PV(firm) = p(0) + [p(0) (1+g) / (1+i)]+ [p(0) (1+g)^2 / (1+i)^2]+ [p(0) (1+g)^3 / (1+i)^3] .... [p (0) (1+g)^x / (1+i)^x

Simplified:

PV (firm) = p (0) * [(1+i) / (i-g)]

Notes

p(0) = profit for the current year

i = interest rate

g = growth rate

One final scenario in which the value of a firm can be estimated is when current profits have already been paid out to the shareholders in the form of a dividend. In this case, the value of a firm is calculated as follows:

Equation #3: Dividend Equation

PV (ex-dividend firm) = PV (firm) - p(0)

Simplified:

PV (ex-dividend firm) = p(0) * [(1+g) / (i-g)]

Therefore, as long as our assumption that the interest rate and growth rate are both constant holds, maximizing profits will also maximize the value of the firm.

Under the simplest version of the theory of the firm it is assumed that profit maximization is its primary goal. In this version of the theory, the firm's owner is the manager of the firm, and thus, the firm's owner-manager is assumed to maximize the firm's short-term profits (current profits and profits in the near future). Today, even when the profit maximizing assumption is maintained, the notion of profits has been broadened to take into account uncertainty faced by the firm (in realizing profits) and the time value of money (where the value of a dollar further and further in the future is increasingly smaller than a dollar today). In this more complete model, the goal of maximizing short-term profits is replaced by goal of maximizing long-term profits, the present value of expected profits, of the business firm.

Defining present value of expected profits is based on first defining "value" and then defining "present value." Many concepts of value, such as book value, market value, going-concern value, break-up value, and liquidating value, are encountered in business and economics. The value of the firm is defined as the present value of expected future profits (net cash flows) of the firm. Thus, to obtain an estimate of the present value of expected profits, one must identify the stream of net cash flow in future years. Once this is accomplished, these expected future profit values are converted into present value by discounting these values by an appropriate interest rate. For illustration, assume that a firm expects a profit of $10,000 in one year and $20,000 in the second year it is assumed that the firm earns no profits after two years. Let us assume that the prevailing interest rate is 10 percent per annum. Thus, $10,000 in a year from now is only equal to about $9,091 at the present ([$10,000/(1 +0.1)] = $9,091)—that is, the present value of a $10,000 profit expected in a year from now is about $9,091. Similarly, the present value of an expected profit of $20,000 in two years from now is equal to about $16,529 (since [$20,000/ (1 + 0.1)2] = $16,529). Therefore, the present value of future expected profits is $25,620 (equal to the sum of $9,091 and $16,529). The present value of expected profits is a key concept in understanding the theory of the firm, and maximizing this profit is considered the primary goal of a firm in most models.

It should be noted that expected profit in any one period can itself be considered as the difference between the total revenue and the total cost in that period. Thus, one can, alternatively, find the present value of expected future profits by subtracting the present value of expected future costs from the present value of expected future revenues.

Profit maximization is subject to various constraints faced by the firm. These constraints relate to resource scarcity, technology, contractual obligations, and laws and government regulations. In their attempt to maximize the present value of profits, business managers must consider not only the short-term and long-term implications of

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decisions made within the firm, but also various external constraints that may limit the firm's ability to achieve its organizational goals.

The first external constraint of resource scarcity refers to the limited availability of essential inputs (including skilled labor), key raw materials, energy, specialized machinery and equipment, warehouse space, and other resources. Moreover, managers often face constraints on plant capacity that are exacerbated by limited investment funds available for expansion or modernization. Contractual obligations also constrain managerial decisions. Labor contracts, for example, may constrain managers' flexibility in worker scheduling and work assignment. Labor contracts may also determine the number of workers employed at any time, thereby establishing a floor for minimum labor costs. Finally, laws and regulations have to be observed. The legal restrictions can constrain decisions regarding both production and marketing activities. Examples of laws and regulations that limit managerial flexibility are: the minimum wage, health and safety standards, fuel efficiency requirements, antipollution regulations, and fair pricing and marketing practices.

The present value maximization criterion as a basis for the study of the firm's behavior has come under severe criticism from some economists. The critics argue that business managers are interested, at least partly, in factors other than the firm's profits. In particular, they may be interested in power, prestige, leisure, employee welfare, community well-being, and the welfare of the larger society. The act of maximization itself has been criticized; there is a feeling that managers often aim merely to "satisfice" (seek solutions that are considered satisfactory), rather than really try to optimize or maximize (seek to find the best possible solution, given the constraints). This question is often rhetorically posed as: does a manager really try to find the sharpest needle in a haystack or does he or she merely stop upon finding a needle sharp enough for sewing needs?

Under the structure of a modern firm, it is hard to determine the true motives of managers. A modem firm is frequently organized as a corporation in which shareholders are the legal owners of the firm, and the manager acts on their behalf. Under such a structure, it is difficult to determine whether a manager merely tries to satisfy the stockholders of the firm while pursuing other goals, rather than truly attempting to maximize the value (the discounted present value) of the firm. It is, for example, difficult to interpret company support for a charitable organization as an integral part of the firm's long-term value maximization. Similarly, if the firm's size is increasing, but profits are not, can one attribute the manager's decision to expand as being motivated by the increased prestige associated with larger firms, or as an attempt to make the firm more noticeable in the marketplace? As it is virtually impossible to provide definitive answers to these and similar questions, the attempt to analyze these issues has led to the development of alternative theories of firm behavior. Some of the preeminent alternate models assume one of the following:

1. a firm attempts primarily to maximize its size or growth, rather than its present value;
2. the managers of firms aim at maximizing their own personal utility or welfare; and
3. The firm is a collection of individuals with widely divergent goals, rather than a single common, identifiable goal.

While each of the alternative theories of the firm has increased our understanding of how a modern firm behaves, none has been able to completely take the place of the basic profit maximization assumption for several reasons. Numerous academic studies have shown that intense competition in the markets for goods and services of the firm usually forces the manager to make value maximization decisions; if a firm does not decide on the most efficient alternative (implying the need to seek the minimum costs for each output level, given the market price of the commodity the firm is producing), others can outcompete the firm and drive it out of existence. Competition also has its effects through the capital markets. As one would expect, stockholders are primarily interested in their returns on stocks and stock prices, which in turn, are determined by

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the firm's value (the discounted present value of expected profits). Thus, managers are forced to maximize profits in order to maximize firm value, an important basis for returns on common stocks in the long run. Managers who insist on goals other than maximizing shareholder wealth risk being replaced. An inefficiently managed firm may also be bought out; in almost all such hostile takeovers, managers pursuing their own interests will most likely be replaced. Moreover, a number of academic studies indicate that managerial compensation is closely correlated to the profits generated for the firm. Thus, managers themselves have strong financial incentives to seek profit maximization for their firms.

Before arriving at the decision whether to maximize profits or to satisfice, managers (like other economic entities) have to analyze the costs and benefits of their decisions. Sometimes, when all costs are taken into account, decisions that appear merely aimed at a satisfactory level of performance turn out to be consistent with value-maximizing behavior. Similarly, short-term firm-growth maximization strategies have often been found to be consistent with long-term value maximization behavior, since large firms have advantages in production, distribution, and sales promotion. Thus, many other goals that do not seem to be oriented to maximizing profits may be intimately linked to value or profit maximization—so much so that the value maximization model even provides an insight into a firm's voluntary participation in charity or other socially responsible behavior.

7.5 Constraints to the Operation of the Firm

Theory of constraints (TOC) is a technique which produces correct solutions for every kind of bottleneck in short time. The philosophy of theory is to determine the weaker part of process chain and to eliminate this constraint point by taking actions, after improved bottleneck point in the process chain, another process point would be weaker part of process chain and it would be necessary to take improvement action to eliminate new constraint point, so constraints theory continue continuous.

The main goal is to applicate improvement actions continuously to reach excellent system structure.

The theory of constraints (TOC) is a remarkably successful operations philosophy, centered on the idea of focusing managerial attention to the local constraints that inhibit the global performance of an entire system (Linhares, A., 2009; Goldratt and Cox, 1984; Goldratt and Fox, 1986; Goldratt, 1990a, b) TOC can be defined as a management approach which focuses on improving bottleneck processes to improve continuously the performance of manufacturing operations. TOC had its beginning in Israel in the 1970s. Eliyahu Goldratt applied a technique for predicting the behavior of a heated crystalline atom to optimize the large number of variables in a work schedule (Watson, et. al. 2007).Dr. Eliyahu Goldratt examined the manufacturing firms in 1970s and asserted that they were doing many mistakes while applying processes and philosophy of TOC base on this assertion. Dr. Eliyahu Goldratt invented software that is called as “optimized manufacturing technology” (OPT) and he expelled this software to market under license. Because of the fact that the software was under license, the main topics of theory had not been understood clearly and although the software had good level of success in practical applications, it could not receive the attention of scientists.

TOC views systems as chains. The weakest link is the constraint that keeps the chain from doing any better at achieving its goal. Constraint can be explained as insufficiency of resources which prevents reaching better performance level of a system. TOC emphasizes that the firms determine and manage constraints in the system continuously as well programming non-constraint resources.

TOC supports a continuous improvement philosophy. In order to accomplish this task, TOC looks for answers to the following questions:

1. **What to change:** Every organization in a real environment is overwhelmed with problems and/or opportunities which need the managers’ attention and/or corrective

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actions. Taking into account, limited time, effort and resources the manager has to find what should be changed, to effectively improve the performance.

2. **To what to change to:** once the core problems have been identified, the next step is to find the solutions.
3. **How to cause the change:** In addition to the time, effort and capital required, managers often face the problem of emotional resistance by people in the organization who perceive change as a threat to their security. If 'to what to change to' is identified, but it is not possible to cause that change, then the solution is not of much use.

   Constrained Maximization is a term in economics used to refer to and is concerned with the restrictions imposed on the availability of resources and other requirements. It tries to explain using prescribed formulae such as the langarian method how firms can solve issues to do with constrained maximization. In this context however we are more interested in the maximization of profits in firms, we are interested in the constraints imposed on managers that limit their options when making decisions.

   For instance in profit making organizations the primary objective is to make profits so it endeavors to explain what firms have to contend with in their objective. In this context profit maximization is the process by which a firm determines the price and output level that returns the greatest profit, and in doing so the company may have constraints on the budget, human resource, inputs in terms of raw materials , capital expenditure etc.

   Constrained Maximization shows the relationship between inputs such as the ones mentioned and how they ultimately affect the output. In solving any constrained maximization problem the objective is to see how other variables can be manipulated to achieve the highest output, to do this Managerial economists use the constraint equation for one of the decision variables , then substitute for that variable in the objective function.

   A typical example of constrained maximization can be shown by examining a study done by M.T Maloney on a Bee Keeper Steve Cheung to analyse the problem of keeping bees as an integrated endeavor to explain constrained maximization.

   Be keepers sometimes paid and sometimes received pay depending on the marginal value of their pollination services relative to the value of honey they collected. For instance a farmer that uses bees to pollinate apple trees and to make honey from nector. The farmer's outputs are apples and honey. Assuming there is a tradeoff between the two outputs i.e. the nector gathered from apple trees does not produce as much honey as that found elsewhere. When the farmer is interested in apple pollination he places the hives close to the apple trees. This reduces the amount of honey while increasing the production of apples. Conversely, when the farmer increases honey production, apple production is sacrificed.

   This relationship can be explained using derivatives, for instances if we let the production function be characterized by y=f(X1, X2), where y is the number of bees, X1 is honey, and X2 is apples. This is an inverse production function since the input is the left hand side variable ; the partial derivative of input with respect to one of the outputs f1, tells us how much the input must increase for one unit change in the output holding the other output constant.

7.6 Limitations of the Theory of the Firm

Some critics question why the value maximization criterion is used as a foundation for studying firm behavior. Do managers try to optimize (seek the best result) or merely satisfice (seek satisfactory rather than optimal results)? Do managers seek the sharpest needle in a haystack (optimize), or do they stop after finding one sharp enough for sewing (satisfice)?

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How can one tell whether company support of the United Way, for example, leads to long-run value maximization? Are generous salaries and stock options necessary to attract and retain managers who can keep the firm ahead of the competition? When a risky venture is turned down, is this inefficient risk avoidance? Or does it reflect an appropriate decision from the standpoint of value maximization?

It is impossible to give definitive answers to questions like these, and this dilemma has led to the development of alternative theories of firm behavior. Some of the more prominent alternatives are models in which size or growth maximization is the assumed primary objective of management, models that argue that managers are most concerned with their own personal utility or welfare maximization, and models that treat the firm as a collection of individuals with widely divergent goals rather than as a single, identifiable unit. These alternative theories, or models, of managerial behavior have added to our understanding of the firm. Still, none can supplant the basic value maximization model as a foundation for analyzing managerial decisions. Examining why provides additional insight into the value of studying managerial economics. Research shows that vigorous competition in markets for most goods and services typically forces managers to seek value maximization in their operating decisions.

Competition in the capital markets forces managers to seek value maximization in their financing decisions as well. Stockholders are, of course, interested in value maximization because it affects their rates of return on common stock investments. Managers who pursue their own interests instead of stockholders' interests run the risk of losing their job. Buyout pressure from unfriendly firms ("raiders") has been considerable during recent years. Unfriendly takeovers are especially hostile to inefficient management that is replaced. Further, because recent studies show a strong correlation between firm profits and managerial compensation, managers have strong economic incentives to pursue value maximization through their decisions.

Finally, the value maximization model also offers insight into a firm's voluntary "socially responsible" behavior. The criticism that the traditional theory of the firm emphasizes profits and value maximization while ignoring the issue of social responsibility is important.

7.7 The Nature and Functions of Profits

Despite their very great differences concerning the function which each assigns to the profit-earning agency, the various theories of profit exhibit substantial agreement that profits are, however they may be caused, essentially residual in character; that is, profits are what is left when all payments to all other factors of production have been made, or at least calculated. Most of these theories are seemingly content to try to "explain" why profits emerge and to leave the determination of their exact amount in any specific instance to this process of subtraction. And even in those theories of profit where the residual nature of profit appears on the surface to be more integrally a part of the explanation - as is the case with the Marxian doctrine of exploitation - closer examination reveals that here, too, the determination of the amount (or the rate) of profit requires recourse to assumptions lying outside the mechanism of explanation itself- in the Marxian case, the gratuitously introduced assumption seems to be the insatiability of capitalist acquisitiveness, which is directed at none other than the same residual share (or rate). In view of all this, it would therefore appear fair to summarize the present state of profit theory by saying that there has not yet emerged a complete explanation of profits -one capable, that is, of accounting within its own terms alone for both the appearance of profits and their magnitude; and that, as a consequence, the concept of profit as a residuum has had to be uniformly retained without adequate attention to the logical implications of this retention.

At this juncture, several questions suggest themselves with respect to the present state of affairs. The first is, does the general acceptance of, and reliance upon, the residual nature of profits prove that there is, however dimly perceived at present, some fundamental explanatory value in this concept? Hardly; there are much more plausible and less mysterious reasons to account for the iniquitousness and the persistence of

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the residual concept. For one thing, empirical observation of the order in which payments are actually made, under conditions of private enterprise, has always tended to lend credence to the view that profits are, in some sense, essentially a remainder. Now, while this is, of course, perfectly true and obvious, it has tempted the unwary, whether by analogy with arithmetic or for some other reason, into a corollary which is not true, but whose falsity is a little less obvious: that the size of the remainder is purely a passive result of the computation and in no way influences either the entities or the processes by which it is determined.

Another circumstance which lends support to the residual view of profits is the often misunderstood testimony of double-entry bookkeeping. In our accounting procedures profits are clearly and explicitly treated as residuals, a fact which appears to impress people in inverse ratio to their familiarity with the objectives and the detailed procedures involved. For this reason, the accountants themselves are much less apt to be deceived by this evidence than is the general public â€" the latter including a large number of businessmen and even some economists. For it should be noted, and is too seldom, that accounting makes no claim to explain profits, or, for that matter, any other income share. Its entire purpose is to represent in convenient and manageable form the configuration of standardized components in a given total at a point in time (as in the case of a balance sheet), or to trace the relative changes in these components over a period of time (as in an income statement).

A business firm is an organisation designed to make profits. Profits are acid test of the individual firm's performance. In appraising a company, we must first understand how profit arises. The concept of profit maximization is very useful in selecting the alternatives in making a decision at the firm level.

Profit forecasting is an essential function of any management. It relates to projection of future earnings and involves the analysis of actual and expected behaviour of firms, the sales volume, prices and com-petitor's strategies, etc. The main aspects covered under this area are the nature and measurement of profit, and profit policies of special significance to managerial decision making.

Managerial economics tries to find out the cause and effect relationship by factual study and logical reasoning. For example, the statement that profits are at a maximum when marginal revenue is equal to marginal cost, a substan-tial part of economic analysis of this deductive proposition attempts to reach specific conclusions about what should be done.

The logic of linear programming is deduction of mathematical form. In fine, managerial economics is a branch of normative economics that draws from descriptive economics and from well established deductive patterns of logic.

7.8 Business Sources of Economic Profits

Generally, profit is the difference between costs and revenue. Accounting profit and economic profit may sound similar, but they actually have major differences in how they measure a company's financial health. Economic profit takes into consideration explicit costs and implicit costs, while accounting profit only utilizes explicit costs.

7.8.1 Accounting Profit

Accounting profit uses realized or actual gains and losses and is calculated according to generally accepted accounting principles (GAAP). It is a company's total revenue reduced by the explicit costs of producing goods or services. These explicit costs involve direct monetary movement and include expenses such as the cost of raw materials, employee wages, transportation, rent and interest on capital. Usually, accounting profit is limited to time periods, such as a fiscal quarter or year. Accounting profit computations are primarily used for income tax purposes, financial statement preparations and to review financial performance.

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7.8.2 Economic Profit

Economic profit is determined by economic principles, not GAAP. Just like accounting profit, costs are deducted from revenues. Economic profit uses implicit costs, not just explicit costs. Implicit costs are considered opportunity costs and are normally the company's own resources. Examples of implicit costs include company-owned buildings, equipment and self-employment resources. Economic profit computations are not normally limited to time periods like accounting profit computations are.

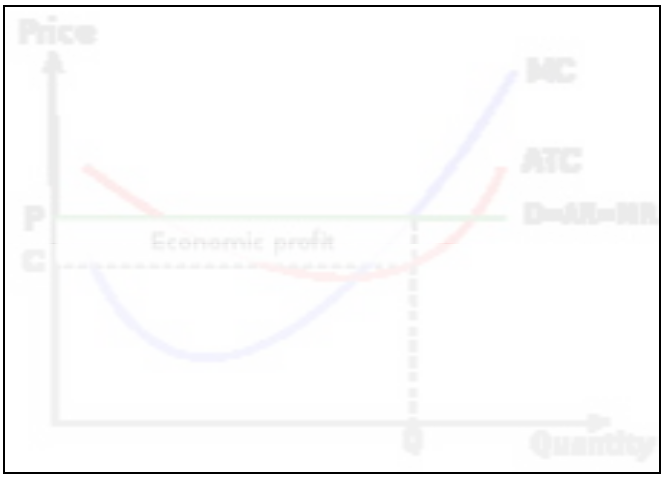
For example, if a company had $150,000 in revenues and $50,000 in explicit costs, its accounting profit would be $100,000. The same company also had $25,000 in implicit, or opportunity costs. Its economic profit would be $75,000.

Economic profits may be positive, zero, or negative. If economic profit is positive, other firms have an incentive to enter the market. If profit is zero, other firms have no incentive to enter or exit. When economic profit is zero, a firm is earning the same as it would if its resources were employed in the next best alternative. If the economic profit is negative, firms have the incentive to leave the market because their resources would be more profitable elsewhere. The amount of economic profit a firm earns is largely dependent on the degree of market competition and the time span under consideration.

7.8.3 Competitive Markets

In competitive markets, where there are many firms and no single firm can affect the price of a good or service, economic profit can differ in the short-run and in the long-run.

In the short run, a firm can make an economic profit. However, if there is economic profit, other firms will want to enter the market. If the market has no barriers to entry, new firms will enter, increase the supply of the commodity, and decrease the price. This decrease in price leads to a decrease in the firm's revenue, so in the long-run, economic profit is zero. An economic profit of zero is also known as a normal profit. Despite earning an economic profit of zero, the firm may still be earning a positive accounting profit.



7.8.4 Uncompetitive Markets

Unlike competitive markets, uncompetitive markets - characterized by firms with market power or barriers to entry - can make positive economic profits. The reasons for the positive economic profit are barriers to entry, market power, and a lack of competition.

Barriers to entry prevent new firms from easily entering the market, and sapping short-run economic profits.

Market power, or the ability to affect market prices, allows firms to set a price that is higher than the equilibrium price of a competitive market. This allows them to make profits in the short run and in the long run. This situation can occur if the market is

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dominated by a monopoly (a single firm), oligopoly (a few firms with significant market control), or monopolistic competition (firms have market power due to having differentiated products). .

Lack of competition keeps prices higher than the competitive market equilibrium price. For example, firms can collude and work together to restrict supply to artificially keep prices high.

7.8.5 Business versus Economic Profits

As discussed above, profits are central to the goals of a firm and managerial decision making. Thus, to understand the theory of firm behavior properly, one must have a clear understanding of profits. While the term profit is very widely used, an economist's definition of profit differs from the one used by accountants (which is also usually used by the general public and the business community). Profit in accounting is defined as the excess of sales revenue over the explicit accounting costs of doing business. This surplus is available to the firm for various purposes.

An economist also defines profit as the difference between sales revenue and costs of doing business, but includes more items in figuring costs, rather than considering only explicit accounting costs. For example, inputs supplied by owners (including labor, capital, and space) are accounted for in determining costs in the definition used by an economist. These costs are sometimes referred to as implicit costs—their value is imputed based on a notion of opportunity costs widely used by economists. In other words, costs of inputs supplied by an owner are based on the values these inputs would have received in the next best alternative activity. For illustration, assume that the owner of the firm works for ten hours a day at his business. If the owner does not receive any salary, an accountant would not consider the owner's effort as a cost item. An economist would, however, value the owner's service to his firm at what his labor would have earned had he worked elsewhere. Thus, to compute the true profit, an economist will subtract the implicit costs from business profit; the resulting profit is often referred to as economic profit. It is this concept of profit that is used by economists to explain the behavior of a firm. The concept of economic profit essentially recognizes that owner-supplied inputs must also be paid for. Thus, the owner of a firm will not be in business in the long run until he recovers the implicit costs (also known as normal profit), in addition to recovering the explicit costs, of doing business.

As pointed out earlier, a given firm attempts to maximize profits. Other firms do the same. Ultimately, profits decline for all firms. If all firms are operating under a competitive market structure, in equilibrium, economic profits (the excess of accounting profits over implicit costs) would be equal to zero; accounting profits (equal to explicit costs), however would be positive. When a firm makes profits above the normal profits level, it is said to be reaping above-normal profits.

7.9 Theory and Functions of Profits

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Business profit is the revenue of the firm minus its explicit cost. Explicit costs are the actual out of pocket expenditures of the firm to hire labour, borrow capital, rent land and buildings and purchase raw materials.

1. **Profit as the reward for bearing risks and uncertainty:** Profit is necessary to induce the businessman to take risks rather than play safe, no same person would think of investing in a manufacturing industry for a return of 6 per cent if he can get that return on a government security. He would expect a much higher rate because of the greater risk of a possible loss. The greater the risk, the higher must be the expected gain in order to induce an entrepreneur.
2. **Profit as a consequence of market imperfection and monopoly:** Where a firm possesses monopoly power, it can restrict output and obtain a higher profit than what it could under competitive conditions. Profit is the result of contrived scarcity. It can exist only in an imperfect market where output is, for various reasons, restricted and the consumers are deprived of the opportunity of alternative sources of supply.

   Sources of such power are usually found in legal restrictions, sole ownership of raw-materials or sole access to particular markets. Even some degree of uniqueness in a firm's product confers some monopoly power. Contrived scarcity must be distinguished from natural scarcity. Natural scarcity exists in the supply of central urban building sites or high grade farm lands. These earn rents rather than monopoly profits, since practically nothing can be done to alter their supply.
3. **Profit as the reward for successful innovation:** Innovation refers broadly to any purposeful change in production methods or consumer tastes that increases national output more than it increases costs. The increase in net output is the profit that comes from innovation. It includes not only new products such as synthetic fibers but also new organizations, new markets, new promotion and new raw materials.

   It may also include a new way of doing old things or a different combination of existing methods to accomplish new things. To an important degree, innovation has been built into the competitive system complete with research laboratories and advertising staff.

   There is an important distinction to be made between invention and innovation. Invention is the creation of something new whereas innovation is the application of an invention to business use. Many inventions never become innovations.

7.9.1 Functions of Profit

In practice, as pointed out by Peter Drucker, profit serves three main purposes:

1. **Measure of performance:** It measures the net effectiveness, and soundness of a business effort. A higher profit is an indicator that the business is being run successfully and effectively. It is true that profit is far from being a perfect measure of business efficiency but it is probably the best indicator of the general efficiency of a firm. It is certainly the only one which allows quick and easy comparison of performance between firms.
2. **Premium to cover costs of staying in business:** Profit is the premium that covers the costs of staying in business—replacement, obsolescence, market and technical risk and uncertainty. Seen from this point of view, it may be argued that there is no such thing as profit; there are only the costs of being and staying in business. The management of business has to provide adequately for these costs by generating sufficient profit.
3. **Ensuring supply of future capital:** Profit ensures the supply of future capital for innovation and expansion, either directly, by providing the means of self-financing out of retained profits, or indirectly, through providing sufficient inducement for new external capital which will optimize the company's capital structure and minimize its cost of capital.

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7.9.2 Profiteering and Profit-earning

Profiteering has to be understood as distinct from profit- earning. Where the amount of profit is made to exceed a socially acceptable limit by questionable methods, it is a case of profiteering. Profiteering is often done by creation of artificial shortages through hoarding or curtailing production.

How a Firm Arrives at a Profit-Maximizing Point

Let us assume throughout the discussion that a firm uses an economist's definition of profits. Assume that profit is the excess of sales revenue over cost (now assumed to be composed of both explicit and implicit costs). It can also be assumed, as discussed above, that the profit maximization is the firm's primary goal. Given this objective, important questions remain: How does the firm decide on the output level that maximizes its profits? Should the firm continue to produce at all if it is not profitable?

A manufacturing firm, motivated by profit maximization, calculates the total cost of producing any given output level. The total cost is made up of total fixed cost (due to the expenditure on fixed inputs) and total variable cost (due to the expenditure on variable inputs). Of course, the total fixed cost does not vary over the short run—only the total variable cost does. It is important for the firm to also calculate the cost per unit of output, called the average cost. In addition to the average cost, the firm calculates the marginal cost. The marginal cost at any level of output is the increase in the total cost due to an increase in production by one unit—essentially, the marginal cost is the additional cost of producing the last unit of output.

The average cost is made up of two components: the average fixed cost (the total fixed cost divided by the number of units of the output produced) and the average variable cost (the total variable cost divided by the number of units of the output produced). As the fixed costs remain fixed over the short run, the average fixed cost declines as the level of production increases. The average variable cost, on the other hand, first decreases and then increases; economists refer to this as the U-shaped nature of the average variable cost. The U-shape of the average variable cost curve is explained as follows. Given the fixed inputs, output of the relevant product increases more than proportionately as the levels of variable inputs used increase. This is caused by increased efficiency due to specialization and other reasons. As more and more variable inputs are used in conjunction with the given fixed inputs, however, efficiency gains reach a maximum—the decline in the average variable cost eventually comes to a halt. After this point, the average variable cost starts increasing as the level of production continues to increase, given the fixed inputs. First decreasing and then increasing average variable cost lead to the U-shape for the average variable cost. The combination of the declining average fixed cost (true for the entire range of production) and the U-shaped average variable cost results into a U-shaped behavior of the average total cost, often simply called the average cost.

The marginal cost also displays a U-shaped pattern—it first decreases and then increases. The logic for the shape of the marginal cost curve is similar to that for the average variable cost—both relate to variable costs. But while the marginal cost refers to the increase in total variable cost due to an increase in the production by one unit, the average variable cost refers to the average variable cost per unit of output produced. It is important to notice, without going into finer details, that the marginal cost curve intersects the average and the average variable cost curves at their minimum cost points.

In a graphic rendering of this concept there would be a horizontal line, in addition to the three cost curves. It is assumed that the firm can sell as many units as it wants at the given market price indicated by this horizontal line. Essentially, the horizontal line is the demand curve a perfectly competitive firm faces in the market—it can sell as many units of output as it deems profitable at price "p" per unit (p, for example, can be $10 per unit of the product under consideration). In other words, p is the firm's average revenue

per unit of output. Since the firm receives p dollars for every successive unit it sells, p is also the marginal revenue for the firm.

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A firm maximizes profits, in general, when its marginal revenue equals marginal cost. If the firm produces beyond this point of equality between the marginal revenue and marginal cost, the marginal cost will be higher than the marginal revenue. In other words, the addition to total production beyond the point where marginal revenue equals marginal cost, leads to lower, not higher, profits. While every firm's primary motive is to maximize profits, its output decision (consistent with the profit maximizing objective), depends on the structure of the market it is operating under. Before we discuss important market structures, we briefly examine another key economic concept, the theory of consumer behavior.

The Nature and Functions of Profits

A business firm is an organisation designed to make profits. Profits are acid test of the individual firm’s performance. In appraising a company, we must first understand how profit arises. The concept of profit maximization is very useful in selecting the alternatives in making a decision at the firm level.

Profit forecasting is an essential function of any management. It relates to projection of future earnings and involves the analysis of actual and expected behaviour of firms, the sales volume, prices and com-petitor’s strategies, etc. The main aspects covered under this area are the nature and measurement of profit, and profit policies of special significance to managerial decision making.

Managerial economics tries to find out the cause and effect relationship by factual study and logical reasoning. For example, the statement that profits are at a maximum when marginal revenue is equal to marginal cost, a substan-tial part of economic analysis of this deductive proposition attempts to reach specific conclusions about what should be done.

The logic of linear programming is deduction of mathematical form. In fine, managerial economics is a branch of normative economics that draws from descriptive economics and from well established deductive patterns of logic.

7.10 Economic Forecasting

Economic forecasting, the prediction of any of the elements of economic activity. Such forecasts may be made in great detail or may be very general. In any case, they describe the expected future behaviour of all or part of the economy and help form the basis of planning.

Formal economic forecasting is usually based on a specific theory as to how the economy works. Some theories are complicated, and their application requires an elaborate tracing of cause and effect. Others are relatively simple, ascribing most developments in the economy to one or two basic factors. Many economists, for example, believe that changes in the supply of money determine the rate of growth of general business activity. Others assign a central role to investment in new facilities—housing, industrial plants, highways, and so forth. In the United States, where consumers account for such a large share of economic activity, some economists believe that consumer decisions to invest or save provide the principal clues to the future course of the entire economy. Obviously the theory that a forecaster applies is of critical importance to the forecasting process; it dictates his line of investigation, the statistics he will regard as most important, and many of the techniques he will apply.

Although economic theory may determine the general outline of a forecast, judgment also often plays an important role. A forecaster may decide that the circumstances of the moment are unique and that a forecast produced by the usual statistical methods should be modified to take account of special current circumstances. This is particularly necessary when some event outside the usual run of economic activity inevitably has an economic effect. For example, forecasts of 1987 economic

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activity in the United States were more accurate when the analyst correctly foresaw that the exchange value of the dollar would fall sharply during the year, that consumer spending would slacken, and that interest rates would rise only moderately.

Forecasts are becoming the lifetime of business in a world, where the tidal waves of change are sweeping the most established of structures, inherited by human society. Commerce just happens to the one of the first casualties. Survival in this age of economic predators, requires the tact, talent and technique of predicting the future.

Forecast is becoming the sign of survival and the language of business. All requirements of the business sector need the technique of accurate and practical reading into the future. Forecasts are, therefore, very essential requirement for the survival of business. Man-agement requires forecasting information when making a wide range of decisions.

The sales forecast is particularly important as it is the foundation upon which all company plans are built in terms of markets and revenue. Management would be a simple matter if business was not in a continual state of change, the pace of which has quickened in recent years.

It is becoming increasingly important and necessary for business to predict their future prospects in terms of sales, cost and profits. The value of future sales is crucial as it affects costs profits, so the prediction of future sales is the logical starting point of all business planning.

A forecast is a prediction or estimation of future situation. It is an objective assessment of future course of action. Since future is uncertain, no forecast can be percent correct. Forecasts can be both physical as well as financial in nature. The more realistic the forecasts, the more effective decisions can be taken for tomorrow.

In the words of Cundiff and Still, “Demand forecasting is an estimate of sales during a specified future period which is tied to a proposed marketing plan and which assumes a particular set of uncon-trollable and competitive forces”. Therefore, demand forecasting is a projection of firm’s expected level of sales based on a chosen marketing plan and environment.

7.10.1 Types of Forecasting

Forecasts can be broadly classified into:

1. Passive Forecast and
2. Active Forecast. Under passive forecast prediction about future is based on the assumption that the firm does not change the course of its action. Under active forecast, prediction is done under the condition of likely future changes in the actions by the firms.

   From the view point of ‘time span’, forecasting may be classified into two, viz.:

3. Short term demand forecasting and
4. Long term demand forecasting.

   In a short run forecast, seasonal patterns are of much importance. It may cover a period of three months, six months or one year. It is one which provides information for tactical decisions.

Which period is chosen depends upon the nature of busi-ness. Such a forecast helps in preparing suitable sales policy. Long term forecasts are helpful in suitable capital planning. It is one which provides information for major strategic decisions. It helps in saving the wastages in material, man hours, machine time and capacity. Planning of a new unit must start with an analysis of the long term demand potential of the products of the firm.

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There are basically two types of forecast, viz.

1. External or national group of forecast, and
2. Internal or company group forecast.

External forecast deals with trends in general business. It is usually prepared by a company's research wing or by outside consultants. Internal forecast includes all those that are related to the operation of a particular enterprise such as sales group, production group, and financial group. The structure of internal forecast includes forecast of annual sales, forecast of products cost, forecast of operating profit, forecast of taxable income, forecast of cash resources, forecast of the number of employees, etc.

One of the crucial aspects in which managerial economics differs from pure economic theory lies in the treatment of risk and uncertainty. Traditional economic theory assumes a risk-free world of certainty; but the real world business is full of all sorts of risk and uncertainty. A manager cannot, therefore, afford to ignore risk and uncertainty. The element of risk is associated with future which is indefinite and uncertain. To cope with future risk and uncertainty, the manager needs to predict the future event. The likely future event has to be given form and content in terms of projected course of variables, i.e. forecasting. Thus, business forecasting is an essential ingredient of corporate planning. Such forecasting enables the manager to minimize the element of risk and uncertainty. Demand forecasting is a specific type of business forecasting.

The manager can conceptualize the future in definite terms. If he is concerned with future event- its order, intensity and duration, he can predict the future. If he is concerned with the course of future variables- like demand, price or profit, he can project the future. Thus prediction and projection-both have reference to future; in fact, one supplements the other. Suppose, it is predicted that there will be inflation (event). To establish the nature of this event, one needs to consider the projected course of general price index (variable). Exactly in the same way, the predicted event of business recession has to be established with reference to the projected course of variables like sales, inventory etc.

Forecast is different from prediction. Forecast is an estimate of future events and trends and is arrived at by systematically combining past data and projecting it forward in a predetermine a manner. Prediction is a similar, but more general term. Prediction is an estimate of future events and trends in a subjective manner without taking into account the past data. The subjective considerations may not emerge from any predetermined analysis or approach.

Projection is of two types – forward and backward. It is a forward projection of data variables, which is named forecasting. By contrast, the backward projection of data may be named 'back casting', a tool used by the new economic historians. For practical managers concerned with futurology, what is relevant is forecasting, the forward projection of data, which supports the production of an event.

Thus, if a marketing manager fears demand recession, he must establish its basis in terms of trends in sales data; he can estimate such trends through extrapolation of his available sales data. This trend estimation is an exercise in forecasting.

7.10.2 Time Horizon of Demand Forecasting

Market and demand analysis of various types are undertaken to meet specific requirements of planning and decision making. For example, short-term decisions in production planning, distribution etc and selling individual products would require short-term forecast, up-to one year time horizon, which must he fairly accurate for specific product items. For long-term planning, time horizon being four to five years, information required from demand analysis would be for broad product groups for facilitating choice of technology, machine tools and other hardware's and their location. Longer-term

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forecasting is also undertaken to determine trends in technology development so as to choose the technology for backing up and funding its research and development.

7.10.3 Levels of Demand Forecasting

Demand forecasting in managerial economics can be at the level of a firm or an industry or at the national or national or international level:

- **Firm Level:** If the exercise aims at forecasting demand of firm's products locally at state, region or national level, it is a micro-level of demand forecasting. Sometimes, forecasts are required for company's products in specific industry or market segment.
- **Industry Level:** Such a demand forecasting exercise focuses on an industry as a whole for the region and/or national level. These forecasts may be undertaken by a group of companies or by industry/trade associations.
- **National Level:** Demand forecasts at national level include parameters like national income, expenditure, index of industrial and/or agricultural production etc. Estimating aggregate demand of products at national level facilitates governmental decisions for imports, exports, pricing policy etc.
- **International Level:** Companies operating in multinational markets would require similar forecasting of demands for its products, trends in consumption etc at international level Managerial Economists play a leading role in masterminding these forecasts at firm, industry, national and international levels. Time horizon of these demand forecasts usually varies from 1 to S years and in rare instances up to 10 years.

7.10.4 Need for Demand Forecasting

Business managers, depending upon their functional area, need various forecasts. They need to forecast demand, supply, price, profit, costs and returns from investments.

The question may arise: Why have we chosen demand forecasting as a model? What is the use of demand forecasting?

The significance of demand or sales forecasting in the context of business policy decisions can hardly be overemphasized. Sales constitute the primary source of revenue for the corporate unit and reduction for sales gives rise to most of the costs incurred by the firm.

Demand forecasting is essential for a firm because it must plan its output to meet the forecasted demand according to the quantities demanded and the time at which these are demanded. The forecasting demand helps a firm to arrange for the supplies of the necessary inputs without any wastage of materials and time and also helps a firm to diversify its output to stabilize its income overtime.

The purpose of demand forecasting differs according to the type of forecasting.

1. **The Purpose of the Short Term Forecasting:** It is difficult to define short run for a firm because its duration may differ according to the nature of the commodity. For a highly sophisticated automatic plant 3 months time may be considered as short run, while for another plant duration may extend to 6 months or one year. Time duration may be set for demand forecasting depending upon how frequent the fluctuations in demand are, short- term forecasting can be undertaken by affirm for the following purpose;
   - ❖ Appropriate scheduling of production to avoid problems of over production and under- production.
   - ❖ Proper management of inventories
   - ❖ Evolving suitable price strategy to maintain consistent sales
   - ❖ Formulating a suitable sales strategy in accordance with the changing pattern of demand and extent of competition among the firms.

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- Forecasting financial requirements for the short period.

2. **The Purpose of Long Term Forecasting:** The concept of demand forecasting is more relevant to the long-run that the short-run. It is comparatively easy to forecast the immediate future than to forecast the distant future. Fluctuations of a larger magnitude may take place in the distant future. In fast developing economy the duration may go up to 5 or 10 years, while in stagnant economy it may go up to 20 years. More over the time duration also depends upon the nature of the product for which demand forecasting is to be made. The purposes are;
   - Planning for a new project, expansion and modernization of an existing unit, diversification and technological up gradation.
   - Assessing long term financial needs. It takes time to raise financial resources.
   - Arranging suitable manpower. It can help a firm to arrange for specialized labour force and personnel.
   - Evolving a suitable strategy for changing pattern of consumption.

7.10.5 Importance of Demand Forecasting

Why demand forecasting is needed in a business? Forecasting product demand is crucial to any supplier, manufacturer, or retailer. Forecasts of future demand will determine the quantities that should be purchased, produced, and shipped. Demand forecasts are necessary since the basic operations process, moving from the suppliers' raw materials to finished goods in the customers' hands, takes time. Most firms cannot simply wait for demand to emerge and then react to it. Instead, they must anticipate and plan for future demand so that they can react immediately to customer orders as they occur. In other words, most manufacturers "make to stock" rather than "make to order" – they plan ahead and then deploy inventories of finished goods into field locations. Thus, once a customer order materializes, it can be fulfilled immediately – since most customers are not willing to wait the time it would take to actually process their order throughout the supply chain and make the product based on their order. An order cycle could take weeks or months to go back through part suppliers and sub-assemblers, through manufacture of the product, and through to the eventual shipment of the order to the customer.

Firms that offer rapid delivery to their customers will tend to force all competitors in the market to keep finished good inventories in order to provide fast order cycle times. As a result, virtually every organization involved needs to manufacture or at least order parts based on a forecast of future demand. The ability to accurately forecast demand also affords the firm opportunities to control costs through leveling its production quantities, rationalizing its transportation, and generally planning for efficient logistics operations.

In general practice, accurate demand forecasts lead to efficient operations and high levels of customer service, while inaccurate forecasts will inevitably lead to inefficient, high cost operations and/or poor levels of customer service. In many supply chains, the most important action we can take to improve the efficiency and effectiveness of the logistics process is to improve the quality of the demand forecasts.

7.11 The Virtual Corporation

The term virtual corporation was coined by Jan Hopland, an executive at Digital Equipment Corporation at the end of the 1980s, to describe firms that can marshal more resources than they actually possess by means of both internal and external collaborations. The term can be traced to the computing concept of virtual memory, which describes how a computer can behave as if it had much more processing power than it really has.

The expression virtual corporation has been used in the literature to refer to concepts ranging from simply using teleworking and outsourcing intensively, to the

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wholesale restructuring of the firm. However, three approaches predominate in the literature:

1. Virtual corporation as a temporary network of firms that rapidly forms to exploit temporary opportunities appearing in the market;
2. Virtual corporation as a firm that produces virtual products, and which develops strong and stable links with its suppliers and customers; and
3. A final model which considers that the virtual firm is an organization whose costs are essentially variable, only being generated when the firm is sure that it will recover them by selling the product or service.

The virtual corporation can also be defined by what it is not. The virtual corporation is not a takeover or merger between firms, nor is it a temporary employment agency, nor a "hollow" firm seeking to cut costs by closing down factories in one country and opening them up again in another one with lower labour costs.

There are three different perspectives of the concept of virtual corporation. Among the characteristics shared by these three models of virtual corporation, we would stress: excellence, technology, trust, opportunism, and absence of borders:

- **Excellence:** Since each member contributes its core competencies, it is possible to create an organization with the best of each of them, so that every process of the virtual corporation can be the best in its class, something that no one firm could achieve on its own.
- **Technology:** Information technology—and more specifically, communications networks—will facilitate the transfer of knowledge and technologies between firms and will allow firms and workers to work together.
- **Trust:** This type of relationship makes firms more dependent on others, and hence requires a much greater trust than would normally be the case between firms that are just partners.
- **Opportunism:** In the first and third model, firms will come together to exploit a very specific market opportunity, disbanding as soon as the opportunity disappears. In the second model, the opportunity to form a virtual corporation is brief. Once a firm adopts a virtual corporation structure, other firms have less chance of doing the same.
- **Absence of Organizational Borders:** The close cooperative ties established between competitors, suppliers, and customers will make it difficult to see where one firm ends and another begins.

It is widely alleged that the business organisation of the future will be virtual. But precise definitions of what it means to be a virtual organisation are hard to find. The origin of the phrase, though, is clear. It comes from the expression "virtual reality", an experience in which electronically created sounds and images are made to resemble reality. A virtual company resembles a normal traditional company in its inputs and its outputs. It differs in the way in which it adds value during the journey in between.

The virtual organisation has an almost infinite variety of structures, all of them fluid and changing. Most of them need virtually no employees. A New York insurance company was once started from scratch by someone whose overriding aim was to employ nobody but himself. The UK's Virgin Group briefly held 5% of the British cola market with just five employees. This was achieved by tightly focusing on the company's core competence: its marketing. Everything else, from the production of the drink to the distribution of it, was done by someone else. A virtual organisation relies for the most part on a network of part-time electronically connected freelances, sometimes referred to as e-lances.

The virtual organisation has few physical assets, reflecting the fact that adding value is becoming more dependent on (mobile) knowledge and less dependent on (immobile) plant and machinery. Hollywood is often cited as a template for the virtual organisation. The way that movies have been made since the industry freed itself from

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the studio system (where everyone from Bette Davis down to the doorman was a full-time employee) has been virtual. A number of freelances, from actors to directors via set builders and publicity agents, come together with a common purpose: to make a movie, to tell a story on celluloid. They then go their separate ways and another (unrelated) bunch of people (with a similar set of skills) comes together to make another movie. And so it goes on, very productively.

Linked to the idea of the virtual organisation is the idea of the virtual office, a place where space is not allocated uniquely to individual employees. People work as and when they need to, wherever space is available. This practice is commonly referred to as hot-desking. The virtual office has the advantage of providing a different vista every day. But it makes it difficult to form close relationships with colleagues.

As information and communications technologies overcome the constraints of time and distance, it becomes possible to create virtual organizations. Virtual is usually taken to be something that does not exist in reality. So a typical definition of a virtual corporation (taking the dimension of time) is:

"a temporary network of independent companies linked by IT to share skills, costs, and access to one another's markets" (Business Week)

However, another definition relates to an organisation not having a clear physical locus. Here a typical definition is:

"An organization distributed geographically and whose work is coordinated through electronic communications."

Both definitions show how information and communications technologies can be used to exploit the dimensions of time and space. A virtual corporation is a specific example of a networked organisation. Many smaller companies are now realizing the benefits of being part of a virtual corporation, which can give them the benefits of the resources of a large organisation while retaining the agility and independence of a small one.

Benefits:

- Gives access to a wide range of specialized resources
- Can present a unified face to large corporate buyers
- Individual members retain their independence and continue to develop their niche skills
- They can reshape and change members according to the project or task in hand
- There is no need to worry ponderously about "divorce settlements" as in formal joint ventures.

The development of business networks as virtual corporations is well developed in Denmark, and is now evolving in other countries. David Skyrme Associates is itself a member of several virtual corporations, including ENTOVATION International. Members of the ENTOVATION Researching and Consulting Networking combine forces to create virtual knowledge teams and virtual corporations, according to project and client needs.

7.11.1 Virtually a Success

Working in virtual corporations comes naturally to small company entrepreneurs and managers who are effective networkers. They are difficult for those with the conventional corporate mind to fathom out. Some of the ingredients for developing a succeeding virtual corporation are:

Each partner must have some distinctive added value to bring to the corporation

Members must develop high degree of mutual trust and understanding. Thus, very often the same people will work together again and again.

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Projects should be the focus of the corporation. Usually they will be for clients, but some projects e.g. marketing, can be done by a few members on behalf of the corporation as a whole.

'Rules of engagement' need to be defined fairly broadly up-front, in terms of inputs to the corporation and rewards expected, though the momentum is lost if these are too formalized too soon

Members of the corporation should recognize the need for coordination roles, and either commit time to develop and nurture these or pay one of the members to undertake them on behalf of the corporation.

A clear interface needs to be developed with 'non virtual' customers - they like tidy relationships and clear contracts. Thus either one member of the virtual corporation must act on behalf of the others (using them as subcontractors) or create a joint company to act as their contracts and administration service.

In bringing together many virtual corporations, the role of a network broker can be important (it is, for example, something strongly advocated in the Denmark model). However, in our experience many virtual corporations will evolve naturally out of working relationships that have developed over years.

The term virtual organization is used to describe a network of independent firms that join together, often temporarily, to produce a service or product. Virtual organization is often associated with such terms as virtual office, virtual teams, and virtual leadership. The ultimate goal of the virtual organization is to provide innovative, high-quality products or services instantaneously in response to customer demands.

The term virtual in this sense has its roots in the computer industry. When a computer appears to have more storage capacity than it really possesses it is referred to as virtual memory. Likewise, when an organization assembles resources from a variety of firms, a virtual organization seems to have more capabilities than it actually possesses.

Partners in virtual organizations share risks, costs, and rewards in pursuit of a global market. The common characteristics of these organizations include a purpose that is motivated by specific market opportunities, world-class core competence, information networks, interdependent relationships, and permeable boundaries.

Virtual organizations represent structures that are motivated by specific market opportunities. Once the alliance has been formed and the opportunity has been exploited, partners may move on to new partnerships and alliances.

Each partner in a virtual corporation contributes a world-class core competence, such as design, manufacturing, or marketing. This ability of multiple firms to create synergies among world-class functions and processes creates untold possibilities.

As organizations create these new linkages, advanced information technology becomes an important element, and key to the success of a virtual organization. Computerized information systems allow employees from geographically dispersed locations to link up with one another. The virtual office may use desktop videoconferencing, collaborative software, and intranet systems to enhance the flow of information among team members. Besides the need for instantaneous communication with one another, members of these autonomous virtual teams have increasing requirements regarding the amount and quality of information they need to do their work.

Members of the virtual organization, in turn, create a network of interdependent relationships. These relationships require firms to be much more dependent on one another than they have been in the past, demanding unprecedented levels of trust. Strong interdependencies cause organizations' boundaries to be blurred as competitors, suppliers, and customers enter into cooperative agreements. These new relationships among firms obligate organizations to use innovative management practices.

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7.11.2 Virtual Teams

Virtual teams are often the group structure used in virtual organizations. Jessica Lipnack and Jeffrey Stamps define virtual teams as "a group of people who interact through interdependent tasks guided by a common purpose." Unlike conventional teams, a virtual team performs work across space, time, and organizational boundaries connected by interactive communication technologies. Virtual teams may include employees, management, customers, suppliers, and government working together to achieve common goals. These teams often stay together only to perform its episodic task. They may work jointly on a new project, but when the product is designed and goes into production, the project is finished and the virtual team dissolves.

Lipnack and Stamps offer three key features for a successful virtual team. One is the choice of team members with the appropriate skills and knowledge for the task; second is the definition of a purpose to steer the group; and third is the effective linking of team members, including communication channels, interactions, and relationships.

Virtual team members are required to learn a new set of skills. One skill is the ability to interact with one another effectively despite infrequent or total lack of face-to-face contact. Another is the ability to assimilate quickly and effectively into new teams. Virtual team members should be technically adept to deal with the variety of required computer-based technologies. Additionally, virtual team members may need intercultural skills to work effectively in multi-national organizations.

7.11.3 Virtual Leaders

Greiner and Metes discuss the new leadership skills required to lead in the virtual environment, including the ability to manage a network of interdependent firms, to design virtual operations, to create and sustain virtual relationships with internal as well as external constituents, to support virtual teams, and to keep virtual teams focused. The leader of a virtual organization demands a new set of skills unlike the skills required in a traditional hierarchy.

7.11.4 Virtual Learning

Another critical element to the success of the virtual organization is the ability of the organization to create world-class learning systems. These learning systems help leaders sustain or create world-class competencies. Effective learning systems can create pathways throughout the organization, in network fashion, enhancing the innovative capabilities of the organizational members. An organization's ability to sustain a leadership position in the world economy demands that organizations be on the cutting edge to develop rapid and elegant solutions to emerging consumer demands.

7.11.5 Examples of Virtual Organizations

An industry that is known for its use of partners and alliances is the entertainment industry, which has partnered with the computing, communications, consumer electronics, and publishing industries to convert movies, textbooks, and other software into digital formats.

Increasing numbers of firms are moving to these new organizational forms. Corning, the glass and ceramics maker, is one such firm known for making partnerships work to their advantage. Corning has partnered with such firms as Siemens, Germany's electronics conglomeration, and Vitro, Mexico's largest glassmaker. Alliances are so important to Corning's business strategy that the corporation has defined itself as a network of organizations.

Computer organizations that have successfully implemented forms of this new structure include Apple Computer and Sun Microsystems. When Apple Computer linked its easy-to-use software with Sony's manufacturing skills in miniaturization, Apple was

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able to get its product to market quickly and gain a market share in the notebook segment of the PC industry.

Sun Microsystems has been considered another highly decentralized organization comprised of independently operating companies. Sun positions information systems as a top priority, trying to achieve faster and better communication. With numerous "Sun Teams," members operate across time, space, and organizations to address critical business issues. Sun managers identify key customer issues and then form teams with the critical skills and knowledge needed to address the issue. This team might include sales people, marketing personnel, finance, and operations from various places around the globe; customers and suppliers may become episodic members as necessary. Weekly meetings may take place via conference calls. Critical to the team's success is the selection of talent from the organization, defining a clear purpose for the team's efforts, and establishing communication links among the team members.

Sun has been working on further development of technologies such as EDI (Electronic Data Interchange) and RFID (Radio Frequency Identification technology). Both EDI and RFID will impact information exchange globally and across numerous industries.

7.12 Competition in the Age of Liberalization, Privatization and Globalization

The economy of India had undergone significant policy shifts in the beginning of the 1990s. This new model of economic reforms is commonly known as the LPG or Liberalization, Privatization and Globalization model. The primary objective of this model was to make the economy of India the fastest developing economy in the globe with capabilities that help it match up with the biggest economies of the world.

India is developing country. It has been implemented five industrial policies like industrial policy 1948,1956,1977,1980 and 1991 and twelve five year plans. This all has been done after recognizing the India's economic condition. But actually as compare to the rate of population of India the economic development of India is not measurable. Before new economic policy-1991 of India means before Liberalization, Privatization and Globalization Industrial policies and five years plans were not that much helpful to Indian economic development. Generally we called it as Globalization and it helped to reform Indian economy too much. Why we are going to discuss these things today because India, today has accounted for the 16.67% of the global population as compared to china with 21.37%. India has over 1.06 billion people which is more than the total population in the continent. Every 6th individual on the earth is an Indian.

Out of the total 70% of the country's population are villagers. India's GDP has gone up well during the recent past. On the other hand 38% of India's households are still living in single room dwelling. Actually India is youngest country in the world more than 50% people are below the age 25 at least. But unfortunately poverty line of India is still very high near about 350 million people come under this. If government wants to change the mind sets, attitude and this situation it must undertake entrepreneurial activity with the help of Globalization and its policies related to industrial development at all. Therefore the situation of nation will overcome the problems which are arising present and in the future time. The economist and Noble prize winner

Mohamad Yunus has rightly said that "Poverty is a threat to peace" and the frustrations, hostility and anger generated by object poverty cannot sustain peace in society in the world. Actually if we want to see the change in near future first of all we should have to understand impact of LPG policy on Indian economy.

In 1990s the govt. of India in order to come out of the economic crisis decided to deviate from its previous economic policies and learn towards Privatization. In July 1991 when the devaluation of Indian currency took place the govt. started announcing its new economic policies one after another. Though these polices pertained to different aspects of the economic field they had one thing in common. The economic element

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was to orient the Indian system towards the world market it is in this context the govt. launched its new economic policy which consisted of among other things three important features. Liberalization, Privatization and Globalization .Liberalization of the economy means to free if from direct or physical control imposed by the govt. economic reforms were based on the assumption that marten forces could guide the economy in a more effective manner than govt.

7.12.1 Main objectives of New –Economic Policy – 1991

The main objectives behind the launching of the new –economic policy (NEP) in 1991 by the union finance minister Dr. Manmohan Singh, could be stated as follows:

The main objective was to plunge Indian economy in to the arena of 'Globalization and to give it a new thrust on market orientation.

The NEP intended to bring down the rate of inflation and to remove imbalances in payment.

It intended to move towards higher economic growth rate and to build sufficient foreign exchange reserves.

It wanted to achieve economic stabilization and to convert the economic in to a market economy by removing all kinds of unnecessary restrictions.

It wanted to permit the international flow of goods, services, capital, human resources and technology, without many restrictions.

Beginning with mid-1991, the govt. has made some radical changes in its policies bearing on trade, foreign investment exchange rate, industry, fiscal of fairs etc…The various elements, when put together, constitute an economic policy which marks a big departure from what has gone before.

New Economic Policies: Liberalization, Privatization and Globalization

The last quarter of the 20th century has been a wave of economic policy reforms in the developing world, with one country after another taking the Liberalization cure, often imposed by the international financial institutions. This wave of reform had been preceded by a quarter-century of state directed effort at economic development, during which time the goals of economic self reliance and import substitution industrialization were the hallmarks of development strategies in the less developed countries. These goals seemed particularly justified, given the long experience of these countries with colonialism and the agricultural nature of their economies. However, all this seemed to be overtaken by the subsequent surge of liberalization.

7.12.2 Liberalization

Liberalization refers to the slackening of government regulations. The economic liberalization in India denotes the continuing financial reforms which began since July 24, 1991.

Impact of Liberalization on Indian Economy

The low annual growth rate of the economy of India before 1980, which stagnated around 3.5% from 1950□s to 1980□s which per capital income averaged 1.3%. At the same time Pakistan grew by 5%, Indonesia by 9%, Thailand by 9%, South Korea by 10% and in Taiwan by 12%.

Only four to five licenses would be given for steel, Power and communications, license owners built up huge powerful empires.

A huge public sector emerged. State owned enterprises made large losses.

Infrastructure investment was very poor because of the public sector monopoly.

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License RAJ: established the „irresponsibly self perpetuating bureaucracy that still exists throughout much of the county and corruption flourished under the system.

The term “liberalization” in this context implies economic liberalization. “Economic liberalization” constitutes one of the basic elements of the new Economic policy (NEP) which the Indian Government launched in the middle of the year 1991. The other important aspects of the policy are –Privatization of the public sector, Globalization and market friendly state.

The main trust of the new economic policy is “liberalization”. The essence of this policy is that greater freedom is to be given to the entrepreneur of any industry, trade or business and that governmental control on the same be reduced to the minimum.

The main purpose of the process to economic liberalization is to set business free and to run on commercial lines. The underlying belief is that commerce and business are not matter to contained to fixed national boundaries; they are global phenomena. Here, artificial govt. restrictions which hinder economic and commercial activities ad flow of goods and services must be removed. The liberalization intends to liberalization commerce and business and trade from the clutches of controls and obstacles.

The concept of Liberalization

The recent wave of economic policy reform in the developing world has been seen as a necessary consequence of a changed world economic system. The key feature of the changed world economy is the clement of the heightened economic Globalization which provides new external challenges as well as opportunities for development.

Main Features of the Policy of Liberalization

Following are main features of liberalization:

- Lessened Government control and freelance to private Enterprises.
- Capital Markets opened for private Entrepreneurs
- Simplification of Licensing policy
- Opportunity to purchase foreign exchange at market prices
- Right To Take Independent Decisions Regarding The Market
- Better opportunity for completion
- Widened Liberty in the Realm of Business and Trade

Brief Evaluation of Liberalization

From the Indian point of view, it is very difficult to say at this stage when the process of economic liberalization taken up by the govt. of India in 1990’s has reality brought big economic gains to India gains to India. The process has no doubt brought some benefits through suffers from some deficiencies.

The Gains

The liberalization process has helped the free movement of goods and services it has led to better industrial performances. Industrial organizations have now become more efficient and market responsive. Country’s exports are on the increase. Sectors such as information technology and computer soft ware here registered tremendous progress.

The Deficiencies

Liberalization process has its deficiencies also. The economic reforms including liberalization were introduced all on a sudden and proper background was not created to take their full advantage and to face their consequences.

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Liberalization in India

There are at least two striking features of main stream analysis of the economic reforms programmer in India since 1991. The first which is evident not only in official govt. publications particularly English language financial press is the generally un-supported far by and large have been successful so both in achieving the medium term goals of structural adjustment and in preparing to economy for intake off in the new globalized environment. The important characteristics of the new policy may be described and explained under the following four heads liberalization; Privatization of the public sector, Globalization and market friendly state. Liberalization is the thrust of the policy is the freedom for the entrepreneur. The new policy permits foreign direct investment to a large extent and in a larger number of Industries then before.

7.12.3 Privatization and Globalization

Privatization refers to the participation of private entities in businesses and services and transfer of ownership from the public sector (or government) to the private sector as well. Globalization stands for the consolidation of the various economies of the world.

LPG and the Economic Reform Policy of India

Following its freedom on August 15, 1947, the Republic of India stuck to socialistic economic strategies. In the 1980s, Rajiv Gandhi, the then Prime Minister of India, started a number of economic restructuring measures. In 1991, the country experienced a balance of payments dilemma following the Gulf War and the downfall of the erstwhile Soviet Union. The country had to make a deposit of 47 tons of gold to the Bank of England and 20 tons to the Union Bank of Switzerland. This was necessary under a recovery pact with the IMF or International Monetary Fund. Furthermore, the International Monetary Fund necessitated India to assume a sequence of systematic economic reorganizations. Consequently, the then Prime Minister of the country, P V Narasimha Rao initiated groundbreaking economic reforms. However, the Committee formed by Narasimha Rao did not put into operation a number of reforms which the International Monetary Fund looked for.

Impact of Privatization on Indian Economy

It frees the resources for a more productive utilization.

Private concerns tend to be profit oriented and transparent in their functioning as private owners are always oriented towards making profits and get rid of sacred cows and hitches in conventional bureaucratic management.

Since the system becomes more transparent all underlying corruption are minimized and owners have a free reign and incentive for profit maximization so they tend to get rid of all free loaders and vices that are inherent in government functions.

Gets rid of employment inconsistencies like free loaders or over employed departments reducing the strain on resources.

Reduce the government's financial and administrative burden.

Effectively minimizes corruption and optimizes output and functions.

Private firms are less tolerant towards capitulation and appendages in government departments and hence tend to right size the human resource potential befitting the organizations needs and may cause resistance and disgruntled employees who are accustomed to the benefits as government functionaries.

Permit the private sector to contribute to economic development.

Impact of Globalization on Indian Economy

The following achievements have been claimed especially on the external front:

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India's share in the world trade which had fallen 0.53% in 1991 from 178% in 1950 has been reversed trends and has improved to 0.86% in 2003.

Our foreign currency reserves which had fallen to barely one billion dollars to June, 1991 rose substantially to about 141 billion dollars in March, 2005.

Exporters responding well to sweeping reforms in exchange rate and trade policies. This would be clear from the fact that as against a fall in the dollar value of exports by 1.5 % in 1993-96. However, export growth slowed down during 1996-2002. The annual average growth rate during this period was around 8%. Since 2002-2003 however, exports have picked up once again. The average growth of export has been around 10% per annum during 1992-2004.

Exports now finance over 80% of imports, compared to only 60% in the latter half of the eighties.

The current account deficit was over 3% of GDP in 1990-91. It has fallen to less the 1% in 2000-01. During 2001-03 we even had surplus in current account ranging between 0.7-1.08percent of GDP.

At the time of crisis, our external debt was rising at rate of 8 billion a year, after that its growth has been arrested. From 1996- 2003, it grew only by less than 3 billion %.

Contrary to what many feared, the exchange rate for the rupee has remained almost steady despite the introduction of full convertibility of rupee.

Given below are the salient highlights of the Liberalization, Privatization and Globalization Policy in India:

1. Foreign Technology Agreements
2. Foreign Investment
3. MRTP Act, 1969 (Amended)
4. Industrial Licensing
5. Deregulation
6. Beginning of privatization
7. Opportunities for overseas trade
8. Steps to regulate inflation
9. Tax reforms
10. Abolition of License -Permit Raj

Privatization is a managerial approach that has attracted the interest of many categories of people academicians, politicians, government employee players of the private sector and public on the whole. Privatization has an adverse impact on the employee morale and generates fear of dislocation or termination more likely it also adds on to the apprehension pertaining to accountability and quality. Experts both advocate and criticize Privatization making it more or less provocative decision that calls for diligent scurrying by the decision makers in assessment of pros and cons attached to the concerned policy.

In India Privatization has been accepted with a lot of resistance and has been dormant initially during the inception period of economic Liberalization in the country. The article intends to analyze the present status of Privatization in India and summarize its advantages and disadvantages in context with the Indian economy. Privatization is also one of the aspects of the new economic policy which came to take shape in the decade 1990. The term "Privatization" can notes wide range of ideas? But the broad meaning of Privatization is that in the economic field much broader role is to be agencies and the role of the public sector activities is to be limited.

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Privatization refers to any process hat reduces the involvement of the state, public sector in economic activities of a nation. The Privatization process in a mixed economy such as of India includes:

Decentralization the transfer of the ownership of productive assets to the private sector.

Entry of private sector industries into the areas exclusive reserved for the state sector or which are considered exclusive monopolies of state.

Limiting the scope of the public sector or no more diversification of existing public sector understandings.

Definition of privatization

Steve H. Hanker refers to Privatization as "the process whereby the public operations are transferred to the private sector".

Barbara Lee and John Nellis define the concept in this manner: "Privatization is the general process of involving the private sector in the ownership or operation of a state owned enterprise. Thus the term refers to private purchase of all or part of a company. It cover "contractedly out" and the Privatization of management through management contracts leases or franchise arrangements."

Main Objective of Privatization

The process of Privatization has been triggered with the main intention of improving industrial efficiency and to facilitate the inflow of foreign investments.

It also wants to make the public sector undertakings strong able efficient companies. It recommends a change in the role of the government from that of the "owner manager" to that of a mere "controller" or "regular".

It also intend to ensure efficient utilization of all types of resources including human resources.

Privatization insists on the government to concentrate on the area such as education administration and infrastructure and to give up the responsibility of looking after business and running industries. It is expected to strengthen the capital market by following appropriate trade policies.

Privatization in India

In India the wave of Privatization that was generated during the Eighties (1980s) became more powerful when Rajiv Gandhi assumed office as the Prime minister of India. The issue of Privatization in India has to be understood in the context of – the relative inefficiency of the public sector industries, dearth of financial resources, defective competition system, and continuous labour problem and so on.

When India became independent it embarked upon planned economic development. In order to accelerate the economic development it started giving more important to the public sector on which the Government had its control. The Industrial Policy Resolution of 1956 also gave importance to the public sector industries. The growth of the public sector assume importance in the Indian economy. It contributed to employment opportunities, capital formation, development of infrastructure, and increase in exports over the years, and too many other areas. But it failed in certain respects. It failed to generate adequate surpluses to support sustained growth. The public sector was also a failure in obtaining consistent profits, fulfilling labour demands and interests, encouraging industrial researches, reducing the cost of the production, achieving technical expertise, and in successfully facing the competition at the hand of the private sector. During the later years of Mrs. Indira Gandhi's regime a search for the new policy options began. Gradually, a new industrial policy started taking its shape. The essence of this policy is marketed forces must be allowed to play their role in

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shaping the economy. With the announcement of new economic policy on 24th July 1991 by Dr. Manmohan Singh, the then Union Finance Minister, India opted for a radical change.

Advantages of Privatization

Efficiency, Absences of political interference, Quality service, Systematic marketing Use of freedom technology.

- Accountability.
- Innovation.
- Research and development.
- Infrastructure.

Arguments in Favour of Privatization

- Privatization is Necessary to Revitalize the State Owned Enterprises
- Privatization is Necessary to Face Global Competition
- Privatization is Needed to Create More Employment Opportunities in Future
- Helpful for Mobilizing and Investing Resources
- Recognition of Talents and Good Performance of work

Argument against privatization

- Profitability Alone Should Not Become the Sole Yardstick to Measure Efficiency
- Role of Public Sector Undertaking From the socio-Economic Angle Also Cannot be ignored
- Protection of the Interests of the Weaker Section
- Price –fixing Policy Here is Not Profit- Oriented
- Argument that the Private Sector Is More Efficient than the Public Sector is Not Right

7.13 Summary

Firms exist as an alternative system to the market-price mechanism when it is more efficient to produce in a non-market environment. For example, in a labor market, it might be very difficult or costly for firms or organizations to engage in production when they have to hire and fire their workers depending on demand/supply conditions. It might also be costly for employees to shift companies every day looking for better alternatives. Similarly, it may be costly for companies to find new suppliers daily. Thus, firms engage in a long-term contract with their employees or a long-term contract with suppliers to minimize the cost or maximize the value of property rights.

Formal economic forecasting is usually based on a specific theory as to how the economy works. Some theories are complicated, and their application requires an elaborate tracing of cause and effect. Others are relatively simple, ascribing most developments in the economy to one or two basic factors. Many economists, for example, believe that changes in the supply of money determine the rate of growth of general business activity.

The theory of the firm is always being re-analyzed and adapted to suit changing economies and markets. Early economic analysis focused on broad industries, but as the nineteenth century progressed, more economists began to look at the firm level to answer basic questions about why companies produce what they do, and what motivates their choices when allocating capital and labor.

7.14 Check Your Progress

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Multiple Choice Questions

1. Which of the following refers to the slackening of government regulations:
   (a) Privatization
   (b) Globalization
   (c) Liberalization
   (d) all of these
2. Among which of the following ensures the supply of future capital for innovation and expansion:
   (a) Money
   (b) Profit
   (c) Capital
   (d) Investment
3. In which year Rajiv Gandhi, the then Prime Minister of India, started a number of economic restructuring measures:
   (a) 1980
   (b) 1981
   (c) 1982
   (d) 1983
4. In which year, the country experienced a balance of payments dilemma following the Gulf War and the downfall of the erstwhile Soviet Union:
   a. 1991
   b. 1981
   c. 1971
   d. 1961
5. The economy of India had undergone significant policy shifts in the beginning of the:
   (a) 1960s
   (b) 1970s
   (c) 1980s
   (d) 1990s
6. Which of the following stands for the consolidation of the various economies of the world:
   (a) Privatization
   (b) Globalization
   (c) Liberalization
   (d) all of these
7. _____ as a temporary network of firms that rapidly forms to exploit temporary opportunities appearing in the market:
   (a) Virtual corporation
   (b) Economic forecasting
   (c) Both a and b
   (d) Neither a nor b
8. _____ the prediction of any of the elements of economic activity:

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(a) Virtual corporation
(b) Economic forecasting
(c) Both a and b
(d) Neither a nor b

9. Which profit uses realized or actual gains and losses and is calculated according to generally accepted accounting principles (GAAP):
   (a) Accounting
   (b) Economic
   (c) normal
   (d) None of these
10. Which profit is determined by economic principles, not GAAP:
   (a) Economic
   (b) Accounting
   (c) Both a and b
   (d) Neither a nor b

7.15 Questions and Exercises

1. Explain theory of the firm.
2. What are the objectives of the theory of firm?
3. What do you mean by value of the firm?
4. Define Accounting profit.
5. Briefly explain economic profit.
6. What are the limitations of the theory of the firm?
7. What is the nature of the profit?
8. Explain the business source of profit.
9. Briefly explain economic forecasting.
10. What is virtual corporation?

7.16 Key Terms

- **Profit:** Profit is a financial benefit that is realized when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes needed to sustain the activity. Any profit that is gained goes to the business's owners, who may or may not decide to spend it on the business.
- **Profit Maximization:** In economics, profit maximization is the short run or long run process by which a firm determines the price and output level that returns the greatest profit. There are several approaches to this problem.
- **Globalization:** Globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process driven by international trade and investment and aided by information technology.
- **Liberalization:** Liberalization (or liberalization) is a relaxation of government restrictions, usually in such areas of social, political and economic policy.
- **Forecasting:** Forecasting is the process of making predictions of the future based on past and present data and analysis of trends. A commonplace example might be estimation of some variable of interest at some specified future date.
- **Annual percentage rate (APR):** The percentage used in calculating interest each compounding period. In an investment context, the annual percentage rate (or nominal rate) is the advertised rate of interest, 100r%.

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- **Changes in demand:** A change in price does not lead to a change in demand. But a change in a factor other than price such as income and prices of related goods etc, does lead to a change in demand. In that case the change in demand leads to a shift in the demand curve. A fall in demand shifts the demand curve to the left and a rise in demand shifts the curve to the right.
- **Compound interest:** A method of crediting interest in which interest is earned on interest.
- **Econometric Model:** An econometric model is an economic model formulated so that its parameters can be estimated if one makes the assumption that the model is correct.

Check Your Progress: Answers

1. c, 2. b, 3. a, 4. a, 5. d, 6. b, 7. a, 8. b, 9. a, 10. a.

7.17 Further Readings

- *Labor Economics*, Pierre Cahuc, André Zylberberg – 2004.
- *Principles of Economics - Volume 1*, N. Gregory Mankiw – 2008.
- *Economics: The User's Guide: A Pelican Introduction*, Ha-Joon Chang – 2014.
- *Economics: A New Introduction*, Hugh Stretton – 1999.
- *Principles of Microeconomics - Volume 1*, N. Gregory Mankiw – 1998.

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Unit 8: Individual Demand v. Market Demand

Structure

Objectives

After studying this unit, you should be able to understand:

- The difference between Individual demand v. market demand
- The concept of Elasticity: price elasticity of demand, and income elasticity of demand.

8.1 Introduction

Demand, a chief economic principle, is the effective want for something and the willingness and ability to pay for it. A relative concept, demand is always attached to a certain price point at a particular point in time. There are two basic types of demand: individual and market. While both principles overlap in many ways, the scope of individual demand is much narrower than market demand.

The demand for a commodity at a given price is the quantity that will be purchased at a unit of time and at a unit price.

Demand has the following features;

- Demand refers to the quantity at a given price,
- Demand must be defined per unit time.
- Demand must be associated with the willingness of the consumers to part with his resources to get the commodity and demand must be associated with the ability of the consumer to purchase the commodity.

From the above concepts of demand it can now be defined as the quantity that a buyer is willing and able to purchase and a given period of time and a certain price level. Demand can be explained by the use of a demand schedule and a demand curve. A demand schedule shows a relationship between two variables of a commodity the prices and their corresponding quantities. In a nut shell it is a list of product quantity and their prices. An individual demand schedule is a list of various quantities of a commodity which each individual consumers purchases at different or alternative prices in the market. On the other hand a market demand schedule is the aggregate of all the

individual demand schedules. A market demand schedule is calculated by taking the demand schedule of the representative consumers and multiplying its prices to the total number of consumer.

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Demand curve is the relationship that exists between prices and quantity. The demand curve will slope downwards from left to right. This is in conformity with the law of demand which states that at higher prices lower will be demand and at and low prices high quantities will be demanded if all the other factors are to be held constant.

There are several determinants of demand the main one be the price of the commodity. Price changes will make demand to shift upwards or downwards when the prices increase the quantity demanded will reduce and vice - versa. The other determinant of demand is the income of the consumers. An increase in consumer wealth will increase the consumer's purchasing power and hence increase the demand for the commodities. The other determinants of demand are the changes in tastes and preferences of consumers, changes in the prices of related products, changes in prices of complementary goods, speculative factors, income distribution and level of advertisement.

The laws of demand are only an indicative statement and it only indicates the direction in which the demand will increase to. The law of demand does not tell us how much demand increases or decreases. The condition of demand should be restricted to some conditions for it to operate. The people's income should remain unchanged for the law to operate, the taste and preference of consumers should not change and prices of related commodity should remain the same. There are exceptional types of commodities that defy s the law of demand. They are giffen goods or commodities, status symbol commodity, habitual goods, Inferior goods, and high priced commodities.

Demand can move on the same demand curve and this is referred to as extension of demand and contraction. When there is an increase in demand on the demand graph then this is said to be a shift in demand.

Demand curve is a graphical representation of demand schedule. It is the locus of all the points showing various quantities of a commodity that a consumer is willing to buy at various levels of price, during a given period of time, assuming no change in other factors.

8.2 Individual Demand

The individual demand is the demand of one individual or firm. It represents the quantity of a good that a single consumer would buy at a specific price point at a specific point in time. While the term is somewhat vague, individual demand can be represented by the point of view of one person, a single family, or a single household.

Individual demand curve refers to a graphical representation of individual demand schedule.

With the help of Table 8.1 (Individual demand schedule), the individual demand curve can be drawn as shown in Fig. 8.1.

As seen in the diagram, price (independent variable) is taken on the vertical axis (Y-axis) and quantity demanded (dependent variable) on the horizontal axis (X-axis). At each possible price, there is a quantity, which the consumer is willing to buy. By joining all the points (P to T), we get a demand curve 'DD'.

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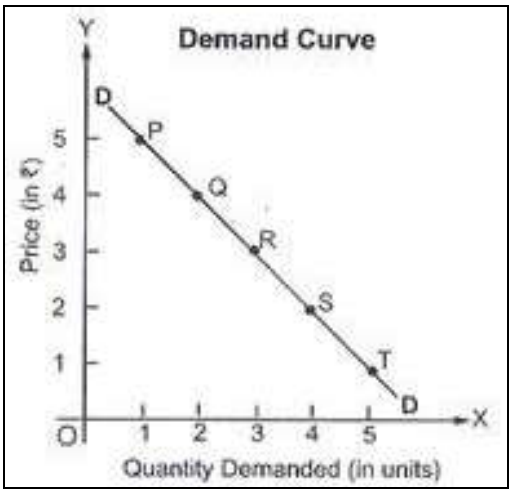


Figure 8.1

The demand curve 'DD' slopes downwards due to inverse relationship between price and quantity demanded.

8.3 Market Demand

Market demand provides the total quantity demanded by all consumers. In other words, it represents the aggregate of all individual demands. There are two basic types of market demand: primary and selective. Primary demand is the total demand for all of the brands that represent a given product or service, such as all phones or all high-end watches. Selective demand is the demand for one particular brand of product or service, such as the iPhone or a Michele watch. Market demand is an important economic marker because it reflects the competitiveness of a marketplace, a consumer's willingness to buy certain products and the ability of a company to leverage itself in a competitive landscape.

Market demand curve refers to a graphical representation of market demand schedule. It is obtained by horizontal summation of individual demand curves.

The points shown in Table 8.2 are graphically represented in Fig. 8.2. DA and DB are the individual demand curves. Market demand curve (DM) is obtained by horizontal summation of the individual demand curves (DA and DB).

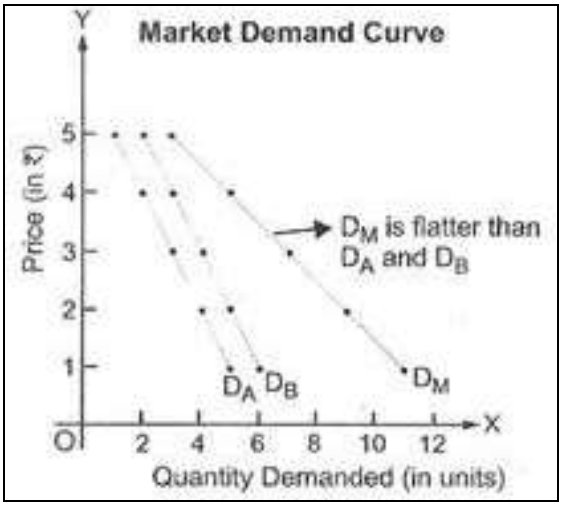


Figure 8.2

Market demand curve 'DM'also slope downwards due to inverse relationship between price and quantity demanded.

Market Demand Curve is Flatter:

Market demand curve is flatter than the individual demand curves. It happens because as price changes, proportionate change in market demand is more than proportionate change in individual demand.

Notes

8.4 Factors Influencing Demand

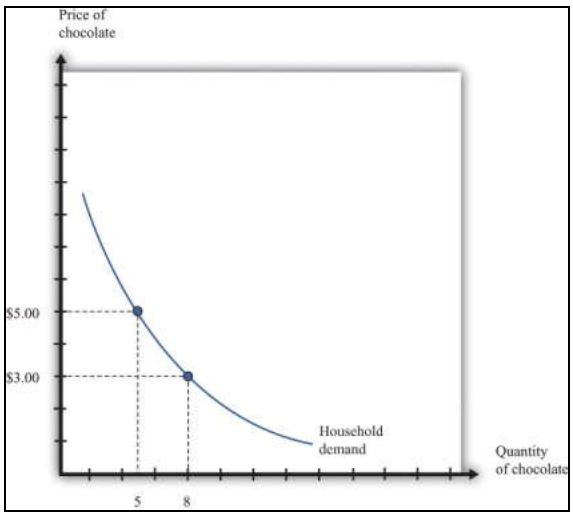
There are several factors that influence individual and market demand. Individual demand is influenced by an individual's age, sex, income, habits, expectations and the prices of competing goods in the marketplace. Market demand is influenced by the same factors, but on a broader scale—the taste, habits and expectations of a community and so on. It also considers the number of buyers in the market, the rate at which a certain community is growing and the level of innovation erupting in the marketplace. Market demand can be measured on an international, national, regional, local, or even smaller level.

Other Considerations

Note that where you have a sizable market demand for a product or service, there may be several individuals included in the market who won't buy the service or product. Often, companies will use several pieces of demographic information to parse out very specific subsets of the market they wish to target, such as middle-income middle-aged stay-at-home mothers or urban youths in coastal metropolises. In a monophonic market, where there is only buyer, individual demand and market demand collapse. Since the market encapsulates one person, that individual represents the entire market.

The Demand Curve of an Individual Household" is an example of a household's demand for chocolate bars each month. Taking the price of a chocolate bar as given, as well as its income and all other prices, the household decides how many chocolate bars to buy. Its choice is represented as a point on the household's demand curve. For example, at $5, the household wishes to consume five chocolate bars each month. The remainder of the household income—which is its total income minus the $25 it spends on chocolate—is spent on other goods and services. If the price decreases to $3, the household buys eight bars every month. In other words, the quantity demanded by the household increases. Equally, if the price of a chocolate bar increases, the quantity demanded decreases. This is the law of demand in operation.

One way to summarize this behavior is to say that the household compares its marginal valuation from one more chocolate bar to price. The marginal valuation is a measure of how much the household would like one more chocolate bar. The household will keep buying chocolate bars up to the point where
Marginal valuation = price.

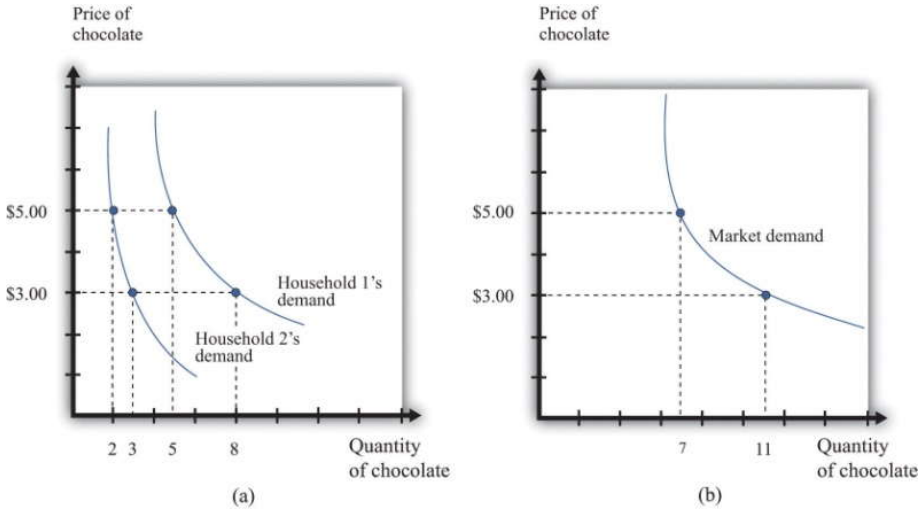


Notes

The household demand curve shows the quantity of chocolate bars demanded by an individual household at each price. It has a negative slope: higher prices lead people to consume fewer chocolate bars.

In most markets, many households purchase the good or the service traded. We need to add together all the demand curves of the individual households to obtain the market demand curve. To see how this works, look at Table "Individual and Market Demand" and Figure “Market Demand". Suppose that there are two households. Part (a) of Figure "Market Demand" shows their individual demand curves. Household 1 has the demand curve from Figure 8.1 "The Demand Curve of an Individual Household". Household 2 demands fewer chocolate bars at every price. For example, at $5, household 2 buys 2 bars per month; at $3, it buys 3 bars per month. To get the market demand, we simply add together the demands of the two households at each price. For example, when the price is $5, the market demand is 7 chocolate bars (5 demanded by household 1 and 2 demanded by household 2). When the price is $3, the market demand is 11 chocolate bars (8 demanded by household 1 and 3 demanded by household 2). When we carry out the same calculation at every price, we get the market demand curve shown in part (b) of Figure:

Price ($)	Household 1 Demand	Household 2 Demand	Market Demand
1	17	10	27
3	8	3	11
5	5	2	7
7	4	1.5	5.5



Because the individual demand curves are downward sloping, the market demand curve is also downward sloping: the law of demand carries across to the market demand curve. As the price decreases, each household chooses to buy more of the product. Thus the quantity demanded increases as the price decreases. Although we used two households in this example, the same idea applies if there are 200 households or 20,000 households. In principle, we could add together the quantities demanded at each price and arrive at a market demand curve.

There is a second reason why demand curves slope down when we combine individual demand curves into a market demand curve. Think about the situation where each household has a unit demand curve: that is, each individual buys at most one unit of the product. As the price decreases, the number of individuals electing to buy increases, so the market demand curve slopes down. "Everyday Decisions" and Chapter 6 "eBay and craigslist" for discussions of unit demand. In general, both mechanisms come into play.

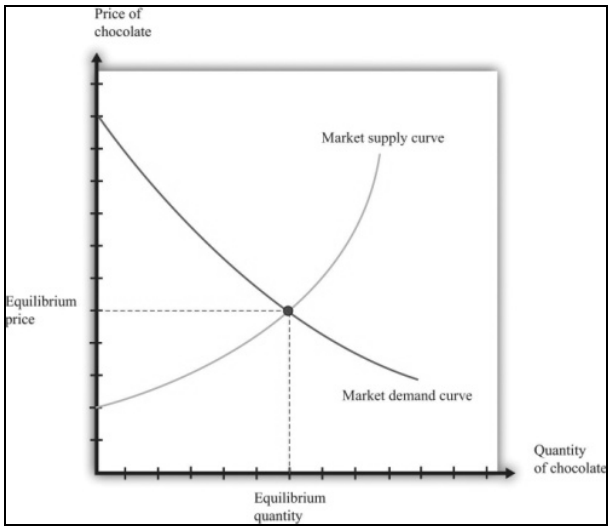
Notes

As price decreases, some households decide to enter the market; that is, these households buy some positive quantity other than zero.

As price decreases, households increase the quantity that they wish to purchase.

When the price decreases, there are more buyers, and each buyer buys more.

In a perfectly competitive market, we combine the market demand and supply curves to obtain the supply-and-demand framework shown in Figure 8.5 "Market Equilibrium". The point where the curves cross is the market equilibrium. The definition of equilibrium is also presented in "eBay and craigslist". At this point, there is a perfect match between the amount that buyers want to buy and the amount that sellers want to sell. The term equilibrium refers to the balancing of the forces of supply and demand in the market. At the equilibrium price, the suppliers of a good can sell as much as they wish, and demanders of a good can buy as much of the good as they wish. There are no disappointed buyers or sellers.



Because the demand curve has a negative slope and the supply curve has a positive slope, supply and demand will cross once. Both the equilibrium price and the equilibrium quantity will be positive. (More precisely, this is true as long as the vertical intercept of the demand curve is larger than the vertical intercept of the supply curve. If this is not the case, then the most that any buyer is willing to pay is less than the least any seller is willing to accept and there is no trade in the market.)

8.5 Elasticity: Price Elasticity of Demand

Price elasticity of demand is a measure of the relationship between a change in the quantity demanded of a particular good and a change in its price. Price elasticity of demand is a term in economics often used when discussing price sensitivity. The formula for calculating price elasticity of demand is:

Price Elasticity of Demand = % Change in Quantity Demanded / % Change in Price.

If a small change in price is accompanied by a large change in quantity demanded, the product is said to be elastic (or responsive to price changes). Conversely, a product is inelastic if a large change in price is accompanied by a small amount of change in quantity demanded.

Price elasticity of demand measures the responsiveness of demand to changes in price for a particular good. If the price elasticity of demand is equal to 0, demand is perfectly inelastic (i.e., demand does not change when price changes). Values between zero and one indicate that demand is inelastic (this occurs when the percent change in demand is less than the percent change in price). When price elasticity of demand equals one, demand is unit elastic (the percent change in demand is equal to the

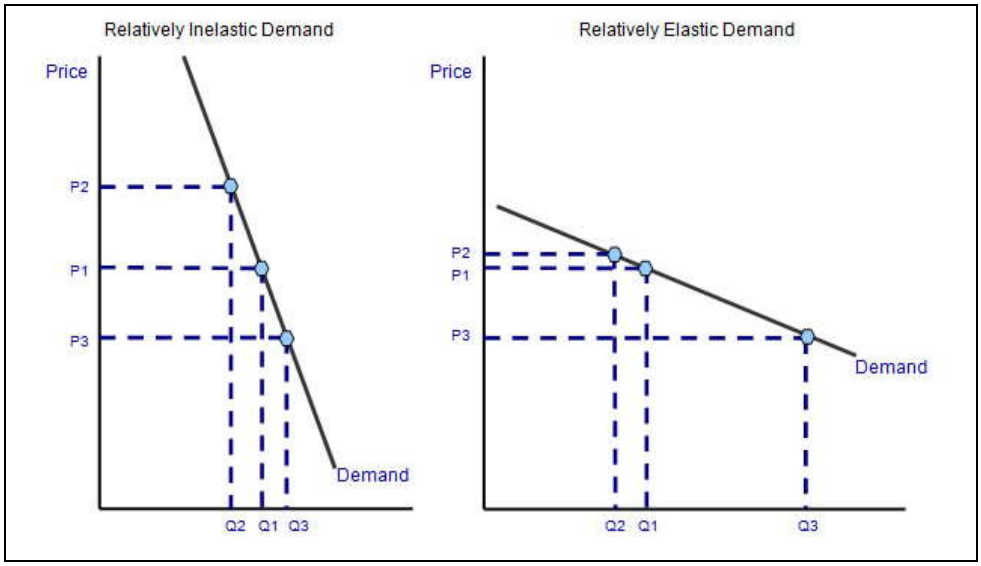
Notes

percent change in price). Finally, if the value is greater than one, demand is perfectly elastic (demand is affected to a greater degree by changes in price).

Price elasticity of demand (PED) shows the relationship between price and quantity demanded and provides a precise calculation of the effect of a change in price on quantity demanded.

For example, if the quantity demanded for a good increases 15% in response to a 10% decrease in price, the price elasticity of demand would be 15% / 10% = 1.5. The degree to which the quantity demanded for a good change in response to a change in price can be influenced by a number of factors. Factors include the number of close substitutes (demand is more elastic if there are close substitutes) and whether the good is a necessity or luxury (necessities tend to have inelastic demand while luxuries are more elastic).

Businesses evaluate price elasticity of demand for various products to help predict the impact of a pricing on product sales. Typically, businesses charge higher prices if demand for the product is price inelastic.



The range of responses

The degree of response of quantity demanded to a change in price can vary considerably. The key benchmark for measuring elasticity is whether the co-efficient is greater or less than proportionate. If quantity demanded changes proportionately, then the value of PED is 1, which is called 'unit elasticity'.

PED can also be:

- Less than one, which means PED is inelastic.
- Greater than one, which is elastic.
- Zero (0), which is perfectly inelastic.
- Infinite (∞), which is perfectly elastic.

PED along a linear demand curve

PED on a linear demand curve will fall continuously as the curve slopes downwards, moving from left to right. PED = 1 at the midpoint of a linear demand curve.

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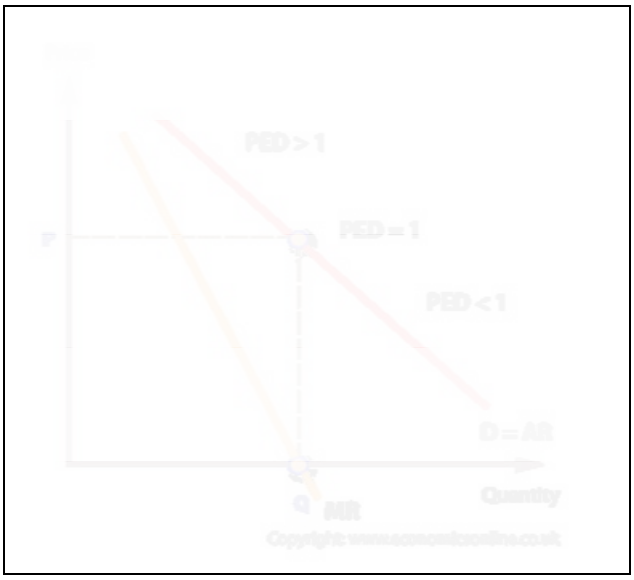


PED and revenue:

- There is a precise mathematical connection between PED and a firm's revenue.
- There are three 'types' of revenue:
- Total revenue (TR), which is found by multiplying price by quantity sold (P x Q).

Average revenue (AR), which is found by dividing total revenue by quantity sold (TR/Q). Consider these figures and calculate Total, Marginal and Average Revenue.

Marginal revenue (MR), which is defined as the revenue from selling one extra unit. This is calculated by finding the change in TR from selling one more unit.

Why does a firm want to know PED?

There are several reasons why firms gather information about the PED of its products. A firm will know much more about its internal operations and product costs than it will about its external environment. Therefore, gathering data on how consumers respond to changes in price can help reduce risk and uncertainly. More specifically, knowledge of PED can help the firm forecast its sales and set its price.

Sales forecasting

The firm can forecast the impact of a change in price on its sales volume, and sales revenue (total revenue, TR). For example, if PED for a product is (-) 2, a 10% reduction in price (say, from £10 to £9) will lead to a 20% increase in sales (say from 1000 to 1200). In this case, revenue will rise from £10,000 to £10,800.

Pricing policy

Knowing PED helps the firm decide whether to raise or lower price, or whether to price discriminate. Price discrimination is a policy of charging consumers different prices for the same product. If demand is elastic, revenue is gained by reducing price, but if demand is inelastic, revenue is gained by raising price.

Non-pricing policy

When PED is highly elastic, the firm can use advertising and other promotional techniques to reduce elasticity.

Determinants of PED

There are several reasons why consumers may respond elastically or in elastically to a price change, including:

Notes

The number and 'closeness' of substitutes

A unique and desirable product is likely to exhibit an inelastic demand with respect to price.

The degree of necessity of the good

A necessity like bread will be demanded in elastically with respect to price.

Whether the good is habit forming

Consumers are also relatively insensitive to changes in the price of habitually demanded products.

The proportion of consumer income which is spent on the good

The PED for a daily newspaper is likely to be much lower than that for a new car!

Whether consumers are loyal to the brand

Brand loyalty reduces sensitivity to price changes and reduces PED.

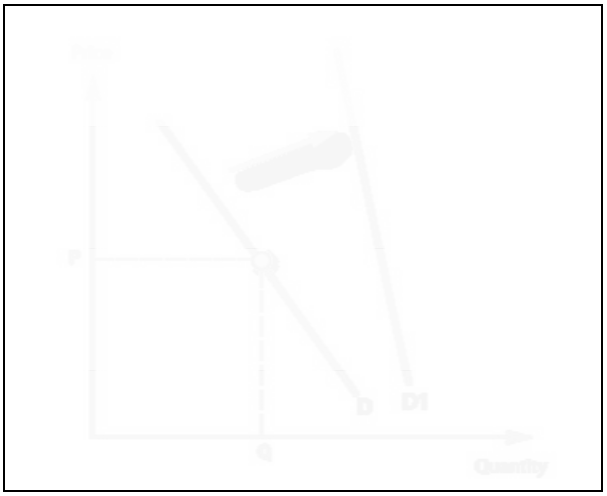
Life cycle of product

PED will vary according to where the product is in its life cycle. When new products are launched, there are often very few competitors and PED is relatively inelastic. As other firms launch similar products, the wider choice increases PED. Finally, as a product begins to decline in its lifecycle, consumers can become very responsive to price, hence discounting is extremely common.

The effects of advertising

Firms may use persuasive advertising by to win new customers and retain the loyalty of existing ones.

Advertisers use a range of media, including television, press, and electronic media. Advertising will shift demand to the right, and make demand less elastic.



There are three extreme cases of PED:

1. Perfectly elastic, where only one price can be charged.
2. Perfectly inelastic, where only one quantity will be purchased.
3. Unit elasticity, where all the possible price and quantity combinations are of the same value. The resultant curve is called a rectangular hyperbola.

Generally, elasticity of demand refers to price elasticity of demand which is often called own price elasticity of demand, though the notion of elasticity of demand also relates to income, cross and substitution elasticities of demand.

Notes

The elasticity of demand is the degree of responsiveness of demand to change in price. In the words of Prof. Lipsey: “Elasticity of demand may be defined as the ratio of the percentage change in demand to the percentage change in price.” Mrs. Robinson’s definition is clearer: “The elasticity of demand at any price…. is the proportional change of amount purchased in response to a small change in price, divided by the proportional change of price.”

Thus, price elasticity of demand is the ratio of percentage change in amount demanded to a percentage change in price. It may be written as Ep = Percentage change in amount demanded/ Percentage change in price If we use ∆ (delta) for a change, q for amount demanded and p for price, the algebraic equation is

$$E_p = \frac{\frac{\triangle q}{q}}{\frac{\Delta p}{p}} = \frac{\Delta q}{q} \times \frac{p}{-\Delta p} = -\frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

Ep, the coefficient of price elasticity of demand is always negative because when price changes demand moves in the opposite direction. It is, however, customary to disregard the negative sign. If the percentages for quantity and prices are known the value of the coefficient Ep can be calculated.

Price elasticity of demand may be unity, greater than unity, less than unity, zero or infinite. These five cases are explained with the aid of the following figures. Price elasticity of demand is unity when the change in demand is exactly proportionate to the change in price. For example, a 20% change in price causes 20% change in demand, E = 20%/20% = 1. In the diagrams of Figure 1, ∆p represents change in price, ∆q change in demand? And DD the demand curve. Price elasticity on the first demand curve in Panel (A) is unity, for ∆q/∆p = 1.

When the change in demand is more than proportionate to the change in price, price elasticity of demand is greater than unity. If the change in demand is 40% when price changes by 20% then E = 40%/20% = 2, in Panel (B), i.e. ∆q /∆p> 1. It is also known as relatively elastic demand.

If, however, the change in demand is less than proportionate to the change in price, price elasticity of demand is less than unity. When a 20% change in price causes 10% change in demand, then E p= 10%/20% = 1/2 =<1, in Panel (C), i.e. ∆q/∆p<1. It is also known as relatively inelastic demand.

Zero elasticity of demand is one when whatever the change in price, there is absolutely no change in demand. Price elasticity of demand is perfectly inelastic in this case. A 20% rise or fall in price leads to no change in the amount demanded, Ep= 0/20% = 0, in Panel (D), i.e.0/∆p = 0. It is perfectly inelastic demand.

Lastly, price elasticity of demand is infinity when as infinitesimal small change in price leads to an infinitely large change in the amount demanded. Visibly, no change in price causes an infinite change in demand, Ep = clip_image006_thumb/0 =clip_image0061_thumb, in Panel (E), at OD price, the quantity demanded continues to increase from Ob to Ob1 …..n. It is perfectly elastic demand.

Methods of Measuring Price Elasticity of Demand:

There are four methods of measuring elasticity of demand they are the percentage method, point method, arc method and expenditure method.

1. **The Percentage Method:** The price elasticity of demand is measured by its coefficient

   (Ep). This coefficient (Ep) measures the percentage change in the quantity of a commodity demanded resulting from a given percentage change in its price. Thus

$$E_p = \frac{\%change\ in\ q}{\%change\ in\ p} = \frac{\Delta q / q}{\Delta p / p} = \frac{\Delta q}{\Delta p} \times \frac{p}{q}$$

Notes

Where q refers to quantity demanded, p to price and A to change. If Ep> 1, demand is elastic. If Ep <1 demand is inelastic, and if Ep =1, demand is unitary elastic. With this formula, we can compute price elasticities of demand on the basis of a demand schedule.

2. **The Point Method:** Prof. Marshall devised a geometrical method for measuring elasticity at a point on the demand curve. Let RS be a straight line demand curve in Figure. 2. If the price falls from PB (= OA) to MD (= OC), the quantity demanded increases from OB to OD.

   Elasticity at point P on the RS demand curve according to the formula is:

   $EP= \Delta q/\Delta p \times p/q$

   Where Δq represents change in quantity demanded Δp changes in price level while p and q are initial price and quantity levels.

3. **The Arc method:** We have studied the measure-ment of elasticity at a point on a demand curve. But when elasticity is measured between two points on the same de-mand curve, it is known as arc elasticity. In the words of Prof. Baumol, "Arc elasticity is a measure of the average responsiveness to price change exhibited by a demand curve over some finite stretch of the curve."

4. **The Total Outlay Method:** Marshall evolved the total outlay, or total revenue or total ex-penditure method as a measure of elasticity. By comparing the total expenditure of a purchaser both before and after the change in price, it can be known whether his demand for a good is elastic, unity or less elastic.

   (i) ***Elastic Demand:*** Demand is elastic, when with the fall in price the total expenditure increases and with the rise in price the total expenditure decreases. Table.3 shows that when the price falls from Rs. 9 to Rs. 8, the total expenditure increases from Rs. 18 to Rs. 24 and when price rises from Rs. 7 to Rs. 8, the total expenditure falls from Rs. 28 to Rs. 24. Demand is elastic (Ep>1) in this case.

   (ii) ***Unitary Elastic Demand:*** When with the fall or rise in price, the total expenditure remains unchanged, the elasticity of demand is unity. This is shown in the table when with the fall in price from Rs. 6 to Rs. 5 or with the rise in price from Rs. 4 to Rs. 5, the total expenditure remains unchanged at Rs. 30, i.e., Ep =1.

   (iii) ***Less Elastic Demand:*** Demand is less elastic if with the fall in price, the total expenditure falls and with the rise in price the total expenditure rises. In Table 3 when the price falls from Rs. 3 to Rs. 2, total expenditure falls from Rs. 24 to Rs 18, and when the price rises from Re. 1 to Rs. 2, the total expenditure also rises from Rs. 10 to Rs. 18. This is the case of inelastic or less elastic demand, Ep< 1.

Factors Affecting Price Elasticity of Demand

Elasticity of demand for any commodity is determined or influenced by a number of factors which are discussed as under:

1. **Nature of the Commodity:** The elasticity of demand for any commodity depends upon the category to which it belongs, i.e., whether it is a necessity, comfort, or luxury. The demand for necessaries of life or conventional necessaries is generally less elastic. For example, the demand for necessaries like food, salt, matches, etc. does not change much with rise or fall in their prices. Similar is the case with commodities which are required at the time of marriage, death ceremonies, etc.

   The demand for necessaries of efficiency (such as milk, eggs, butter, etc.), and for comforts is moderately elastic because with the rise or fall in their prices, the demand for them decreases or increases moderately. On the other hand, the demand for luxuries is more elastic because with a small change in their prices there is a large change in their demand. But the demand for prestige goods, like jewels, rare coins, rare stamps, paintings by Tagore or Picasso, etc. is inelastic

Notes

because they possess unique utility for the buyers who are prepared to buy them at all costs.

2. **Substitutes:** Commodities having substitutes have more elastic demand because with the change in the price of one commodity, the demand for its substitute is immediately affected. For example, if the price of coffee rises, the demand for coffee will decrease and that for tea will increase, and vice versa. But the demand for commodities having no good substitutes is inelastic.
3. **Variety of Uses:** The demand for a commodity having composite demand or variety of uses is more elastic. Such commodities are coal, milk, steel, electricity, etc. For example, coal is used for cooking and heating, for power generation, in factories, in locomotives, etc. If there is a slight fall in the price of coal, its demand will increase from all quarters.

   On the other hand, a rise in its price will bring a considerable decrease in demand in less important uses (domestic) and in more important uses efforts will also be made to economies its use, as in railways and factories. Thus the overall effect will be a reduction in demand. A commodity which cannot be put to more than one use, has less elastic demand.
4. **Joint Demand:** There are certain commodities which are jointly demanded, such as car and petrol, pen and ink, bread and jam, etc. The elasticity of demand of the second commodity depends upon the elasticity of demand of the major commodity. If the demand for cars is less elastic, the demand for petrol will also be less elastic. On the other hand, if the demand for, say, bread is elastic the demand for jam will also be elastic.
5. **Deferred Consumption:** Commodities whose consumption can be deferred have an elastic demand. This is the case with durable consumer goods, like cloth, bicycle, fan, etc. If the price of any of these articles rises, people will postpone their consumption. As a result, their demand will decrease, and vice versa.
6. **Habits:** People who are habituated to the consumption of a particular commodity, like coffee, tea or cigarette of a particular brand, the demand for it will be inelastic. We find that the prices of coffee, tea and cigarettes increase almost every year but there has been little effect on their demand because people are in the habit of consuming them.
7. **Income Groups:** The elasticity of demand also depends on the income group to which a person belongs. Persons who belong to the higher income group, their demand for commodities is less elastic. It is immaterial to a rich man whether the price of a commodity has fallen or risen, and hence his demand for the commodity will be unaffected.

   On the other hand, the demand of persons in lower income groups is generally elastic. A rise or fall in the prices of commodities will reduce or increase the demand on their part. But this does not apply in the case of necessities, the demand for which on the part of the poor is less elastic.
8. **Proportion of Income Spent:** If the consumer spends a small proportion of his income on a commodity at a time, the demand for that commodity is less elastic because he does not bother much about small expenditure. Such commodities are shoe polish, pen, pencil, thread, needle, etc. But commodities which entail a large proportion of the income of the consumer, the demand of them is elastic, such as bicycle, watch, etc.
9. **Level of Prices:** The level of prices also influences the elasticity of demand for commodities when the price level is high, the demand for commodities is elastic, and when the price level is low, and the demand is less elastic.
10. **Time Factor:** Time factor plays an important role in influencing the elasticity of demand for commodities. The shorter the time in which the consumer buys a commodity, the lesser will be the elasticity of demand tor that product. On the other hand, the longer the time which the consumer takes in buying a commodity, the higher will be the elasticity of demand for that product.

Notes

Prof. Stigler mentions three possible reasons for the long-period elasticity being higher than the short-period elastic-ity. In the long run, the consumer has a better knowledge of the price changes, takes time to readjust his budget, and might change his consumption pattern due to possible technological changes.

11. **Brand:** The price of demand for a given brand of product may be elastic. If its price increases, people turn towards the other brands easily. This is substitution effect For example, if the price of the Hero bicycle increases, the consumer will buy the Atlas bicycle.
12. **Recurring Demand:** Goods which have recurring demand, their prices are more elastic than the goods which are not demanded time and again.
13. **Distribution of Income:** If a country has equal distribution of income and wealth, the demand for majority of goods is elastic because there are more middle class people whose purchasing power is almost equal.

The concept of income elasticity of demand (Ey) expresses the responsiveness of a consumer's demand (or expenditure or consumption) for any good to the change in his income. It may be defined as the ratio of percentage change in the quantity demanded commodity to the percentage change in income. Thus

Ey = Percentage change in quantity demanded / Percentage change in income

$= \Delta Q/Q \,/\, \Delta Y/Y = \Delta Q/Q \times Y/\Delta Y = \Delta Q/\Delta Y \times Y/Q$

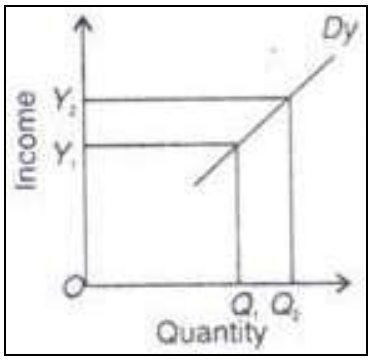
Where $\Delta$is change, Q quantity demanded and Y is income.

The coefficient E may be positive, negative or zero depending upon the nature of a commodity. If an increase in income leads to an increased demand for a commodity, the income elasticity coefficient (Ey) is positive. A commodity whose income elasticity is positive is a normal good because more of it is purchased as the consumer's income increases.

On the other hand, if an increase in income leads to a fall in the demand for a commodity, its income elasticity coefficient (Ey) is negative. Such a commod-ity is called inferior good because less of it is purchased as income increases. If the quantity of a commodity purchased remains unchanged regardless of the change in income, the income elasticity of demand is zero (Ey =0).

Normal goods are of three types

Necessaries, luxuries and comforts. In the case of luxuries, the coefficient of income elasticity is posi-tive but high, Ey >1. Income elasticity of demand is high when the demand for a commodity rises more than proportionate to the increase in income. Assuming prices of all other goods as constant, if the income of the consumer increases by 5% and as a result his purchases of the com-modity increase by 10%, then Ey = 10/5 = 2(>1). Taking income on the vertical axis and the quantity demanded on the horizontal axis, the increase in demand Q1 income Q2 in more than the rise in income Y1, Y2.The curve Dy shows a positive and elastic income demand.



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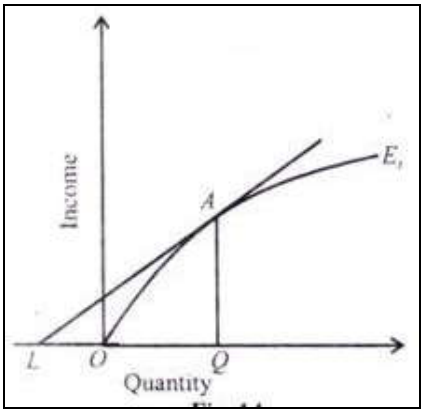
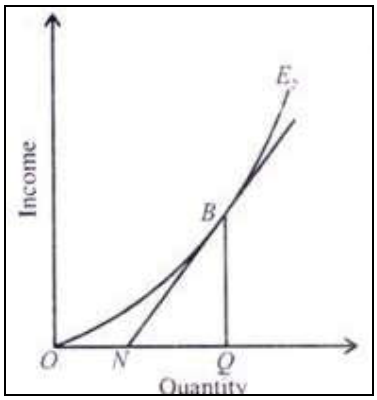
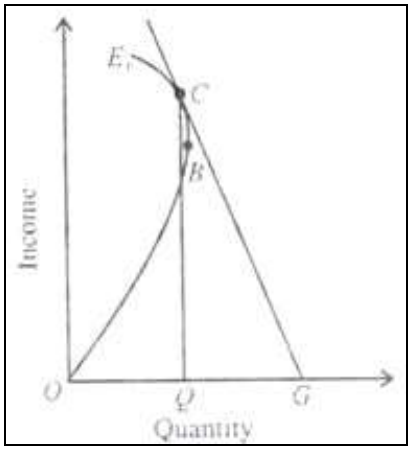
In the case of necessities, the coefficient of income elasticity is posi-tive but low, Ey <1. Income elasticity of demand is low when the demand for a commodity rises less than proportionate to the rise in the income. If the proportion of income spent on a commodity increases by 2% when the consumer's income goes up by 5%, Ey = 2/5(<1) Figure shows a positive but inelastic income demand curve Dy because the increase in demand Q1 Q2 is less than proportionate to the rise in income Y1 Y2.

Measuring Income Elasticity of Demand: The Engel Curve

Each Dy curve expresses the income-quantity relationship. Such a curve is known as an Engel curve which shows the quantities of a commodity which a con-sumer would buy at various levels of income. In Figure, we have explained income elasticity of demand with the help of linear Engle curves. Income elasticity in terms of non-linear Engel curves can be measured with the point formula. In general, the Engel curves look like the curves E1 E2 and E3, as shown in Figures:







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Determinants of Income Elasticity of Demand

There are certain factors which determine the income elasticity of demand:

1. **The Nature of Commodity:** Commodities are generally grouped into necessities, comforts and luxuries. We have seen above that in the case of necessities, Ey <1, in the case of comforts, Ey = 1, and in the case of luxuries, Ey > 1.
2. **Income Level:** This grouping of commodities depends upon the income level of a country. A car may be a necessity in a high-income country and a luxury in a poor low-income country.
3. **Time Period:** Income elasticity of demand depends on the time period. Over the long-run, the consumption patterns of the people may change with changes in income with the result that a luxury today may become a necessity after the lapse of a few years.
4. **Demonstration Effect:** The demonstration effect also plays an important role in changing the tastes, preferences and choices of the people and hence the income elasticity of demand for different types of goods.
5. **Frequency:** The frequency of increase in income also determines income elasticity of demand for goods. If the frequency is greater, income elasticity will be high because there will be a general tendency to buy comforts and luxuries.

Use of Income Elasticity in Business Decisions

The income elasticity of a product has great significance in long-term planning and in the solution of strategic problems, particularly during trade cycles:

1. **Planning of the Firm's Growth:** The knowledge of income elasticity of demand is very important for both the firms and the government. Firms whose demand function is income elastic, the scope of their growth is generally wide in an expanding economy but they are very insecure during recession. So such firms must consider their all economic activities and their potential growth rate in future.

   On the contrary, firms whose products are less income elastic, they will neither obtain more profit with the expansion of the economy nor will they incur specific loss during recession in the economy. Such firms consider it necessary to bring variety in different products or in a different industry.

   For example, agricultural products are less income elastic while industrial products are income elastic. Moreover, since the coefficient of income elasticity of inferior goods is negative, the sale of such products will decline with economic growth.
2. **In Formulation of Farm Policy:** Farmers' products are less income elastic because they cannot generally bring variety in their products like income elastic products. Hence, in the coming years the danger of such agricultural problems is likely to remain particularly in developing countries. Therefore, the Government of India has considered it necessary to continue and increase various agricultural subsidies.
3. **In Forecasting Demands:** The concept of income elasticity can be used in forecasting future demand provided the firm knows the growth rate of income and income elasticity of demand for the good. It is often believed that the demand for goods and services increases with the rise in GNP that depends on the marginal propensity to consume.

   But it may be proved true in the context of aggregate national demand while it is not necessary to be true for a particular good. For this, the income of the related income class should be used. It is also useful for avoiding the problem of overproduction or under-production.
4. **In Formulating Marketing Strategies:** The income elasticity of demand of potential buyer class for products affects the number, nature and location of sales centers, nature and level of advertis-ing and the policies related to other sales promotion activities. For instance, the sales centers of ice creams will be located in

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the prosperous town areas where the people have sufficient income and their incomes are likely to increase sufficiently in future. Here, the expected rise in demand in the context of increased income has been discussed. But this rise will be compensated in more or less quantity by the expected fall in demand with the increase in price.

5. **Advertising or Promotional Elasticity of Demand:** In the modem competitive or partial competitive market economy, advertising has a great signifi-cance. Under advertising, various visible or verbal activities are done by the firm for the purpose of creating or increasing demand for its goods or services. Informative advertising is very helpful for the consumer in making rational purchase decisions.

   But the extension of demand through advertising can be measured by advertising or promotional elasticity of demand (EA) which measures the expected changes in demand as a result of change in other promotional expenses. The demand for some goods is affected more by advertising such as the demand for cosmetics. Following is the formula for advertising elasticity,

   $Ex = \Delta Q / \Delta Q \times a/Q$

   Where, Q = quantity sold of good X; A = units of advertising expenses on good X; ΔQ = change in quantity sold of good X; andΔ A = change in advertising expenses on good X.

   The elasticity of demand for a good should be positive because there is the possibility of extension of demand and market for the good with advertising expenditure. The higher the value of this elasticity, the greater will be the inducement of the firm to advertise that product. It is on the basis of advertising elasticity that a firm decides how much to spend on advertising a product.

Factors Influencing Advertising Elasticity of Demand

The main factors influencing advertising elasticity are as follows:

1. **Stage of Product's Development:** The advertising elasticity of demand for a product may vary with different levels of sales of the same product. It is different for new and established products.
2. **Degree of Competition:** The advertising effect in a competitive market is also determined by the relative effect of advertising by competing firms.
3. **Effects of Advertising in Terms of Time:** The advertising elasticity of demand depends upon the time interval between advertising expenditure and its effect on sales. This depends on general economic environment, selected media and type of the product. This time interval is large for durable goods than for non-durable goods.
4. **Effect of Advertising by Rival Firms:** The advertising elasticity also depends as to how other rival firms advertise in comparison to the advertisement of the firm. This, in turn, depends on the levels of advertisement and advertisements done in the past and present by rival firms.

Importance of Elasticity of Demand in Management

The elasticity of demand is of great importance in managerial decision making. It is more signifi-cant in the following areas:

1. **In the Determination of Output Level:** For making production profitable, it is essential that the quantity of goods and services should be produced corresponding to the demand for that product.

   Since the changes in demand are due to the change in price, the knowledge of elasticity of demand is necessary for determining the output level.

2. **In the Determination of Price:** The elasticity of demand for a product is the basis of its price determination. The ratio in which the demand for a product will fall with the rise in its price and vice versa can be known with the knowledge of elasticity of

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demand. If the demand for a product is inelastic, the producer can charge high price for it, whereas for an elastic demand product he will charge low price. Thus, the knowledge of elasticity of demand is essential for management in order to earn maximum profit.

3. **In Price Discrimination by Monopolist:** Under monopoly discrimination the problem of pricing the same commodity in two different markets also depends on the elasticity of demand in each market. In the market with elastic demand for his commodity, the discriminating monopolist fixes a low price and in the market with less elastic demand, he charges a high price.
4. **In Price Determination of Factors of Production:** The concept of elasticity for demand is of great importance for determining prices of various factors of production. Factors of production are paid according to their elasticity of demand. In other words, if the demand of a factor is inelastic, its price will be high and if it is elastic, its price will be low.
5. **In Demand Forecasting:** The elasticity of demand is the basis of demand forecasting. The knowledge of income elasticity is essential for demand forecasting of producible goods in future. Long-term production planning and management depend more on the income elasticity because management can know the effect of changing income levels on the demand for his product.
6. **In Dumping:** A firm enters foreign markets for dumping his product on the basis of elasticity of demand to face foreign competition.
7. **In the Determination of Prices of Joint Products:** The concept of the elasticity of demand is of much use in the pricing of joint products, like wool and mutton, wheat and straw, cotton and cotton seeds, etc. In such cases, separate cost of production of each product is not known.

   Therefore, the price of each is fixed on the basis of its elasticity of demand. That is why products like wool, wheat and cotton having an inelastic demand are priced very high as compared to their by-products like mutton, straw and cotton seeds which have an elastic demand.
8. **In the Determination of Government Policies:** The knowledge of elasticity of demand is also helpful for the government in determining its policies. Before imposing statutory price control on a product, the government must consider the elasticity of demand for that product. The government decision to declare public utilities those industries whose products have inelastic demand and are in danger of being controlled by monopolist interests depends upon the elasticity of demand for their products.
9. **Helpful in Adopting the Policy of Protection:** The government considers the elasticity of demand of the products of those industries which apply for the grant of a subsidy or protection. Subsidy or protection is given to only those industries whose products have an elastic demand. As a consequence, they are unable to face foreign competition unless their prices are lowered through sub-sidy or by raising the prices of imported goods by imposing heavy duties on them.
10. **In the Determination of Gains from International Trade:** The gains from international trade depend, among others, on the elasticity of demand. A country will gain from international trade if it exports goods with less elasticity of demand and import those goods for which its demand is elastic.

    In the first case, it will be in a position to charge a high price for its products and in the latter case it will be paying less for the goods obtained from the other country. Thus, it gains both ways and shall be able to increase the volume of its exports and imports.

Application of Elasticity in Managerial Decisions

Now we shall consider the application of concepts of elasticity. Economists measure how re-sponsive or sensitive consumers are to change in the price or income or a

change in the price of some other product. Managerial economists measure the degree of elasticity by the elasticity co-efficient.

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Managerial decisions aim at the best alternative. Managerial decisions are of two types: programmed decisions and non-programmed decisions. But the decision making process may be required in four areas of work: location decision, growth decision, financial decision and operating decision. The price- quantity relationship comes under operating decision.

Managerial Decision and Income Elasticity

Income elasticity measures the ratio of percentage change in quantity demanded to percentage change in income. Positive income elasticity suggests a more than proportionate increase in expenditure with an increase in income. If income elasticity is negative it implies that the commodity is inferior.

Among the several income concepts, the most commonly used term is the personal disposable income per head. The other income concepts important for durable goods are that of transitory income i.e., fluctuation in the short run income and discretionary income i.e., that part of the income which is left over after deductions.

Economic development will be closely associated with increase in die sales of quality goods. An efficient businessman is really interested in knowing whether the sale of his goods will lead to economic development. The relationship between demand and income changes is not always positive.

It depends on the permanent change in income. If the income elasticity is greater than one, the sales of his goods will increase more quickly than general economic development. If the income elasticity is greater than zero but less than one, sales of the goods will increase but at a lower rate than economic development.

8.6 Income Elasticity of Demand

Economists can gain a lot of information about different types of goods based on how consumer's demand for different goods increases or decreases in response to a change in the consumer's income. For example, new car retailers may be interested in how the quantity demanded for new cars in a specific area is changing. In a case like this, we can look at consumer's income. If the area is growing, and incomes are increasing, we can assume that more new cars will be demanded. On the other hand, if incomes are decreasing, we can anticipate that more people will buy secondhand automobiles or take public transportation.

Of course, we have to remember that an increase in income does not increase the quantity demanded for all goods; BMWs are very different types of goods than Ramen Noodles. Therefore, by looking at the income elasticity, we can measure the responsiveness of the quantity demanded for a good due to a change in income. We can then classify the good as normal, inferior, luxury, or necessity.

The income elasticity of demand is a measure of the relationship between a change in the quantity demanded for a particular good and a change in real income. Income elasticity of demand is an economics term that refers to the sensitivity of the quantity demanded for a certain product in response to a change in consumer incomes. The formula for calculating income elasticity of demand is:

Income Elasticity of Demand = % change in quantity demanded / % change in income

For example, if the quantity demanded for a good increases for 15% in response to a 10%increase in income, the income elasticity of demand would be 15% / 10% = 1.5. The degree to which the quantity demanded for a good changes in response to a change in income depends on whether the good is a necessity or a luxury.

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Normal goods have a positive income elasticity of demand. As incomes rise, more goods are demanded at each price level. The quantity demanded for normal necessities will increase with income, but at a slower rate than luxury goods.

Inferior goods have a negative income elasticity of demand - the quantity demanded for inferior goods falls as incomes rise. For example, the quantity demanded for generic food items tends to decrease during periods of increased incomes.

Proportionate change in the demand for a good in response to a change in income. It is reflected in how people change their consumption habits with changes in their income levels. In a growing economy (where income levels are rising) goods whose demand is highly income-dependent will sell more than the goods whose demand is not income-dependent. For example, demand for staple food items normally does not increase with higher income levels; but demand for gourmet food or restaurant food does increase as individual's income grows.

Also called income sensitivity of demand, it is mathematically expressed as percent change in quantity demanded ÷ percent change in income.

The income elasticity of demand was demonstrated in the USA in 2008 as consumers tightened and controlled their spending extensively.

Many retail stores use the income elasticity of demand to help gauge how much product to order for holiday seasons because they know that if household income is on the rise, the potential for sales also increases proportionately.

You should always know how the income elasticity of demand will have a long lasting effect on your product and business.

Normal goods

When the equation gives a positive result, the good is a normal good. A normal good is one where demand is directly proportional to income. For example, if, following an increase in income from £40,000 to £50,000, an individual consumer buys 40 DVD films per year, instead of 20, then the coefficient is:

+100/+25

= (+) 4.0

The positive sign means that the good is a normal good, and because the coefficient is greater than one, demand for the good responds more than proportionately to a change in income. This indicates the good is not a necessity like food, and would be considered a relative luxury for this individual.

Normal necessities have an income elasticity of demand of between 0 and +1 for example, if income increases by 10% and the demand for fresh fruit increases by 4% then the income elasticity is +0.4. Demand is rising less than proportionately to income.

Luxury goods and services have an income elasticity of demand > +1 i.e. demand rises more than proportionate to a change in income – for example a 8% increase in income might lead to a 10% rise in the demand for new kitchens. The income elasticity of demand in this example is +1.25.

Inferior goods

When YED is negative, the good is classified as inferior. For example, if, following an increase in income from £40,000 to £50,000, a consumer buys 180 loaves of bread per year instead of 200, then the YED is:

-10/+25

= (-) 0.4

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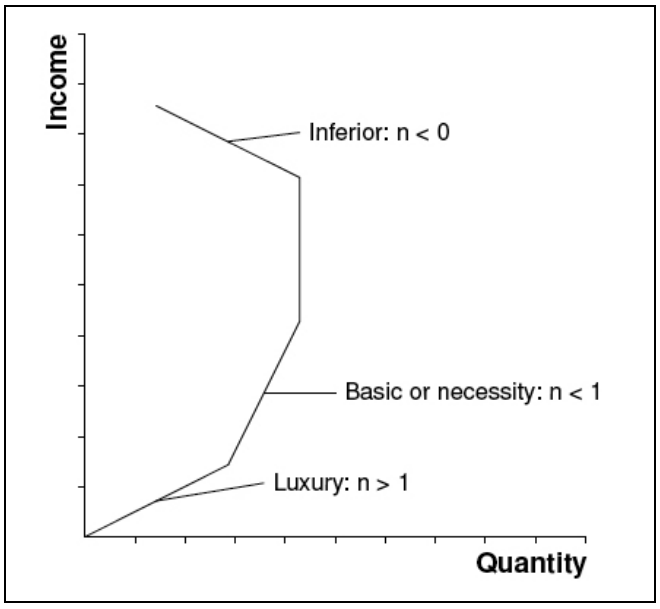
The negative sign means that the good is inferior, and, because the coefficient is less than one, demand for the good does not respond significantly to a change in income. This indicates that the good is not particularly inferior compared with a good which has a YED of > (-) 1.

The sign and the number provide different information about the relationship between income and demand. Income elasticity of demand can also be illustrated by Engel curves.

Inferior goods have a negative income elasticity of demand meaning that demand falls as income rises. Typically inferior goods or services exist where superior goods are available if the consumer has the money to be able to buy it. Examples include the demand for cigarettes, low-priced own label foods in supermarkets and the demand for council-owned properties.



High income elasticity of demand (YED>1): An increase in income is accompanied by a proportionally larger increase in quantity demanded. This is typical of a luxury or superior good.

Unitary income elasticity of demand (YED=1): An increase in income is accompanied by a proportional increase in quantity demanded.

Low income elasticity of demand (YED<1): An increase in income is accompanied by less than a proportional increase in quantity demanded. This is characteristic of a necessary good.

Zero income elasticity of demand (YED=0): A change in income has no effect on the quantity bought. These are called sticky goods.

Negative income elasticity of demand (YED<0): An increase in income is accompanied by a decrease in the quantity demanded. This is an inferior good (all other goods are normal goods). The consumer may be selecting more luxurious substitutes as a result of the increase in income.

The income elasticity of demand is usually strongly positive for:

1. Fine wines and spirits, high quality chocolates and luxury holidays overseas.
2. Sports cars
3. Consumer durables - audio visual equipment, smart-phones
4. Sports and leisure facilities (including gym membership and exclusive sports clubs).

In contrast, income elasticity of demand is lower for:

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1. Staple food products such as bread, vegetables and frozen foods.
2. Mass transport (bus and rail).
3. Beer and takeaway pizza!
4. Income elasticity of demand is negative (inferior) for cigarettes and urban bus services.

How do businesses make use of estimates of income elasticity of demand?

Knowledge of income elasticity of demand helps firms predict the effect of an economic cycle on sales. Luxury products with high income elasticity see greater sales volatility over the business cycle than necessities where demand from consumers is less sensitive to changes in the cycle.

Income elasticity and the pattern of consumer demand

As we become better off, we can afford to increase our spending on different goods and services. The income elasticity of demand will also affect the pattern of demand over time.

1. For normal luxury goods - income elasticity of demand exceeds +1, so as incomes rise, the proportion of a consumer's income spent on that product will go up.
2. For normal necessities (income elasticity of demand is positive but less than 1) and for inferior goods (where the income elasticity of demand is negative) – then as income rises, the share or proportion of their budget on these products will fall
3. For inferior goods as income rise, demand will decline and so too will the share of income spent on inferior products.

8.7 Summary

Demand curve is a graphical representation of demand schedule. It is the locus of all the points showing various quantities of a commodity that a consumer is willing to buy at various levels of price, during a given period of time, assuming no change in other factors.

1. It shows the inverse relationship between the quantities demanded of a commodity with its price, keeping other factor constant.
2. It can be drawn for any commodity by plotting each combination of demand schedule on a graph.
3. Like demand schedules, demand curves can also be drawn both for individual buyers and for the entire market. So, demand curve is of two types:
   (a) Individual Demand Curve
   (b) Market Demand Curve

Individual demand curve refers to a graphical representation of individual demand schedule.

Market demand curve refers to a graphical representation of market demand schedule. It is obtained by horizontal summation of individual demand curves.

The individual demand curve for a good, service, or commodity, is defined with the following in the background:

1. The specific good, service, or commodity.
2. A unit for measuring the quantity of that commodity.
3. A unit for measuring price.
4. A convention on whether sales taxes are included in the stated price.
5. A certain economic actor (individual, household, or firm -- profit-making, nonprofit, or governmental)

6. A time frame within which the demand is measured.
7. An economic backdrop that includes all the determinants of demand other than the unit price of that commodity.

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The demand curve is a curve drawn with:

1. The vertical axis is the price axis, measuring the price per unit of the commodity.
2. The horizontal axis is the quantity axis, measuring the quantity of the commodity demanded by the specific economic actor.

Here quantity demanded is understood to be the maximum quantity that the economic actor would be ready, willing, and able to purchase at the given price.

Note that the individual demand curve makes sense only ceteris paribus -- all other determinants of demand being kept constant.

The term individual demand is used for the entire price-quantity relationship depicted pictorially by the demand curve. Explicitly, the individual demand function refers to the function that outputs, at any given price, the quantity demanded at that price. A demand schedule is a discrete version of the demand curve, specifying demand values for a number of different prices.

One way of interpreting demand is as desire. Here, demand refers to what buyers want. This type of demand can exist even if the good does not exist at all, and even if the potential buyer does not have a clear idea of what the good would look like. This is the type of demand that is referred to when an entrepreneur identifies an as yet untapped market and claims that there is a "demand" for a certain good or service that does not yet exist. This type of demand as desire does not correspond to an individual demand curve.

The second interpretation of demand is the more concrete one -- quantity demanded is understood to be the maximum quantity that the economic actor would be willing and able to purchase at the given price. The individual demand curve simply plots the relationship between price and quantity demanded.

A related distinction is that between effective demand and notional demand. This is closely connected with Say's law.

The market demand curve for a good within a given market is obtained by adding up the individual demand curves of all economic actors in that market.

A lot of interesting and quirky phenomena may be obtained at the level of individual demand curves but may become less visible (due to smoothing and averaging out) at the aggregate level because of the canceling out or smoothing out effects. Some examples are discussed below:

1. For items where purchase quantities are discrete, individual demand curves are by nature discontinuous, while aggregate demand curves are likely to be continuous given sufficient heterogeneity among individuals. Note that individual demand quantities could be fractional even with discrete purchase quantities -- for instance, my weekly number of loaves of bread purchased could be if I purchase a loaf of bread every second day.
2. Individual demand curves are more likely to exhibit sharp discontinuities for other reasons: Individuals may use threshold prices and reference prices to determine which item to purchase and how much. For instance, if, for me, and are equivalent goods (i.e., they are perfect substitute goods for each other, then I buy none of when its price exceeds that of , but I shift my entire consumption to when its price drops below that of . The price of is thus a point of discontinuity in the demand curve. In the aggregate, the heterogeneity of individuals ensures that they do not all perceive the same pairs of goods as perfect substitutes, and hence these jumps are less likely to occur.

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3. Various violations of the law of demand, both rational and irrational, are more likely to be seen at the individual level than at the aggregate level: For instance, the Giffen good phenomenon and the Veblen good phenomenon may play an important role in the consumption behavior of one individual or household, but because of differing incomes and differing tastes and preferences that lead individuals to value substitutes differently, the phenomena would not apply to all economic actors. Since an aggregate Giffen good phenomenon depends on the phenomenon affecting a large number of individuals, aggregate Giffen good phenomena may be much rarer than individual Giffen good phenomena. The same holds for various forms of mild irrationality and idiosyncratic behavior.

8.8 Check Your Progress

Multiple Choice Questions

1. How many types of demand curve are there:
   (a) One
   (b) Two
   (c) three
   (d) four
2. The negative sign means that the good is:
   (a) normal
   (b) Superior
   (c) inferior
   (d) None of these
3. The positive sign means that the good is:
   (a) normal
   (b) Superior
   (c) inferior
   (d) None of these
4. Normal goods have a _____ income elasticity of demand:
   (a) positive
   (b) Negative
   (c) Both a and b
   (d) Neither a nor b
5. Inferior goods have a _____ income elasticity of demand:
   (a) positive
   (b) Negative
   (c) both a and b
   (d) Neither a nor b
6. Among which of the following demand measures the responsiveness of demand to changes in price for a particular good:
   (a) Price elasticity
   (b) Income elasticity
   (c) Demand analysis
   (d) all of these
7. Which demand is the demand of one individual or firm:
   (a) Market

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(b) Individual
(c) Both a and b
(d) Neither a nor b

8. Which of the following is a graphical representation of demand schedule:
   (a) Demand curve
   (b) Price elasticity
   (c) Income elasticity
   (d) None of these
9. The quantity demanded for inferior goods _____ as incomes rise:
   (a) Rise
   (b) Falls
   (c) Stable
   (d) Fluctuates
10. more goods are demanded at each price level, when income:
   (a) Rises
   (b) Decreases
   (c) Both a and b
   (d) Neither a nor b

8.9 Questions and Exercises

1. Define demand curve.
2. Define individual demand.
3. What is Market demand?
4. Explain price elasticity of demand.
5. Explain income elasticity.
6. What are normal goods?
7. Briefly explain inferior goods.
8. What is the difference between normal and inferior goods?
9. Difference between individual and market demand.
10. What is the elasticity of inferior goods?

8.10 Key Terms

- **Demand:** In economics, demand is the utility for a good or service of an economic agent, relative to his/her income. [citation needed] (Note: This distinguishes "demand" from "quantity demanded", where demand is a listing or graphing of quantity demanded at each possible price.
- **Supply:** In economics, supply is the amount of something that firms, consumers, laborers, providers of financial assets, or other economic agents are willing to provide to the marketplace.
- **Inferior goods:** In economics, an inferior good is a good that decreases in demand when consumer income rises (or rises in demand when consumer income decreases), unlike normal goods, for which the opposite is observed. Normal goods are those for which consumers' demand increases when their income increases.
- **Superior goods:** Superior goods make up a larger proportion of consumption as income rises, and therefore are a type of normal goods in consumer theory. Such a good must possess two economic characteristics: it must be scarce, and, along with that, it must have a high price.

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- **Elasticity:** Elasticity is a measure of a variable's sensitivity to a change in another variable. In economics, elasticity refers the degree to which individuals (consumers/producers) change their demand/amount supplied in response to price or income changes.
- **Demand Elasticity:** Demand elasticity is a measure of how much the quantity demanded will change if another factor changes. One example is the price elasticity of demand; this measures how the quantity demanded changes with price.
- **Market Demand:** In economics, a market demand schedule is a table that lists the quantity of a good all consumers in a market will buy at every different price. A market demand schedule for a product indicates that there is an inverse relationship between price and quantity demanded.
- **Annual percentage yield (APY):** A percentage by which an investment grows over one year. Unlike APR, APY indicates the affect of the compounding periods. APY will be larger than APR any time interest is compounded more frequently than once a year.
- **Business Cycle Frequency:** The business cycle frequency is often considered to be three to five periods.
- **Consumers' willingness and ability to spend:** The maximum amount that consumers say they will spend and/or actually spend for a certain quantity of goods or services.
- **Costs and Efficiency:** A cost is a foregone opportunity. Comparative advantage is the ability to perform a given task at a lower cost. An individual/country is said to be more efficient if it has a comparative advantage in the production of some good. In other words it is said to be more efficient.

Check Your Progress: Answers

1. b, 2. c, 3. a, 4. a, 5. b, 6. a, 7. b, 8. a, 9. b, 10. a.

8.11 Further Readings

- *Basic Economics*, Thomas Sowell – 2014.
- *Ecological Economics, Second Edition*: Principles and Herman E. Daly, Joshua Farley – 2011.
- *Handbook of Regional and Urban Economics: Regional economics*, Peter Nijkamp – 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- *Economics: The User's Guide: A Pelican Introduction*, Ha-Joon Chang – 2014.

Unit 9: Production and Cost Analysis

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Structure

Objectives

After studying this unit, you should be able to understand:

- The concept of Production and cost analysis
- The Production function, ridge lines and expansion path
- The concept of Law of variable proportion
- Different Types of costs
- The concept of Short-run and long-run costs

9.1 Introduction

Cost–benefit analysis (CBA), sometimes called benefit–cost analysis (BCA), is a systematic approach to estimating the strengths and weaknesses of alternatives that satisfy transactions, activities or functional requirements for a business.

Production processes can be studied empirically in terms of either production functions or cost functions. Estimates of the parameters of these functions provide valuable insights into the technology of firms and industries. The central questions relating to technology are:

1. Whether production processes display decreasing, constant, or increasing returns to scale;
2. How technological progress affects the parameters of production processes; and
3. At what rate technological progress has occurred.

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Estimation and interpretation of the estimates is complicated by the fact that observations on inputs, outputs, and costs reflect not only the state of technology but also the economic decisions made by producers and factor suppliers.

Assumptions regarding economic behavior and competition in input and output markets often play a crucial role in the statistical analyses, and it is not always easy to determine whether the results reveal the nature of technology or serve instead to test the validity of the economic assumptions.

9.2 Production Function

In economics, a production function relates physical output of a production process to physical inputs or factors of production. The production function is one of the key concepts of mainstream neoclassical theories, used to define marginal product and to distinguish allocative efficiency, the defining focus of economics. The primary purpose of the production function is to address allocative efficiency in the use of factor inputs in production and the resulting distribution of income to those factors, while abstracting away from the technological problems of achieving technical efficiency, as an engineer or professional manager might understand it.

In macroeconomics, aggregate production functions are estimated to create a framework in which to distinguish how much of economic growth to attribute to changes in factor allocation (e.g. the accumulation of capital) and how much to attribute to advancing technology. Some non-mainstream economists, however, reject the very concept of an aggregate production function. The production function for a business typically focuses on the physical and so does not take into account non physical aspects of production like prices.

The production function is a mathematical and sometimes graphical way to measure the efficiency of production by considering the relationships between two or more variables, meaning two or more factors that are relevant when producing a good or service, such as raw materials and labor. Once the business has determined the factors for production, they can then begin building the production function.

The basic production function is

$Q = f' (K, L)$.

Where,

Q = output, or the amount of goods or services produced,

f is shorthand meaning function,

K = capital or fixed resources (meaning they do not change) and

L = labor, referring to the human resources a business uses to produce its good or service. Labor can be variable, meaning it is a factor that can be changed by the business (by hiring more people).

The actual formula used to calculate production could be any variety of the following:

$Q = KL$ (Output = Capital times Labor)

$Q = K + L$ (Output = Capital plus Labor)

Or output could just be a function of the variable factor so $Q = L$ (Output = Labor).

Once the function is calculated it can then be graphed and a company can see where its inefficiencies are and how much the variables can or should be changed to maximize output in relation to the raw materials.

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Use/ Implications of Production Function

- Firms use the production function to determine how much output they should produce given the price of a good, and what combination of inputs they should use to produce given the price of capital and labor. When firms are deciding how much to produce they typically find that at high levels of production, their marginal costs begin increasing. This is also known as diminishing returns to scale - increasing the quantity of inputs creates a less-than-proportional increase in the quantity of output. If it weren't for diminishing returns to scale, supply could expand without limits without increasing the price of a good.
- Increasing marginal costs can be identified using the production function. If a firm has a production function Q=F (K, L) (that is, the quantity of output (Q) is some function of capital (K) and labor (L)), then if 2Q<F (2K, 2L), the production function has increasing marginal costs and diminishing returns to scale. Similarly, if 2Q>F (2K, 2L), there are increasing returns to scale, and if 2Q=F (2K, 2L), there are constant returns to scale.
- A production function shows the relationship between inputs of capital and labor and other factors and the outputs of goods and services.

Examples of Common Production Functions

One very simple example of a production function might be

Q=K+L, where

Q is the quantity of output,

K is the amount of capital, and

L is the amount of labor used in production. This production function says that a firm can produce one unit of output for every unit of capital or labor it employs. From this production function we can see that this industry has constant returns to scale - that is, the amount of output will increase proportionally to any increase in the amount of inputs.

Another common production function is the Cobb-Douglas production function. One example of this type of function is Q=K0.5L0.5. This describes a firm that requires the least total number of inputs when the combination of inputs is relatively equal. For example, the firm could produce 25 units of output by using 25 units of capital and 25 of labor, or it could produce the same 25 units of output with 125 units of labor and only one unit of capital.

Finally, the Leontief production function applies to situations in which inputs must be used in fixed proportions; starting from those proportions, if usage of one input is increased without another being increased, output will not change. This production function is given by Q=Min (K, L). For example, a firm with five employees will produce five units of output as long as it has at least five units of capital.

The production function simply states the quantity of output (q) that a firm can produce as a function of the quantity of inputs to production, or. There can be a number of different inputs to production, i.e. "factors of production," but they are generally designated as either capital or labor. (Technically, land is a third category of factors of production, but it's not generally included in the production function except in the context of a land-intensive business.) The particular functional form of the production function (i.e. the specific definition of f) depends on the specific technology and production processes that a firm uses.

In the short run, the amount of capital that a factory uses is generally thought to be fixed. (The reasoning is that firms must commit to a particular size of factory, office, etc. and can't easily change these decisions without a long planning period.) Therefore, the quantity of labor (L) is the only input in the short-run production function. In the long run, on the other hand, a firm has the planning horizon necessary to change not only the number of workers but the amount of capital as well, since it can move to a different

Notes

size factory, office, etc. Therefore, the long-run production function has two inputs that be changed- capital (K) and labor (L). Both cases are shown in the diagram above.

Note that the quantity of labor can take on a number of different units- worker-hours, worker-days, etc. The amount of capital is somewhat ambiguous in terms of units, since not all capital is equivalent, and no one wants to count a hammer the same as a forklift, for example. Therefore, the units that are appropriate for the quantity of capital will depend on the specific business and production function.

Production function, in economics, equation that expresses the relationship between the quantities of productive factors (such as labour and capital) used and the amount of product obtained. It states the amount of product that can be obtained from every combination of factors, assuming that the most efficient available methods of production are used.

The production function can thus answer a variety of questions. It can, for example, measure the marginal productivity of a particular factor of production (i.e., the change in output from one additional unit of that factor). It can also be used to determine the cheapest combination of productive factors that can be used to produce a given output.

In macroeconomics, the output of interest is Gross Domestic Product or GDP

The simplest possible production function is a linear production function with labor alone as an input.

For example, if one worker can produce 500 pizzas in a day (or other given time period) the production function would be

Q = 500 L

It would graph as a straight line: one worker would produce 500 pizzas, two workers would produce 1000, and so on.

A linear production function is sometimes a useful, if very rough approximation of a production process -- for example, if we know that wages are $ 1000 a day, we know that the price of a pizza must be at least $ 2 to cover the labor cost of production.

We also note that the 500 represents labor productivity, and if the number increases to 600, it means that labor productivity has increased to 600 pizzas a day.

However, more realistic production functions must incorporate diminishing returns to labor or to any other single factor of production. This may be done simply enough: replace the production function

Q = 500 L

With the production function

Q = 500 L a

Where a is any fraction, and you will have a production function which shows the curvature characteristic of diminishing returns.

For example, if we choose a = 0.5, so that we are taking the square root of L, we could compute the following relationships:

Labor	Output Marginal	Product of Labor
100	5,000	50
200	7,071	20.71
300	8,660	15.89
400	10,000	13.40
500	11,180	11.80

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Note that the final column, marginal product of labor, shows how much additional output is due to the addition of one more worker, that is, it is given by

Change in output / change in labor and the change in labor is 100 at each level.

Multifactor production functions

One further step toward reality is to incorporate capital as well as labor as a factor of production. The generalization to a multifactor production function is straightforward:

Q = 50 K a L b

Note that if we had 100 units of capital, and a and b both were equal to 0.5, this production function would be exactly the same as the previous one. Substituting 100 in for K, we would have

Q = 50 (100) 0. 5 L .5 = 500 L .5

Both capital and labor show diminishing returns to increasing any single factor of production, but they may show (and do in this example) constant returns to scale . That is, if you double both capital and labor you will double output. This does not contradict the "law of diminishing returns," which applies only to increasing a single factor of production.

When we increase all factors of production, we speak of a change in the scale of operations, and we may have:

Increasing returns to scale, if the exponents a and b on capital and labor add up to more than one

Constant returns to scale, if the exponents a and b add up to exactly one

Diminishing returns to scale, if the exponents a and b add up to less than one

As an exercise, fill in the following table, using the production function

Q = 100 K 0.5 L 0.5

LABOR CAPITAL	100	200	300	400	500
100	----	----	----	----	----
200	----	----	----	----	----
300	----	----	----	----	----
400	----	----	----	----	----
500	----	----	----	----	----

Q = 100 K 0.3 L 0.8

The fundamental productive organization is the firm, which enters into contractual arrangements in buying, transforming, and selling goods and services. The production set of a firm describes at a given time the possible relationships between inputs and outputs. For the single-product firm, the production function describes the maximum output that can be produced from given quantities of inputs. Let X denote output in physical homogeneous units, and let L and K denote two inputs—labor and capital—in homogeneous units; then the production function is Xmax = f(K,L), or simply X = f(K,L). The numbers X, K, and L can take on positive or zero values only, and for a given technology the function is normally specified as unvalued.

An important practical distinction in statistical studies is between the ex ante (or planning) production or cost function and the ex post (or realized) function. Decisions about the type and scale of plant are made years before the plant is completed.

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Expectations, formed in previous years, about prices and output levels determine the quantity and character of new capital employed in the current period. The ex post function is the realized relationship and is the one that is normally measured in practice. If all plans and expectations are perfectly realized, the ex ante and ex post functions are equivalent.

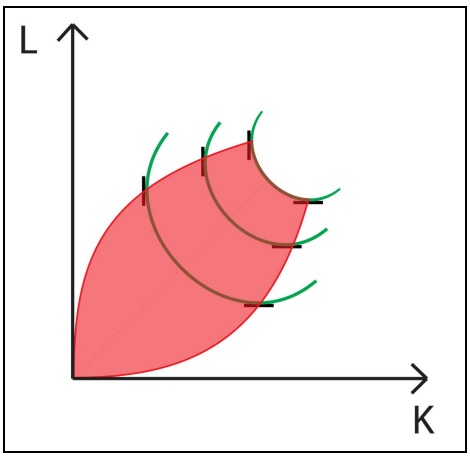
Functional forms. The most popular form of the production function for statistical testing is the Cobb–Douglas function (Cobb & Douglas 1928), i.e.

$X = AK\alpha L\beta$, $A, \alpha, \beta \geq 0$,

Where α and β are elasticities of output with respect to capital and labor. Assuming perfect competition in the markets for output and for factors of production, with prices P for output, W for labor, and R for capital, we obtain the marginal productivity conditions $\beta = WL/PX$ and $\alpha = RK/PX$. In equilibrium the elasticities are equal to the ratios of factor rewards to total revenue. The Cobb–Douglas function is a homogeneous function of degree $\alpha + \beta$ If $\alpha + \beta = 1$, then increasing both K and L by the same proportion will increase output by that proportion, i.e., constant returns to scale prevails. Decreasing and increasing returns to scale correspond to the cases $\alpha + \beta < 1$ and $\alpha + \beta > 1$. The Cobb–Douglas function can easily be extended to cover the case of many inputs and many outputs.

9.3 Ridge Lines

The economic region of production shows the combinations of factors at a certain cost that make economic sense. Areas outside the economic region of production mean that at least one of the inputs has negative marginal productivity. This region is marked by what are called ridge lines, which are simply the boundaries beyond which one of the two factors is being overused. Therefore, outside the economic region of production, there is clear inefficiency, and the company would be better off using less of one of the two factors, bringing costs down whilst maintaining equal production output. Graphically:



In economics, the economic region of production is an offshoot of the theory of production function with two variables. It is a cost-oriented theory which defines the region in which the optimal factor combination will lie. It serves as a map of the region of optimal production.

Production lines Q1 and Q2 are the isoquants, depicting the technically efficient factor combinations at different levels of production. The ridge lines A and B demarcate the technically efficient region of production. Above the line OA and below the line OB slope of the isoquants is positive which means that increases in both capital and labour are required to produce a given fixed quantity of output. The ridge lines are the combination of points where marginal product (MPLK) of one of the factors is zero.

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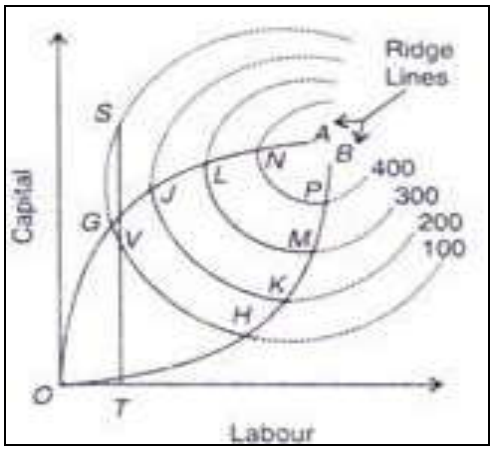
The theory entails that there is a limit to how much one factor can be substituted for another. When production reaches a point where substitution between the factors becomes impossible (MPLK), the isoquant becomes positively sloping. No rational entrepreneur will operate at a point outside the ridge lines (Region of Economic Nonsense).

An isoquant is elliptical or oval-shaped as shown in Fig. but its area of rational operation lies between the ridge lines. The firm will produce only in those segments of isoquants which are convex to the origin and lie between the ridge lines.

The ridge lines are the locus of points of isoquants where the marginal products (MP) of factors are zero. The upper ridge line implies zero MP of capital and the lower ridge line implies zero MP of labour. Production techniques are only efficient inside the ridge lines. The marginal products of factors are negative and the methods of production are inefficient outside the ridge lines.

In Fig., curves O A and OB are the ridge lines on the oval-shaped isoquants and in between these lines on points G, J, L and N and H, K, M and P economically feasible units of capital and labour can be employed to produce 100, 200, 300 and 400 units of the product.



For example, OT units of labour and ST units of the capital can produce 100 units of the prod-uct, but the same output can be obtained by using the same quantity of labour OT and less quantity of capital VT. Thus only an unwise producer will produce in the dotted region of the iso-quant 100.

The dotted segments of isoquants form the uneconomic regions of production because they require an increase in the use of both factors with no corresponding in-crease in output. If points G, J, L, N, H, K, M and P are connected with the lines OA and OB, they are the ridge lines. On both sides of the ridge lines, it is uneconomic for the firm to produce while it is economically feasible to produce inside the ridge lines.

In economics an isocost line shows all combinations of inputs which cost the same total amount. Although similar to the budget constraint in consumer theory, the use of the isocost line pertains to cost-minimization in production, as opposed to utility-maximization. For the two production inputs labour and capital, with fixed unit costs of the inputs, the equation of the isocost line is

RK+wL = C\,

Where w represents the wage rate of labour, r represents the rental rate of capital, K is the amount of capital used, L is the amount of labour used, and C is the total cost of acquiring those quantities of the two inputs.

The absolute value of the slope of the isocost line, with capital plotted vertically and labour plotted horizontally, equals the ratio of unit costs of labour and capital. The slope is:

Notes

-w/r. \,

The isocost line is combined with the isoquant map to determine the optimal production point at any given level of output. Specifically, the point of tangency between any isoquant and an isocost line gives the lowest-cost combination of inputs that can produce the level of output associated with that isoquant. Equivalently, it gives the maximum level of output that can be produced for a given total cost of inputs. A line joining tangency points of isoquants and isocosts (with input prices held constant) is called the expansion path.

The cost-minimization problem

The cost-minimization problem of the firm is to choose an input bundle (K, L) feasible for the output level y that costs as little as possible. A cost-minimizing input bundle is a point on the isoquant for the given y that is on the lowest possible isocost line. Put differently, a cost-minimizing input bundle must satisfy two conditions:

- it is on the y-isoquant
- No other point on the y-isoquant is on a lower isocost line.
- The case of smooth isoquants convex to the origin

If the y-isoquant is smooth and convex to the origin and the cost-minimizing bundle involves a positive amount of each input, then at a cost-minimizing input bundle an isocost line is tangent to the y-isoquant. Now since the absolute value of the slope of the isocost line is the input cost ratio w/r, and the absolute value of the slope of an isoquant is the marginal rate of technical substitution (MRTS), we reach the following conclusion: If the isoquants are smooth and convex to the origin and the cost-minimizing input bundle involves a positive amount of each input, then this bundle satisfies the following two conditions:

- It is on the y-isoquant (i.e. F(K, L) = y where F is the production function), and
- The MRTS at (K, L) equals w/r.

The condition that the MRTS be equal to w/r can be given the following intuitive interpretation. We know that the MRTS is equal to the ratio of the marginal products of the two inputs. So the condition that the MRTS be equal to the input cost ratio is equivalent to the condition that the marginal product per dollar is equal for the two inputs. This condition makes sense: at a particular input combination, if an extra dollar spent on input 1 yields more output than an extra dollar spent on input 2, then more of input 1 should be used and less of input 2, and so that input combination cannot be optimal. Only if a dollar spent on each input is equally productive is the input bundle optimal.

9.4 Expansion Path

In economics, an expansion path (also called a scale line) is a curve in a graph with quantities of two inputs, typically capital and labor, plotted on the axes. The path connects optimal input combinations as the scale of production expands. A producer seeking to produce the most units of a product in the cheapest possible way attempts to increase production along the expansion path.

Economists Alfred Stonier and Douglas Hague defined expansion path as "that line which reflects the least cost method of producing different levels of output, when factor prices remain constant." The points on an expansion path occur where the firm's isocost curves, each showing fixed total input cost, and its isoquants, each showing a particular level of output, are tangent. As a producer's allowable total cost increases, the firm moves from one of these tangency points to the next; the line joining the tangency points is called the expansion path.

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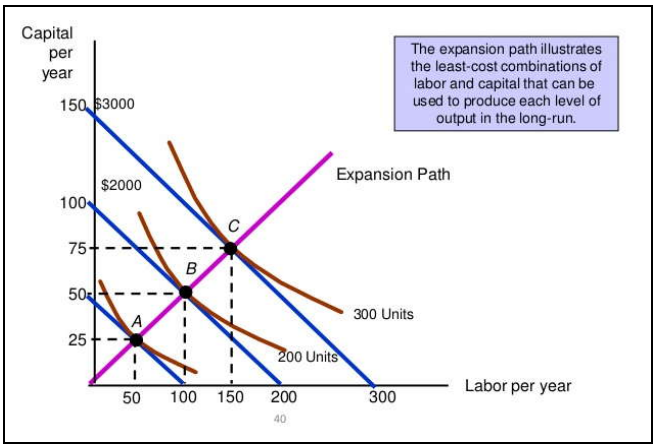

Expansion Path

If an expansion path forms a straight line from the origin, the production technology is considered homothetic (or homothetic). In this case, the ratio of input usages is always the same regardless of the level of output, and the inputs can be expanded proportionately so as to maintain this optimal ratio as the allowable total cost expands.

The choice of optimal expansion path refers to the combinations of factors of production that enable the firm to produce various levels of output at the least cost while relative factor prices remain constant. Its analysis is done in relation to the short run and the long run.

9.4.1 Optimal Expansion Path in the Long Run

In the long run, the firm can change its old machines, equipment and plants, scale of production, organization and management in order to expand its output. The firm's objective is the choice of optimal expansion path in order to minimize its costs or maximize its profits. The expansion path is the locus of different points of firm's equilibrium when it changes its total outlay to expand output while relative factor prices remain constant.

In other words, the expansion path shows how factor proportions change when output changes, relative factor prices remaining constant. "With given factor prices (w, r) and given production function, the optimal expansion path is determined by the points of tangency of suc-cessive isocost lines and successive isoquants."

Assumptions

This analysis is based on the following assumptions:

1. There are two factors of production, labour and capital, which are variable.
2. All units of labour and capital are homogeneous.
3. The price of labour (w) is constant.
4. The price of capital (r) is constant.
5. The firm increases its total outlay in order to expand its output.

Explanation

Given these assumptions, in order to maximize its profits or to have the least cost combination, the firm com-bines labour and capital in such a way that the ratio of their MP is equal to the ratio of their prices, i.e., MPL/MPK = w/ r. This equality occurs at the point of tangency between an isocost line and an isoquant curve.

This is explained in Figure, where C1L1 C2L2 and C3L3are the different isocost lines. The line C2L2shows higher total outlay than the line C1L1 and C3L3 still higher total outlay than the line C2L2. They are shown parallel to each other thereby reflecting

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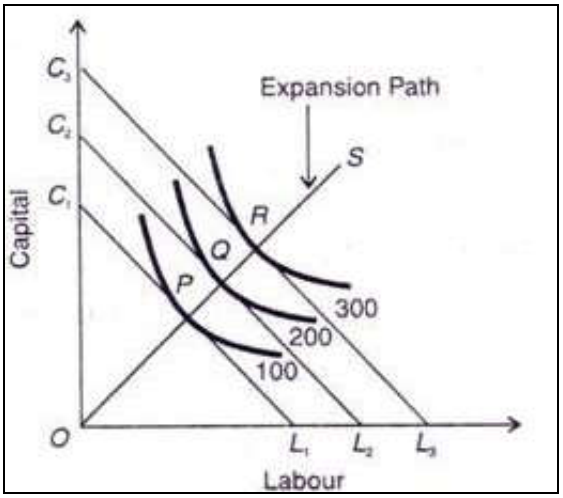
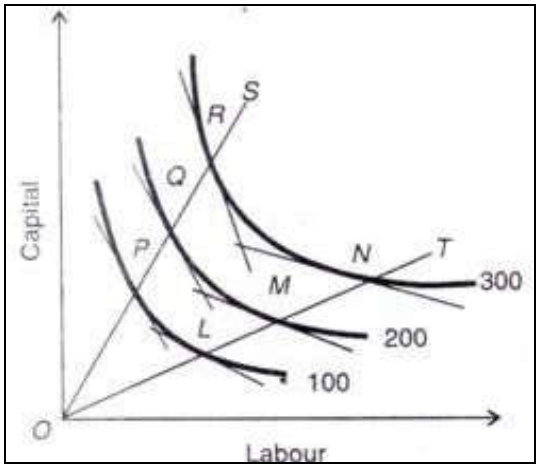
constant factor prices. There are three isoquants 100, 200 and 300 representing successively higher levels of output.



The firm is in equilibrium at point P where the isoquant 100 is tan-gent to its corresponding isocost line C1L1 and similarly the other two isoquants 200 and 300 are tangent to isocost lines C2L2and C3L3 respectively at points Q and R. Each point of tangency implies optimal combination of labour and capital that produces an optimal output level. The line OS joining these equilibrium points P, Q and R through the origin is the expansion path of the firm. The firm expands its output along this line keeping factor prices as constant.

The straight line expansion path through the origin, OS, implies a homogeneous production function (or constant returns to scale). Such an ex- pension path is called an isocline which is the locus of points o along which MRTSLK = MPL/MPK = w/r. Thus OS is the optimal expansion path for the firm in the long run.

But the choice of the expansion path depends on the ratio of factor prices. If the ratio of factor prices increases, the isocost lines become flatter, as shown in figure 19, and the optimal ex-pansion path will be OT. If initially the slope of the isocost lines is steep and the expansion path is OS, with the increase in the ratio of factor prices the optimal expansion path of the firm changes to OT. Both the expansion paths show homogeneous production function.



In case the production function is non- homogeneous the optimal expansion path will not be a straight line from the origin. Rather, it will be a zigzag line OS, as shown in Figure 20. It is a curved isocline which is the optimal expansion path of the firm because at the points of tan-gency L, M and N, the slopes of the isocost lines (w/r) and isoquants (MRTSLK) are equal.

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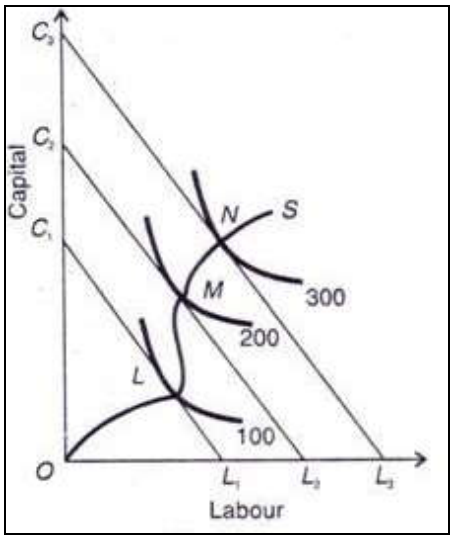
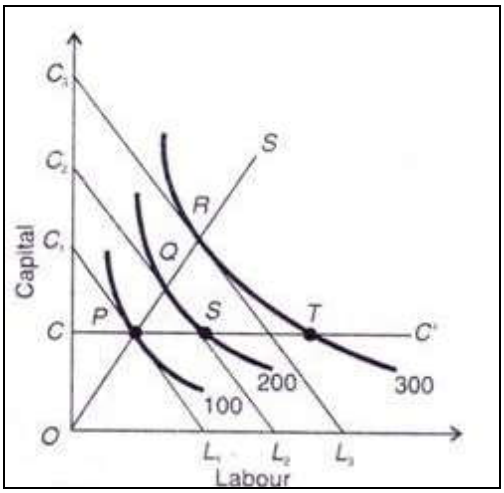


9.4.2 Optimal Expansion Path in the Short Run

In the short run, the firm can increase only the vari-able factors and not the fixed factors in order to increase its output, while relative factor prices remain constant. Sup-pose capital is the fixed factor and labour is the variable factor, other assumptions remaining the same. The firm cannot choose the optimal expansion path OS. It can ex-pand its output only along the line C', as shown in Figure. But this is not the optimal expansion path because points P, S and T are not on the isocline.



James Jimenez stated "an expansion path gives the most efficient input combinations for every level of output. It is the curve or locus of points that shows the cost-minimizing input combination for each level of output with the input/price ratio held constant. It also shows how input usage changes as output changes. An expansion path is derived for a specific set of input prices." Remember Managers are always looking to improve profitability of a product or service, for the least amount of cost. The issue or dilemma I see is that managers are looking at producing a product or providing a service for the least amount of cost and may not look at the ramifications of using cheaper methods to improve profitability. A good example of this is many companies are outsourcing inbound call centre services as it's cheaper to but the quality of service that is being provided to the customer is what gets sacrificed.

Economists Alfred Stonier and Douglas Hague defined expansion path as "that line which reflects least cost method of producing different levels of output, when factor prices remain constant." The points on an expansion path occur where budget level and the purchaser's indifference curve are tangents. As a producer's budget level

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increases, each of these points can be connected in a line joining tangency points of isoquants and isocosts (with input prices held constant). If an expansion path forms a straight line, the production technology is considered homothetic (or homothetic). In this case, the ratio is always the same, and the inputs can be adjusted based on this ratio for any budget. A Cobb–Douglas production function has an expansion path which is a straight line.

9.5 Law of Variable Proportion

Law of variable proportions occupies an important place in economic theory. This law examines the production function with one factor variable, keeping the quantities of other factors fixed. In other words, it refers to the input-output relation when output is increased by varying the quantity of one input.

When the quantity of one factor is varied, keeping the quantity of other factors con-stant, the proportion between the variable factor and the fixed factor is altered; the ratio of employ-ment of the variable factor to that of the fixed factor goes on increasing as the quantity of the variable factor is increased.

Since under this law we study the effects on output of variation in factor proportions, this is also known as the law of variable proportions. Thus law of variable proportions is the new name for the famous" Law of Diminishing Returns" of classical economics. This law has played a vital role in the history of economic thought and occupies an equally important place in modern economic theory. This law has been supported by the empirical evidence about the real world.

The law of variable proportions or diminishing returns has been stated by various economists in the following manner:

As equal increments of one input are added; the inputs of other productive services being held constant, beyond a certain point the resulting increments of product will decrease, i.e., the mar-ginal products will diminish," (G. Stigler)

"As the proportion of one factor in a combination of factors is increased, after a point, first the marginal and then the average product of that factor will diminish." (F. Benham)

"An increase in some inputs relative to other fixed inputs will, in a given state of technology, cause output to increase; but after a point the extra output resulting from the same addition of extra inputs will become less." (Paul A. Samuelson)

Marshall discussed the law of diminishing returns in relation to agriculture. He defines the law as follows: "An increase in the capital and labour applied in the cultivation of land causes in general a less than proportionate increase in the amount of product raised unless it happens to coincide with an improvement in the arts of agriculture."

It is obvious from the above definitions of the law of variable proportions (or the law of dimin-ishing returns) that it refers to the behaviour of output as the quantity of one factor is increased, keeping the quantity of other factors fixed and further it states that the marginal product and average product will eventually decline.

If one input is variable and all other inputs are fixed the firm's production function exhibits the law of variable proportions. If the number of units of a variable factor is increased, keeping other factors constant, how output changes is the concern of this law. Suppose land, plant and equipment are the fixed factors, and labour the variable factor.

When the number of labourers is increased successively to have larger output, the proportion between fixed and variable factors is altered and the law of variable proportions sets in. The law states that as the quantity of a variable input is increased by equal doses keeping the quantities of other inputs constant, total product will increase, but after a point at a dimin-ishing rate.

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It's Assumption

The law of diminishing returns is based on the following assumptions:

1. Only one factor is variable while others are held constant.
2. All units of the variable factor are homogeneous.
3. There is no change in technology.
4. It is possible to vary the proportions in which different inputs are combined.
5. It assumes a short-run situation, for in the long-run all factors are variable.
6. The product is measured in physical units, i.e., in quintals, tones, etc. The use of money in measuring the product may show increasing rather than decreasing returns if the price of the product rises, even though the output might have declined.

It's Explanation

Given these assumptions, let us illustrate the law with the help of Table, where on the fixed input land of 4 acres, units of the variable input labour are employed and the resultant output is obtained. The production function is revealed in the first two columns. The average product and marginal product columns are derived from the total product column.

The average product per worker is obtained by dividing column (2) by a corresponding unit in column (1). The marginal product is the addition to total product by employing an extra worker. 3 workers produce 36 units and 4 produce 48 units. Thus the marginal product is 12 i.e., (48-36) units.

Table 9.1: Output of Wheat in Physical Units (Quintals)

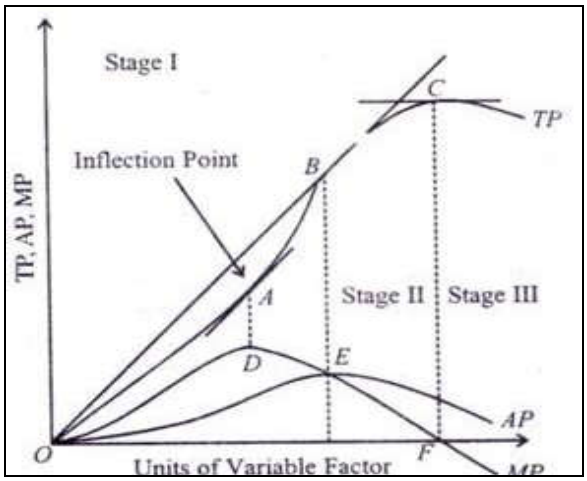
(1) No. of Workers	(2) Total Product	(3) Average Product	(4) Marginal Product	
1	8	8	8	
2	20	10	12	Stage I
3	36	12	16	
4	48	12	12	
5	55	11	7	Stage II
6	60	10	5	
7	6-	8.6	0	Stage III
8	56	7	4	

An analysis of the Table shows that the total, average and marginal products increase at first, reach a maximum and then start declining. The total product reaches its maximum when 7 units of labour are used and then it declines. The average product continues to rise till the 4th unit while the marginal prod-uct reaches its maximum at the 3rd unit of la-bour, then they also fall. It should be noted that the point of falling output is not the same for total, average and marginal product.

The mar-ginal product starts declining first, the average product following it and the total product is the last to fall. This observation points out that the tendency to diminishing returns is ultimately found in the three productivity concepts.

Notes

The law of variable proportions is pre-sented diagrammatically in Figure. The TP curve first rises at an increasing rate up to point A where its slope is the highest. From point A upwards, the total product increases at a dimin-ishing rate till it reaches its highest point C and then it starts falling.



Point A where the tangent touches the TP curve is called the inflection point up to which the total product increases at an increasing rate and from where it starts increasing at a diminish-ing rate. The marginal product curve (MP) and the average product curve (AP) also rise with TP. The MP curve reaches its maximum point D when the slope of the TP curve is the maximum at point A.

The maximum point on the AP curves is E where it coincides with the MP curve. This point also coincides with point B on TP curve from where the total product starts a gradual rise. When the TP curve reaches its maximum point C the MP curve becomes zero at point F. When TP starts declining, the MP curve becomes negative. It is only when the total product is zero that the average product also becomes zero.

Three Stages of Production

The behaviour of output when the varying quantity of one factor is combined with a fixed quantity of the other can be divided into three distinct stages. In order to understand these three stages it is better to graphically illustrate the production function with one factor variable.

This has been done in Figure 9.1. In this figure, on the X-axis the quantity of the variable factor is measured and on the F-axis the total product, average product and marginal product are measured. How the total product, average product and marginal product a variable factor change as a result of the increase in its quantity, that is, by increasing the quantity of one factor to a fixed quantity of the others will be seen from below Figure 9.1.

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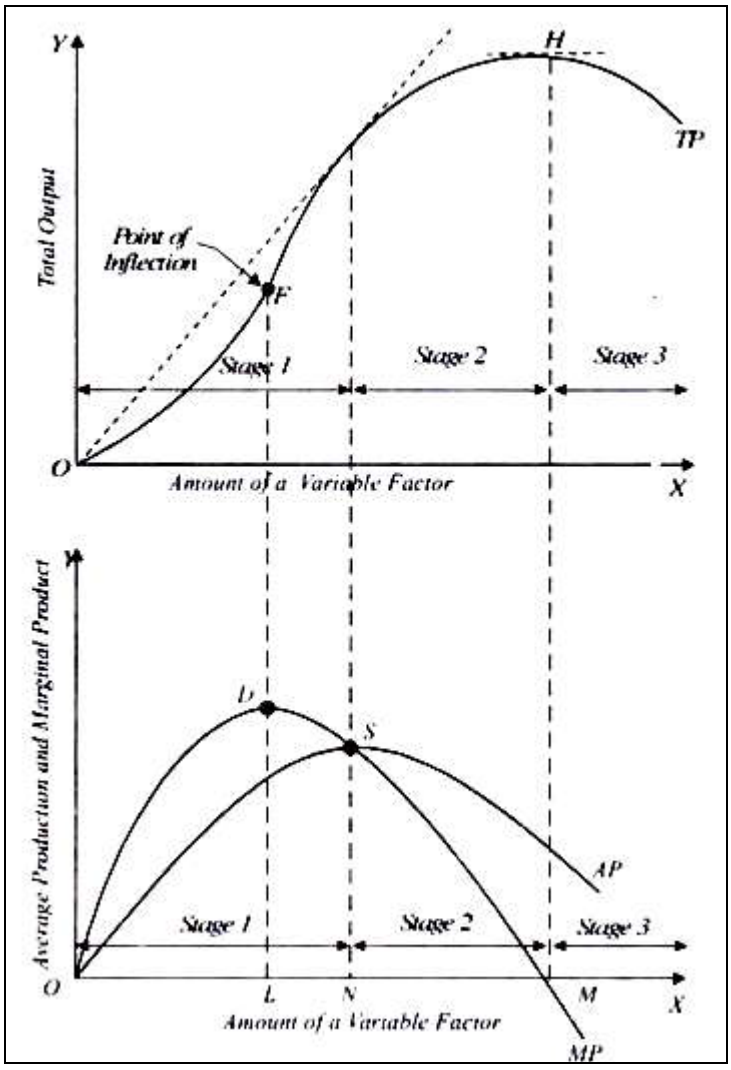

Figure 9.1: Three Stages of the Law of Variable Proportions

Three Stages of Law of Variable Proportions In the top Danel of this figure, the total product curve TP of variable factor goes on increasing to a point and alter that it starts declining. In the bottom pane- average and marginal product curves of labour also rise and then decline; marginal product curve starts declining earlier than the average product curve.

The behaviour of these total, average and marginal products of the variable factor as a result of the increase in its amount is generally divided into three stages which are explained below:

Stage 1:

In this stage, total product curve TP increases at an increasing rate up to a point. In Fig. 9.1. from the origin to the point F, slope of the total product curve TP is increasing, that is, up to the point F, the total product increases at an increasing rate (the total product curve TP is concave upward up to the point F), which means that the marginal product MP of the variable factor is rising.

From the point F onwards during the stage 1, the total product curve goes on rising but its slope is declining which means that from point F onwards the total product increases at a dimin-ishing rate (total product curve TP is concave down-ward), i.e., marginal product falls but is positive.

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The point F where the total product stops increasing at an increasing rate and starts increasing at the diminishing rate is called the point of inflection. Vertically corres-ponding to this point of inflection marginal product is maximum, after which it starts diminishing.

Thus, marginal product of the variable factor starts diminishing beyond OL amount of the variable factor. That is, law of diminishing returns starts operating in stage 1 from point D on the MP curve or from OL amount of the variable factor used.

This first stage ends where the average product curve AP reaches its highest point, that is, point S on AP curve or CW amount of the variable factor used. During stage 1, when marginal product of the variable factor is falling it still exceeds its average product and so continues to cause the average product curve to rise.

Thus, during stage 1, whereas marginal product curve of a variable factor rises in a part and then falls, the average product curve rises throughout. In the first stage, the quantity of the fixed factor is too much relative to the quantity of the variable factor so that if some of the fixed factor is withdrawn, the total product will increase. Thus, in the first stage marginal product of the fixed factor is negative.

Stage 2:

In stage 2, the total product continues to increase at a diminishing rate until it reaches its maximum point H where the second stage ends. In this stage both the marginal product and the average product of the variable factor are diminishing but remain positive.

At the end of the second stage, that is, at point M marginal product of the variable factor is zero (corresponding to the highest point H of the total product curve TP). Stage 2 is very crucial and important because as will be explained below the firm will seek to produce in its range.

Stage 3: Stage of Negative Returns

In stage 3 with the increase in the variable factor the total product declines and therefore the total product curve TP slopes downward. As a result, marginal product of the variable factor is negative and the marginal product curve MP goes below the X-axis. In this stage the variable factor is too much relative to the fixed factor. This stage is called the stage of negative returns, since the marginal product of the variable factor is negative during this stage.

It may be noted that stage 1 and stage 3 are completely symmetrical. In stage 1 the fixed factor is too much relative to the variable factor. Therefore, in stage 1, marginal product of the fixed factor is negative. On the other hand, in stage 3 the variable factor is too much relative to the fixed factor. Therefore, in stage 3, the marginal product of the variable factor is negative.

The Stage of Operation

Now, an important question is in which stage a rational producer will seek to produce. A rational producer will never choose to produce in stage 3 where marginal product of the variable factor is negative. Marginal product of the variable factor being negative in stage 3, a producer can always increase his output by reducing the amount of the variable factor.

It is thus clear that a rational producer will never be producing in stage 3. Even if the variable factor is free, the rational producer will stop at the end of the second stage where the marginal product of the variable factor is zero.

At the end point M of the second stage where the marginal product of the variable factor is zero, the producer will be maximizing the total product and will thus be making maximum use of the variable factor. A rational producer will also not choose to produce in stage 1 where the marginal product of the fixed factor is negative.

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A producer producing in stage 1 means that he will not be making the best use of the fixed factor and further that he will not be utilizing fully the opportunities of increasing production by increasing quantity of the variable factor whose average product continues to rise throughout the stage 1. Thus, a rational entrepreneur will not stop in stage 1 but will expand further.

Even if the fixed factor is free (i.e., costs nothing), the rational entrepreneur will stop only at the end of stage 1 (i.e., at point N) where the average product of the variable factor is maximum. At the end point N of stage 1, the producer they will be making maximum use of the fixed factor.

It is thus clear from above that the rational producer will never be found producing in stage 1 and stage 3. Stage 1 and 3 may, therefore, be called stages of economic absurdity or economic non-sense. The stages 1 and 3 represent non-economic regions in production function.

A rational producer will always seek to produce in stage 2 where both the marginal product and average product of the variable factor are diminishing. At which particular point in this stage, the producer will decide to produce depends upon the prices of factors. The stage 2 represents the range of rational production decisions.

We have seen above how output varies as the factor proportions are altered at any given moment. We have also noticed that this input-output relation can be divided into three stages. Now, the question arises as to what causes increasing marginal returns to the variable factor in the beginning, diminishing marginal returns later and negative marginal returns to the variable factor ultimately.

9.6 Types of Costs

Cost accounting is an accounting process that measures and analyzes the costs associated with products, production and projects so that correct amounts are reported on financial statements. Cost accounting aids in decision-making processes by allowing a company to evaluate its costs. Some types of costs in cost accounting are direct, indirect, fixed, variable and operating costs.

A direct cost is related to producing a good or service. A direct cost is the material, labor, expense or distribution cost associated with producing a product. It can be accurately and easily traced to a product, department or project. For example, suppose a worker spends eight hours building a car for a car manufacturing company. The direct costs associated with the car are the wages paid to the worker and the parts used to build the car.

On the other hand, an indirect cost is an expense unrelated to producing a good or service. An indirect cost cannot be easily traced to a product, department, activity or project. For example, a semiconductor company rents office space in a building and produces microchips. The wages paid to the workers and the material used to produce the microchips are direct costs. However, the electricity used to power the entire building is considered an indirect cost because it appears on one bill and is difficult to trace back to the semiconductor company.

A fixed cost is also associated with cost accounting. A fixed cost does not vary with the number of goods or services a company produces. For example, suppose a company leases a machine for production for two years. The company has to pay $2,000 per month to cover the cost of the lease. The lease payment the company pays per month is considered a fixed cost.

Contrary to a fixed cost, a variable cost fluctuates as the level of production output changes. This type of cost varies depending on the number of products a company produces. A variable cost increases as the production volume increases, and it falls as the production volume decreases. For example, a toy manufacturer must package its toys before shipping products out to stores. This is considered a type of variable cost because, as the manufacturer produces more toys, its packaging costs increase.

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However, if the toy manufacturer's production level is decreasing, the variable cost associated with the packaging decreases.

An operating cost is an expense associated with day-to-day business activities and may be variable or fixed. An example of an operating cost is a company's inventory. Suppose a company produces and sells microchips. The microchips must be stored and maintained, which is an operational cost to the company.

- **Fixed Costs (FC):** The costs which don't vary with changing output. Fixed costs might include the cost of building a factory, insurance and legal bills. Even if your output changes or you don't produce anything, your fixed costs stays the same. In the above example, fixed costs are always £1,000.
- **Variable Costs (VC):** Costs which depend on the output produced. For example, if you produce more cars, you have to use more raw materials such as metal. This is a variable cost.
- **Semi-Variable Cost:** Labour might be a semi-variable cost. If you produce more cars, you need to employ more workers; this is a variable cost. However, even if you didn't produce any cars, you may still need some workers to look after empty factory.

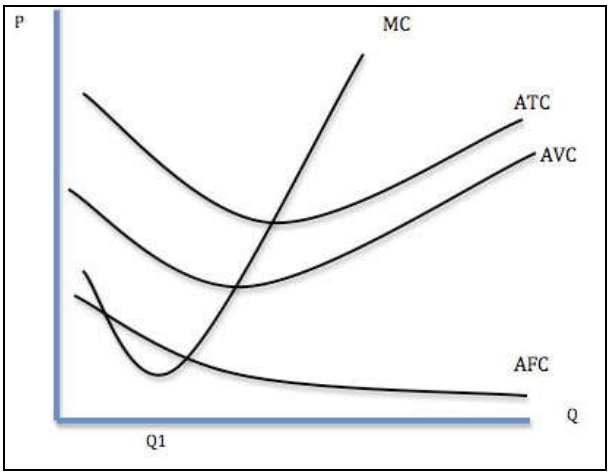
Total Costs (TC) – Fixed + Variable Costs

- **Marginal Costs:** Marginal cost is the cost of producing an extra unit. If the total cost of 3 units is 1550, and the total cost of 4 units is 1900. The marginal cost of the 4th unit is 350.
- **Opportunity cost:** Opportunity cost is the next best alternative foregone. If you invest £1million in developing a cure for pancreatic cancer, the opportunity cost is that you can't use that money to invest in developing a cure for skin cancer.
- **Economic Cost:** Economic cost includes both the actual direct costs (accounting costs) plus the opportunity cost. For example, if you take time off work to a training scheme. You may lose a weeks pay £350, plus also have to pay the direct cost of £200. Thus the total economic cost = £550.
- **Accounting Costs:** This is the monetary outlay for producing a certain good. Accounting costs will include your variable and fixed costs you have to pay.
- **Sunk Costs:** These are costs that have been incurred and cannot be recouped. If you left the industry you cannot reclaim sunk costs. For example, if you spend money on advertising to enter an industry, you can never claim these costs back. If you buy a machine, you might be able to sell if you leave the industry.
- Avoidable Costs: Costs that can be avoided. If you stop producing cars, you don't have to pay for extra raw materials and electricity. Sometimes known as an escapable cost.

Market Failure

- **Social Costs.** This is the total cost to society. It will include the private costs plus also the external cost (cost incurred by a third party). May also be referred to as 'True costs'
- **External Costs.** This is the cost imposed on a third party. For example, if you smoke, some people may suffer from passive smoking. That is the external cost.
- **Private costs.** The costs you pay. e.g. the private cost of a packet of cigarettes is £6.10
- **Social Marginal Cost.** The total cost to society of producing one extra unit. Social Marginal Cost (SMC) = Private marginal cost (PMC) + External marginal Cost (XMC)

Average Cost Curves



ATC (Average Total Cost) = Total Cost / quantity
AVC (Average Variable Cost) = Variable cost / quantity
AFC (Average Fixed Cost) = Fixed cost / quantity

9.7 Short-run and Long-run Costs

9.7.1 Short Run Costs

Short run costs are accumulated in real time throughout the production process. Fixed costs have no impact of short run costs, only variable costs and revenues affect the short run production. Variable costs change with the output. Examples of variable costs include employee wages and costs of raw materials. The short run costs increase or decrease based on variable cost as well as the rate of production. If a firm manages its short run costs well over time, it will be more likely to succeed in reaching the desired long run costs and goals.

Let's say that you own a bakery and have been contracted by local restaurants to supply them with a given number of cakes every week. This is your short-run production. To accurately handle short-run production, you must know your short-run costs, or how much in terms of resources that short-run production will take to produce.

These come in two varieties. Variable costs are those costs that change per unit produced. Obviously, as a baker you will need flour, eggs, and sugar. However, you won't need dozens and dozens of eggs to make just one cake. Because the cost can change depending on how many, we refer to these as variable costs. On the other hand, short-run production also requires attention to be paid to fixed costs, or prices paid to enter the marketplace. As a baker, you have to have a way of billing your customers. Paying for the software to create invoices is a fixed cost. Likewise, if you choose to add advertising, that is also a fixed cost. Fixed costs do not change in relation to the amount produced.

Also, notice that these costs all tend to pertain to an industry that the company has made a declared effort to join. Finally, notice that, according to these definitions, things such as equipment, floor space, and labor are all variable costs. This can sound confusing, but think about it like this - would you necessarily hire 100 cooks to make 10 cakes? Probably not. Nor would you need 10 ovens to bake 3 pies. Instead, smart managers scale up or scale down their labor and equipment as needed in the short run.

The short run, in economics, is the concept that within a certain period of time, in the future, at least one input is fixed while others are variable. The short run is not a definite period of time, but rather varies based on the length of the firm's contracts. For example, a firm may have entered into lease contracts which fix the amount of rent over

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the next month, year or several years. Or the firm may have wage contracts with certain workers which cannot be changed until the contract renewal.

In the analysis of short run versus long run costs, it is important to understand the behavior of the firms. In certain situations, it may be preferable to keep operating an unprofitable firm over the short run if this helps to partially offset costs that are fixed. In the long run, however, an unprofitable firm will be able to terminate its leases and wage agreements and shut down operations.

9.7.2 Long Run Costs

Long run costs are accumulated when firms change production levels over time in response to expected economic profits or losses. In the long run there are no fixed factors of production. The land, labor, capital goods, and entrepreneurship all vary to reach the long run cost of producing a good or service. The long run is a planning and implementation stage for producers. They analyze the current and projected state of the market in order to make production decisions. Efficient long run costs are sustained when the combination of outputs that a firm produces results in the desired quantity of the goods at the lowest possible cost. Examples of long run decisions that impact a firm's costs include changing the quantity of production, decreasing or expanding a company, and entering or leaving a market.

A period of time in which all factors of production and costs are variable. In the long run, firms are able to adjust all costs, whereas in the short run firms are only able to influence prices through adjustments made to production levels. Additionally, whereas firms may be a monopoly in the short-term they may expect competition in the long-term.

In economics, long-run models may shift away from short-turn equilibriums, in which supply and demand react to price levels with more flexibility.

Firms examining the long run understand that they cannot alter levels of production in order to reach an equilibrium between supply and demand. In the long run, they can either expand or reduce production capacity or enter or exit an industry based on expected profits. In the short run, barriers to entry prevent competitors from quickly entering a market. In the long run, however, competitors may enter or exit an industry depending on the levels of profit previously seen by companies operating in that industry.

Differences

The main difference between long run and short run costs is that there are no fixed factors in the long run; there are both fixed and variable factors in the short run. In the long run the general price level, contractual wages, and expectations adjust fully to the state of the economy. In the short run these variables do not always adjust due to the condensed time period. In order to be successful a firm must set realistic long run cost expectations. How the short run costs are handled determines whether the firm will meet its future production and financial goals.

In economics, it's extremely important to understand the distinction between the short run and the long run. As it turns out, the definition of the short run versus the long run differs depending on whether the terms are being used in a microeconomic or a macroeconomic context. There are even different ways of thinking about the microeconomic distinction between the short run and the long run.

The Short Run versus the Long Run in Production Decisions

The long run is not defined as a specific period of time, but is instead defined as the time horizon needed for a producer to have flexibility over all relevant production decisions. Most businesses make decisions not only about how many workers to employ at any given point in time but also about what scale of an operation (i.e. size of factory, office, etc.) to put together and what production processes to use. Therefore,

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the long run is defined as the time horizon necessary to not only change the number of workers but also to scale the size of the factory up or down and alter production processes as desired.

In contrast, economists define the short run as the time horizon over which the scale of operation is fixed and the only available business decision is the number of workers to employ.

The logic is that, even taking various labor laws as given, it's usually easier to hire and fire workers than it is to significantly change a major production process or move to a new size of factory or office. (One reason for this likely has to do with long-term leases and such.) As such, the short run and the long run with respect to production decisions can be summarized as follows:

- **Short run:** Quantity of labor is variable but quantity of capital and production processes are fixed (i.e. taken as given)
- **Long run:** Quantity of labor, quantity of capital, and production processes are all variable (i.e. changeable)

The Short Run versus the Long Run in Measuring Costs

Sometimes the long run but is defined as the time horizon over which there are no sunk fixed costs. In general, fixed costs are costs that don't change as production quantity changes. In addition, sunk costs are those costs to a business that can't be recovered after they are paid. Therefore, a lease on a corporate headquarters would be a sunk cost, for example, if the businesses has to sign a lease for the office space and can't break the lease or sublet, and it would be a fixed cost because, after a scale of operation is decided on, it's not as though the company needs some incremental additional unit of headquarters for each additional unit of output it produces.

Obviously the company would likely need a larger headquarters if it decided to expand a lot, but this scenario refers to the long-run decision of choosing a scale of production.

Therefore, there are no truly fixed costs in the long run, since, in the long run, the firm is free to choose the scale of operation that determines at what level the fixed costs are fixed. In addition, there are no sunk costs in the long run, since the company has the option of not doing business at all and incurring a cost of zero.

In summary, the short run and the long run in terms of cost can be summarized as follows:

- **Short run:** Fixed costs are already paid and are unrecoverable (i.e. "sunk")
- **Long run:** Fixed costs have yet to be decided on and paid, and are thus not truly "fixed"

The two definitions of the short run and the long run so far are really just two ways of saying the same thing, since a firm doesn't incur any fixed costs until it chooses a quantity of capital (i.e. scale of production) and a production process.

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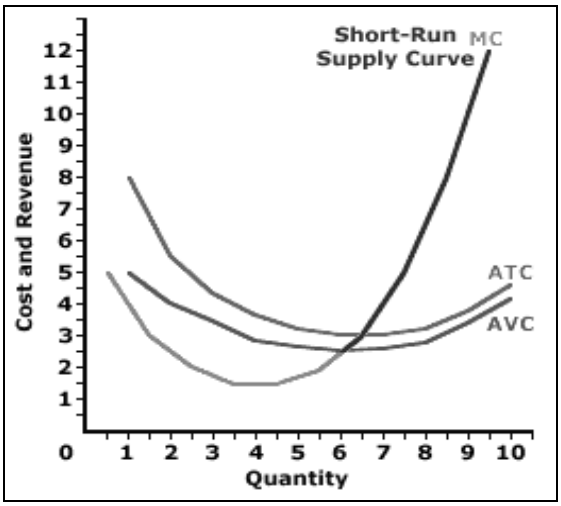


Long run and short run cost functions

In the long run, the firm can vary all its inputs. In the short run, some of these inputs are fixed. Since the firm is constrained in the short run, and not constrained in the long run, the long run cost TC(y) of producing any given output y is no greater than the short run cost STC(y) of producing that output:

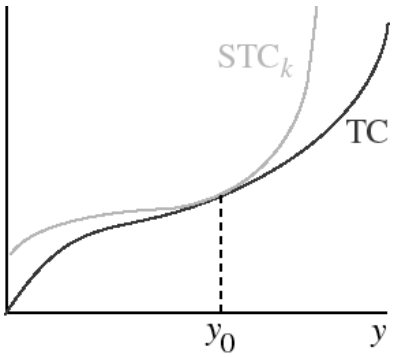
TC(y) STC(y) for all y.

Now consider the case in which in the short run exactly one of the firm's inputs is fixed. For concreteness, suppose that the firm uses two inputs, and the amount of input 2 is fixed at k. For many (but not all) production functions, there is some level of output, say y0, such that the firm would choose to use k units of input 2 to produce y0, even if it were free to choose any amount it wanted. In such a case, for this level of output the short run total cost when the firm is constrained to use k units of input 2 is equal to the long run total cost: STCk(y0) = TC(y0). We generally assume that for any level at which input 2 is fixed, there is some level of output for which that amount of input 2 is appropriate, so that for any value of k,

TC(y) = STCk(y) for some y.

(There are production functions for which this relation is not true, however: see the example of a production function in which the inputs are perfect substitutes.)

For a total cost function with the typical shape, the following figure shows the relations between STC and TC.



Long run and short run average cost functions

Given the relation between the short and long run total costs, the short and long run average and marginal cost functions have the forms shown in the following figure.

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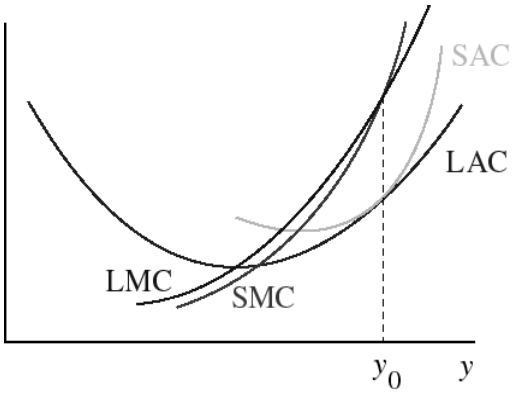
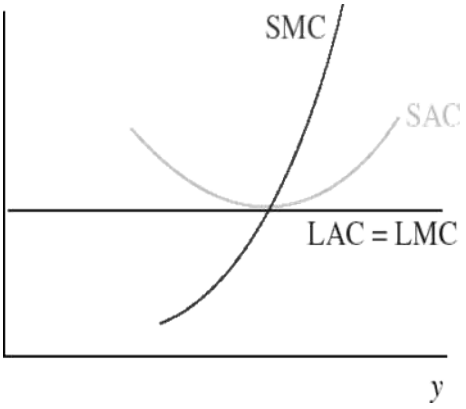


The SMC goes through the minimum of the SAC and the LMC goes through the minimum of the LAC.

When SAC = LAC we must have SMC = LMC (since slopes of total cost functions are the same there).

In the case that the production function has CRTS, the LAC is horizontal, as in the following figure.



9.8 Summary

Costs are bad things endured or good things lost. Cost always means cost to do something. You cannot have a cost without a cost objective. Most of the confusion about costs reflects a failure to be clear about cost objectives. Nevertheless, where economists and accountants are concerned, there is a second and equally critical source of confusion about costs: economists and accountants use the term "cost" to mean different although related things.

Economists define cost in terms of opportunities that are sacrificed when a choice is made. Hence, economic costs are simply benefits lost (and, in some cases, benefits are merely costs avoided). Economic costs are subjective -- seen from the perspective of a decision maker not a detached observer -- and prospective. Moreover, economic cost is a stock concept -- economic costs are incurred when decisions are made. Economic cost estimates are used for making decisions about pricing, output levels, buying or making, alternative marketing tactics/strategies, product introductions and withdrawals, etc.

Accountants define cost in terms of resources consumed. Hence, from an accountant's standpoint, costs are objective -- seen from the perspective of a detached observer -- and retrospective. Accountants usually define costs as flows. Accounting costs reflect changes in stocks (reductions in good things, increases in bad things) over a fixed period of time. Accounting cost measures are used in the evaluation of

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managerial performance (usually together with information on income) and as a basis for economic cost estimation.

Total product or output is the total output produced in physical units by using a set of inputs. It is given by the product function directly.

Marginal product of an input is the extra product or output produced when 1 extra unit of that input is added while other inputs are held constant at any given set of inputs.

Average output is total output divided by total units of input. It can be calculated for each input separately also.

Law of diminishing marginal returns

It holds that the marginal product of each unit of input will decline as the amount of that input increases, holding all other inputs constant.

Returns to scale

Returns to scale reflect the responsiveness of total product when all the inputs are increased proportionately.

The scale effect can be constant returns, decreasing returns, and increasing returns. Constant returns to scale means, if inputs are doubled output also will double.

Decreasing returns to scale means if inputs are doubled output is not doubling. Increasing returns to scale means if inputs are doubled, output is getting more than double.

Time Horizon of Analysis

Three different time periods are used to develop theories of production and production costs

Momentary run: The period of time is so short that no change in production can take place.

Short run: The period of time in which labor and material can be changed, but all inputs cannot be changed simultaneously. Especially, equipment and machinery cannot be fully modified or increased.

Long run: All fixed and variable factors employed by the firm can be changed.

Technology change

Technology change is said to occur when more output can be produced from the same inputs.

Example: Wide-body jets increased the number of passenger-miles per unit of input by almost 40 percent.

9.9 Check Your Progress

Multiple Choice Questions

1. Accountants define cost in terms of:
   (a) Revenue
   (b) Profit
   (c) Resource consumed
   (d) Loss
2. Which costs are accumulated when firms change production levels over time in response to expected economic profits or losses:

(a) Fixed cost
(b) Direct cost
(c) Short run cost
(d) Long run cost

3. Which costs are accumulated in real time throughout the production process:
   (a) Short run
   (b) Long run
   (c) Both of these
   (d) None of these
4. Fixed costs have no impact on:
   (a) Direct cost
   (b) Short run
   (c) Long run
   (D) all of these
5. An operating cost is an expense associated with day-to-day business activities and may be:
   (a) variable
   (b) Fixed
   (c) Both a and b
   (d) Neither a nor b
6. Which costs change with the output:
   (a) Fixed
   (b) Direct
   (c) Operating
   (d) Variable
7. Which of the following is also called a scale line:
   (a) Ridge lines
   (b) Expansion path
   (c) Short run cost
   (d) Long run cost
8. Which cost is related to producing a good or service:
   (a) Fixed
   (b) Direct
   (c) Variable
   (d) Operating
9. Direct cost includes which of the following:
   (a) Labor
   (b) Material
   (c) Expense cost
   (d) all of these
10. Company's inventory is an example of:
    (a) Operating cost
    (b) Fixed cost

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(c) Long run cost

(d) Variable cost

9.10 Questions and Exercises

1. What is long run cost?
2. Briefly explain short run cost.
3. What is the difference between long run and short run cost?
4. Explain Expansion path.
5. Briefly explain operating cost.
6. What are fixed and variable cost?
7. What is ridge lines?
8. Explain the law of variable proportion.
9. What is production function?
10. Briefly explain direct cost.

9.11 Key Terms

- **GDP:** Gross domestic product (GDP) is a monetary measure of the value of all final goods and services produced in a period (quarterly or yearly). Nominal GDP estimates are commonly used to determine the economic performance of a whole country or region, and to make international comparisons.
- **Cost:** In production, research, retail, and accounting, a cost is the value of money that has been used up to produce something, and hence is not available for use anymore. In business, to be one of acquisition, in which case the amount of money expended to acquire it is counted as cost.
- **Long –run:** In microeconomics, the long run is the conceptual time period in which there are no fixed factors of production, so that there are no constraints preventing changing the output level by changing the capital stock or by entering or leaving an industry.
- **Short run:** The short run, in economics, is the concept that within a certain period of time, in the future, at least one input is fixed while others are variable. The short run is not a definite period of time, but rather varies based on the length of the firm's contracts.
- **Production function:** In economics, a production function relates physical output of a production process to physical inputs or factors of production.
- **Average cost:** The total production cost divided by the number of units produced.
- **Break-even point:** The number of units (produced or sold) for which revenue equals cost so that profit is zero.
- **Capital allocation:** A process of choosing what ventures, deals or trades to engage in, usually based upon some cost or risk-return analysis.
- **Capital asset pricing model:** A model for valuing financial assets based upon their systematic risk.

Check Your Progress: Answers

1. c, 2. d, 3. a, 4. b, 5. c, 6. d, 7. b, 8. b, 9. d, 10. a.

9.12 Further Readings

- *Economics*, Paul A. Samuelson – 2010.
- *Basic Economics*, Thomas Sowell – 2014.
- *Principles of Microeconomics - Volume 1*, N. Gregory Mankiw – 1998.

- *Principles of Economics*, Alfred Marshall – 2013.
- *Labor Economics*, Pierre Cahuc, André Zylberberg – 2004.

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Unit 10: Importance of Prices

Structure

Objectives

After studying this unit, you should be able to understand:

- The Importance of prices
- The concept of Pricing and profit analysis
- How Pricing reacts under perfect competition, monopoly, monopolistic competition and oligopoly
- What are the Different pricing strategies
- Concept of Price discrimination

10.1 Introduction

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Price, the amount of money that has to be paid to acquire a given product. It is the amount people are prepared to pay for a product represents its value, price is also a measure of value.

It follows from the definition just stated that prices perform an economic function of major significance. So long as they are not artificially controlled, prices provide an economic mechanism by which goods and services are distributed among the large number of people desiring them. They also act as indicators of the strength of demand for different products and enable producers to respond accordingly. This system is known as the price mechanism and is based on the principle that only by allowing prices to move freely will the supply of any given commodity match demand.

If supply is excessive, prices will be low and production will be reduced; this will cause prices to rise until there is a balance of demand and supply. In the same way, if supply is inadequate, prices will be high, leading to an increase in production that in turn will lead to a reduction in prices until both supply and demand are in equilibrium.

In fact, this function of prices may be analyzed into three separate functions. First, prices determine what goods are to be produced and in what quantities; second, they determine how the goods are to be produced; and third, they determine who will get the goods.

The price mechanism describes the means by which millions of decisions taken by consumers and businesses interact to determine the allocation of scarce resources between competing uses

The price mechanism plays three important functions in a market:

1. **Signaling function:** Prices perform a signaling function – they adjust to demonstrate where resources are required, and where they are not.

   Prices rise and fall to reflect scarcities and surpluses

   If prices are rising because of high demand from consumers, this is a signal to suppliers to expand production to meet the higher demand

   If there is excess supply in the market the price mechanism will help to eliminate a surplus of a good by allowing the market price to fall.

2. **Transmission of preferences:** Through their choices consumers send information to producers about the changing nature of needs and wants

   Higher prices act as an incentive to raise output because the supplier stands to make a better profit.

   When demand is weaker in a recession then supply contracts as producers cut back on output.

   One of the features of a market economy system is that decision-making is decentralized i.e. there is no single body responsible for deciding what is to be produced and in what quantities. This is a remarkable feature of an organic market system.

3. **Rationing function:** Prices serve to ration scarce resources when demand in a market outstrips supply.

   When there is a shortage, the price is bid up – leaving only those with the willingness and ability to pay to purchase the product. Be it the demand for tickets among England supporters for an Ashes cricket series or the demand for a rare antique, the market price acts a rationing device to equate demand with supply.

   The popularity of auctions as a means of allocating resources is worth considering as a means of allocating resources and clearing a market.

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Mixed and Command Economies and Prices

Most economies are mixed economies, comprising not only a market sector, but also a non-market sector, where the government (or state) uses planning to provide public goods and services such as police, roads and merit goods such as education, libraries and health.

In a command economy, planning directs resources to where the state thinks there is greatest need. Following the collapse of communism in the late 1980s and early 1990s, the market-based economy is now the dominant system in most countries – even though we are increasingly aware of many imperfections in the operation of the market.

Prices and incentives

Incentives matter! For competitive markets to work efficiently all 'economic agents' (i.e. consumers and producers) must respond to appropriate price signals in the market.

Market failure occurs when the signaling and incentive functions of the price mechanism fail to operate optimally leading to a loss of economic and social welfare. For example, the market may fail to take into account the external costs and benefits arising from production and consumption. Consumer preferences for goods and services may be based on imperfect information on the costs and benefits of a particular decision to buy and consume a product.

Since the villages of Complex County operate under a free market economy, individual merchants in each village list their products for the price of their choice. The average merchant might look at how much merchandise he has, the cost of any materials he had to use, and the price of his own food and shelter when setting a price. A worker is a merchant when he markets his own labor. Each merchant naturally tries to maximize their income/profit.

People in the county who buy things naturally look for the lowest prices. If they want something more desperately (i.e. it is worth more to them), they will pay more. If they want something less desperately (i.e. it is worth less to them), they will pay less.

Prices are a reflection of worth, and goods and services are worth different amounts to different people.

For example, in Apple town, apples are plentiful, easy to grow, and don't have to travel a long distance to market. A citizen of Apple town would not be willing to pay a high price for an apple. Likewise, a merchant of Apple town doesn't have to spend a lot of money on labor (because the land is so fertile) or lot of money on transportation and can therefore afford to sell apples at a lower price. Also, the merchant is only one of many apple merchants in Apple town, which motivates him to keep his prices low in order make a sale.

Prices instantly communicate the sum of all costs and cost-savings for a product or service.

This communication can either attract or repel buyers and sellers. Buyers are attracted to low prices and repelled by high prices. Sellers are attracted by high prices and repelled by low prices. Through this communication…

Prices provide a mechanism for automatically distributing limited resources to places of need.

For example, the village of Woodville is apple-poor. However, there population size (amount of workers) is still moderate. Since workers must eat apples for food but there are not many apples, the price of an apple in Woodville is high. There are a few apple merchants who grow apples in Woodville, but it is expensive because the land is not well suited for growing apples, and because there are a lot of workers to feed. So the price for apples in Woodville is five times more expensive than the price of an apple in Appleton.

Notes

If you are a merchant in Woodville and half of your land is dedicated to apple farming and the other half is dedicated to pine tree cultivation, you might decide to sell your pine trees and plant more apples, since apples probably bring in more profit due to their high price. If you are a merchant in Apple town and you see that the price for apples is five times greater in Woodville, then you will probably take your apples to Woodville to sell. In both cases, apples were automatically diverted to the town of Woodville to meet the need. There was no fancy coordination involved, it was just the price that the workers of Woodville payed for apples that made it all happen.

So now that merchants from all over are racing to Woodville to sell their apples, the price of apples in Woodville naturally goes down, since the Woodville market has a lot more apples, and settles at a new price.

These two forces, high prices resulting in low prices and low prices resulting in high prices, begin to find an equilibrium. At equilibrium, prices won't change until something that affects the supply, demand, or other aspect of the cost of a good or service.

10.2 Pricing and Profit Analysis

Define pricing?

In managerial economics, profit analysis is a form of cost accounting used for elementary instruction and short run decisions. A profit analysis widens the use of info provided by breakeven analysis. An important part of profit analysis is the point where total revenues and total costs are equal. At this breakeven point, the company does not experience any income or any loss. A business can use a variety of pricing strategies when selling a product or service. The price can be set to maximize profitability for each unit sold or from the market overall.

10.2.1 Components of Profit Analysis

In managerial economics, profit analysis is a form of cost accounting used for elementary instruction and short run decisions. A profit analysis widens the use of info provided by breakeven analysis. An important part of profit analysis is the point where total revenues and total costs are equal. At this breakeven point, the company does not experience any income or any loss.

The key components involved in profit analysis include:

- Selling price per unit
- Level or volume of activity
- Total fixed costs
- per unit variable cos
- Sales mix

10.2.2 Assumptions in Profit Analysis

The profit analysis incorporates the following assumptions:

- Unvarying sales price,
- Unvarying variable cost per unit,
- Unvarying total fixed cost,
- Unvarying sales mix,
- Units sold equal units produced.

These are largely linearizing and simplifying assumptions, which are frequently presumed in elementary discussions of costs and profits. In more advanced accounting treatments, costs and revenue are nonlinear thus making the analysis more complicated.

Notes

10.2.3 Method adopted for Profit Analysis

The main method adopted to carry out profit analysis is the profit volume ratio which is calculated by dividing the shareholders contribution by the sales and then multiplying it by 100 as follows:

Profit Volume Ratio = (Shareholders contribution / Sales) * 100

A method of cost accounting used in managerial economics. Cost-volume profit analysis is based upon determining the breakeven point of cost and volume of goods. It can be useful for managers making short-term economic decisions, and also for general educational purposes.

Cost-volume profit analysis makes several assumptions in order to be relevant. It often assumes that the sales price, fixed costs and variable cost per unit are constant. Running this analysis involves using several equations using price, cost and other variables and plotting them out on an economic graph.

Break-even analysis is of vital importance in determining the practical application of cost func-tions. It is a function of three factors, i.e. sales volume, cost and profit. It aims at classifying the dynamic relationship existing between total cost and sale volume of a company.

Hence it is also known as “cost-volume-profit analysis”. It helps to know the operating condition that exists when a company ‘breaks-even’, that is when sales reach a point equal to all expenses incurred in attaining that level of sales. The break-even point may be defined as that level of sales in which total revenues equal total costs and net income is equal to zero. This is also known as no-profit no-loss point. This concept has been proved highly useful to the company executives in profit forecasting and planning and also in examining the effect of alternative business management decisions.

The break-even point (B.E.P.) of a firm can be found out in two ways. It may be determined in terms of physical units, i.e., volume of output or it may be determined in terms of money value, i.e., value of sales.

BEP in terms of Physical Units

This method is convenient for a firm producing a product. The BEP is the number of units of a product that should be sold to earn enough revenue just to cover all the expenses of production, both fixed and variable. The firm does not earn any profit, nor does it incur any loss. It is the meeting point of total revenue and total cost curve of the firm.

Break-Even charts are being used in recent years by the managerial economists, company execu-tives and government agencies in order to find out the break-even point. In the break-even charts, the concepts like total fixed cost, total variable cost, and the total cost and total revenue are shown separately. The break even chart shows the extent of profit or loss to the firm at different levels of activity.

In the preparation of the break-even chart we have to take the following considerations:

1. Selection of the approach
2. Output measurement
3. Total cost curve
4. Total revenue curve
5. Break-even point and
6. Margin of safety.

Notes

Determination of Break-even Point

The formula for calculating the break-even point is

BEP – Total Fixed Cost/Contribution Margin per Unit

Contribution margin per unit can be found out by deducting the average variable cost from the selling price. So the formula will be

BEP = Total Fixed Cost/Selling Price – AVC

BEP in term of Sales Value

Multi-product firms are not in a position to measure the break-even point in terms of any common unit of product. They find it convenient to determine the break-even point in terms of total rupee sales. Here again the break-even point would be where the contribution margin (sales value—variable costs) would be equal to fixed costs. The contribution margin however, is expressed as a ratio to sales. The formula for calculating the break-even point is-

BEP = Fixed Cost/Contribution Ratio

Contribution Ratio (CR) = Total Revenue (TR)-Total Variable Cost (TVC)/Total Revenue (TR)

For example, if TR is Rs. 600 and TVC is Rs. 450, then the contribution ratio is:

CR = 600 – 450/600/600=150/ 600 = 0.25

The Contribution Ratio is 0.25

BEP = Total Fixed Cost /Contribution Ratio

= 150/0.25 = 600

The firm achieves its BEP when its sales are Rs. 600

Total Revenue = Rs.600

Total Cost = Rs.600

Net Profit/loss = Nil

10.3 Pricing under Perfect Competition

A perfect competition is a market structure where each firm is a price-taker and price is determined by the market forces of demand and supply. We know, equilibrium refers to a state of balance. It means, under perfect competition, market equilibrium is determined when market demand is equal to market supply.

1. Market demand is the sum total of demand for a commodity by all the buyers in the market. Its curve slopes downwards due to operation of law of demand.
2. Market supply is the sum total of supplies of a commodity by all the producers in the market. Its curve slopes upwards due to operation of law of supply.

Both market demand and market supply act as the counteracting forces, which move in the opposite directions. Market Equilibrium is determined when the quantity demanded of a commodity becomes equal to the quantity supplied. The price determined corresponding to market equilibrium is known as equilibrium price and the corresponding quantity is known as equilibrium quantity.

Important Points about Market Equilibrium under Perfect Competition:

1. Each firm is a price-taker and industry is the price-maker.
2. Each firm earns only normal profits in the long rim.

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3. Decisions of consumers and producers in the market are coordinated through free flow of prices known as price mechanism.
4. It is assumed that both law of demand and law of supply operate.
5. Equilibrium Price is the price at which quantity demanded of a commodity is equal to the quantity supplied.
6. At equilibrium price, there is neither shortage nor excess of demand and supply.
7. Equilibrium Quantity is the quantity demanded and supplied at the equilibrium price.

10.3.1 Characteristics of Perfect Competition

Perfect competition is a form of market in which there are a large number of buyers and sellers competing with each other in the purchase and sale of goods, respectively and no individual buyer or seller has any influence over the price. Thus perfect competition is an ideal form of market structure in which there is the greatest degree of competition.

A perfectly competitive market has the following characteristics:

1. There are a large number of independent, relatively small sellers and buyers as compared to the market as a whole. That is why none of them is capable of influencing the market price. Further, buyers/sellers should not have any kind of association or union to arrive at an understanding with regard to market demand/price or sales.
2. The products sold by different sellers are homogenous and identical. There should not be any differentiation of products by sellers by way of quality, variety, colour, design, packaging or other selling conditions of the product. That is, from the point of view of buyers, the products of competing sellers are completely substitutable.
3. There is absolutely no restriction on entry of new firms into the industry and the existing firms are free to leave the industry. This ensures that even in the long run the number of firms would continue to remain large and the relative share of each firm would continue to remain insignificant.
4. Both buyers and sellers in the market have perfect knowledge about the conditions in which they are operating. Buyers know the prices being charged by different competing sellers and sellers know the prices that different buyers are offering.
5. The distance between the locations of competing sellers is not significant and therefore the price of the product is not affected by the cost of transportation of goods. Buyers do not have to incur noticeable transport costs if they want to switch over from one seller to another.

Though perfect competition is rare, almost a non-existent situation, yet we study price determination under the situation.

A perfectly competitive market is one in which the number of buyers and sellers is very large, All engaged in buying and selling a homogeneous product without any artificial restriction and possessing perfect knowledge of a market at a time.

There are two parties which bargain in such a market, the buyers and the sellers. It is only when they agree, a commodity can be bought and sold at a certain price. Thus product pricing is influenced both by buyers and sellers that is by demand and supply.

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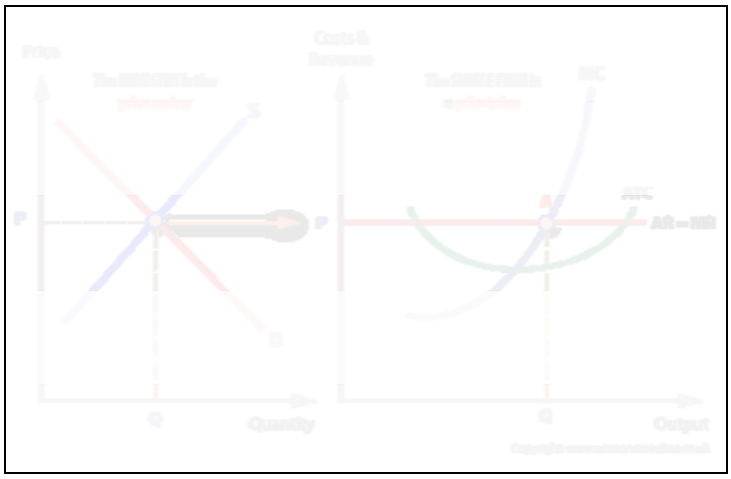
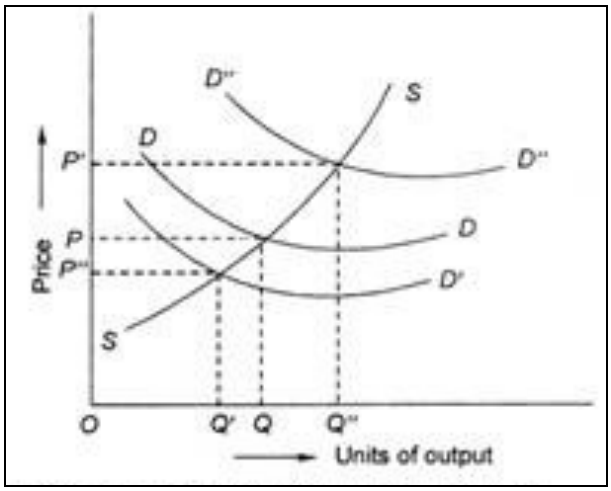


Price of a commodity is determined by the demand and supply. Both the demand and the supply vary with price.

10.3.2 Market Price Vs Normal Prices

The price prevailing in the long run is called normal price. The price determined in the very short period is called Market Price. As supply remains constant, in this period, demand plays an important role in the determination of price. In the long run supply can be adjusted fully to changes in demand. In this period supply plays an important role.



Price Determination in the Short Period

10.4 Pricing under Monopoly

A monopolist is the sole seller of a commodity. The aim of a monopolist is to get maximum profits. Of course, everyone who enters business aims at getting maximum profit. But there is no scope for getting abnormal profit under competition for there are several number of sellers. But the monopolist is the sole seller of a commodity.

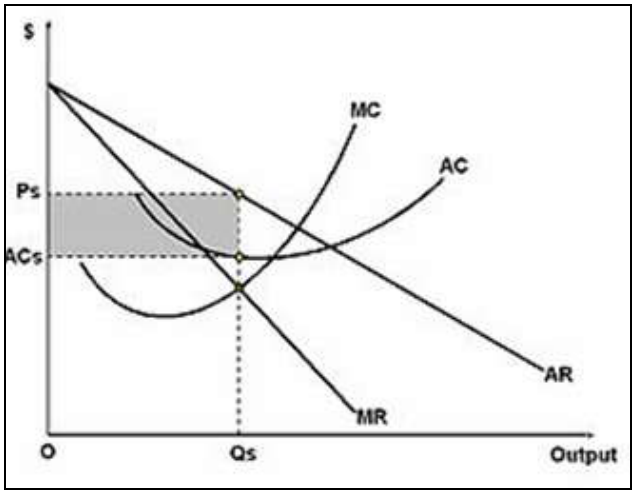
So he will take advantage of the situation and try to get maximum profits. For, all those who want the good should buy it only from him. They have no other way. So in determining the price of a commodity, he will be guided by only one motive, that is, to maximize his profits.

Under perfect competition, there will be several number of sellers. But under monopoly, the monopolist is the sole seller of a commodity. So he can control the supply of his good. But he cannot control demand for there are several number of buyers as in the case of competition.

Notes

The aim of a monopolist is to maximize his profits. For that, he can do one of the following two things. He can fix the price for his good and leave the market to decide what output will be required.

Or he can fix the output and leave the price to be determined by the interaction of supply and demand. In other words, he can fix the price or the output; he cannot do both. The amounts he can sell at any given price depend upon the conditions of demand for his good.



Sometimes, the monopolist may find it possible and profitable to charge different prices to different buyers for the same good. This is known as 'price discrimination' or 'discriminating monopoly.'

For example, a doctor may charge a rich man more than a poor man for a similar operation.

Sometimes, the monopolist may sell his good at lower price in a foreign market than in his home market. His is known as 'Dumping'. Of course, price discrimination is possible only when there is no possibility of resale from one consumer to another. That is, it should not be possible for people to buy goods in a cheaper market and sell them in a dearer market.

10.4.1 Characteristics of Monopoly

Monopoly can be described as a market situation where a single firm controls the entire supply of a product which has no close substitutes.

1. The market structure characteristics of monopoly are listed below:
2. Number and size of distribution of sellers Single seller
3. Number and size of distribution of buyers Unspecified
4. Product differentiation No close substitutes
5. Conditions of entry and exit Prohibited or difficult entry

Though perfect competition and monopoly are the two extreme cases of market structure, they both have one thing in common – they do not have to compete with other individual participants in the market. Sellers in perfect competition are sos mall that they can ignore each other. At the other extreme, the monopolist is the only seller in the market and has no competitors.

The market or industry demand curve and that of the individual firm are the same under monopoly since the industry consists of only one firm. Pricing Decisions8Managers of firms in a perfectly competitive market facing a horizontal demand curve would have no control over the price and they simply choose the profit

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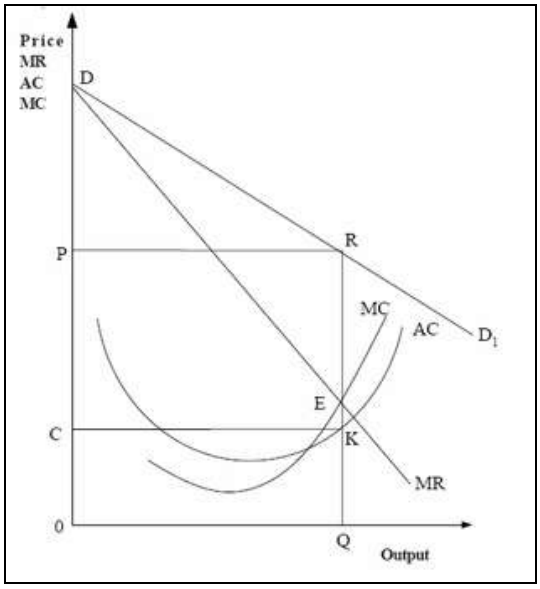
maximizing output. However, the monopoly firm, facing a downward-sloping demand curve has power to control the price of its product.

If the demand for the product remains unchanged, the monopoly firm can raise the price as much as it wishes by reducing its output. On the other hand, if the monopoly firm wishes to sell a larger quantity of its product it must lower the price because total supply in the market will increase to the extent that its output increases. While an individual firm under perfect competition is a price-taker, a monopolist firm is a price-maker. It may, however, be noted that to have price setting power a monopoly must not only be the sole seller of the product but also sell a product which does not have close substitutes.

10.4.2 Profit Maximizing Output of a Monopoly Firm

Often students are tempted into thinking that since a monopolist is the only producer in the market, he will be able to charge any price for the product. While a monopolist will certainly charge a high price, it must also ensure that it is maximizing profit. Our earlier discussion proves that a profit maximizing monopoly firm determines its output at that level where its marginal cost (MC) curve intersects its downward sloping marginal revenue (MR) from below. Since the MR curve of the monopoly firm is below its average revenue or demand curve at all levels of output, and at the equilibrium output level marginal revenue is equal to marginal cost, the profit maximizing monopoly price is greater than marginal cost. You may recall, the profit maximizing price under perfect competition is equal to marginal cost. Since the demand curve of the monopoly firm is above the firm' average cost curve, the price at equilibrium output is also greater than average cost. Therefore, super-normal profits are a distinguishing feature of equilibrium under



Monopoly. The firm would enjoy such super normal profits even in the long run because it is very difficult for new firms to enter in a monopolized market.

The determination of profit maximizing equilibrium output and price under monopoly is shown in figure. DD and MR are the downward sloping demand (or average revenue curve) and marginal revenue curves respectively of the monopoly firm. AC and MC are its average cost and marginal cost curves. At point E, MC intersects MR from below. Corresponding to E, the profit maximizing equilibrium output is OQ. At OQ output, the price is OP = QR; and average cost is OC = QK. The monopoly profits are equal to price minus average cost multiplied by output i.e., (OP – OC) * OQ = PC *CK = PCKR. The rectangle area PCKR represents the super normal profits of the monopoly firm.

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10.5 Pricing under Monopolistic Competition

Under monopolistic competition, the firm will be in equilibrium position when marginal revenue is equal to marginal cost. So long the marginal revenue is greater than marginal cost, the seller will find it profitable to expand his output, and if the MR is less than MC, it is obvious he will reduce his output where the MR is equal to MC.

Pricing decisions tend to be the most important decisions made by any firm in any kind of market structure. The concept of pricing has already been discussed in unit. The price is affected by the competitive structure of a market because the firm is an integral part of the market in which it operates.

Monopolistic competition normally exists when the market has many sellers selling differentiated products, for example, retail trade, whereas oligopoly is said to be a stable form of a market where a few sellers operate in the market and each firm has a certain amount of share of the market and the firms recognize their dependence on each other. The features of monopolistic and oligopoly are discussed in detail in this unit.

Edward Chamberlin, who developed the model of monopolistic competition, observed that in a market with large number of sellers, the products of individual firms are not at all homogeneous, for example, soaps used for personal wash. Each brand has a specific characteristic, be it packaging, fragrance, look etc., though the composition remains the same. This is the reason that each brand is sold Pricing Decisions individually in the market. This shows that each brand is highly differentiated in the minds of the consumers. The effectiveness of the particular brand may be attributed to continuous usage and heavy advertising. As defined by Joe S.Bain 'Monopolistic competition is found in the industry where there are a large number of sellers, selling differentiated but close substitute products'. Take the example of Liril and Cinthol. Both are soaps for personal care but the brands are different. Under monopolistic competition, the firm has some freedom to fix the price i.e. because of differentiation a firm will not lose all customers when it increases its price. Monopolistic competition is said to be the combination of perfect competition as well as monopoly because it has the features of both perfect competition and monopoly. It is closer in spirit to a perfectly competitive market, but because of product differentiation, firms have some control over price. The characteristic features of monopolistic competition are as follows:

1. A large number of sellers: Monopolistic market has a large number of sellers of a product but each seller acts independently and has no influence on others.
2. A large number of buyers: Just like the sellers, the market has a large number of buyers of a product and each buyer acts independently.
3. Sufficient Knowledge: The buyers have sufficient knowledge about the product to be purchased and have a number of options available to choose from.

For example, we have a number of petrol pumps in the city. Now it depends on the buyer and the ease with which s/he will get the petrol decides the location of the petrol pump. Here accessibility is likely to be an important factor. Therefore, the buyer will go to the petrol pump where s/he feels comfortable and gets the petrol filled in the vehicle easily.

1. Differentiated Products: The monopolistic market categorically offers differentiated products, though the difference in products is marginal, for example, toothpaste.
2. Free Entry and Exit: In monopolistic competition, entry and exit are quite easy and the buyers and sellers are free to enter and exit the market at their own will. Nature of the Demand Curve

The demand curve of the monopolistic competition has the following characteristics:

1. Less than perfectly elastic: In monopolistic competition, no single firm dominates the industry and due to product differentiation, the product of each firm seems to be

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a close substitute, though not a perfect substitute for the products of the competitors. Due to this, the firm in question has high elasticity of demand.

2. Demand curve slopes downward: In monopolistic competition, the demand curve facing the firm slopes downward due to the varied tastes and preferences of consumers attached to the products of specific sellers. This implies that the demand curve is not perfectly elastic.

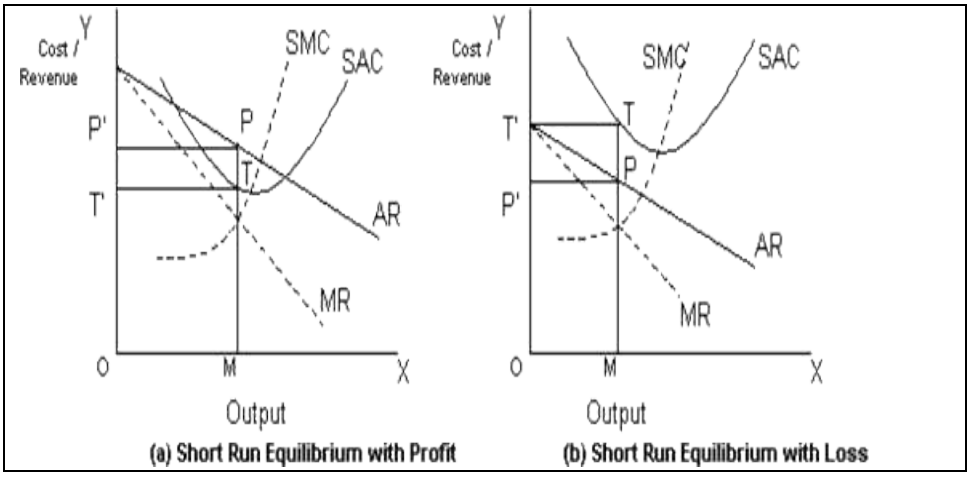
In monopolistic competition, every firm has a certain degree of monopoly power i.e. every firm can take initiative to set a price. Here, the products are similar but not identical, therefore there can never be a unique price but the prices will be in a group reflecting the consumers' tastes and preferences for differentiated products. In this case the price of the product of the firm is determined by its cost function, demand, its objective and certain government regulations, if there are any.

Due to free entry, many firms can enter the market and there may be a condition where the demand falls below LRAC and ultimately suffers losses resulting in the exit of the firms. Therefore under the monopolistic competition free entry and exit must lead to a situation where demand becomes tangent to LRAC, the price becomes equal to average cost and no economic profit is earned. It can thus be said that in the long run the profits peter out completely.

One of the interesting features of the monopolistically competitive market is the variety available due to product differentiation. Although firms in the long run do not produce at the minimum point of their average cost curve, and thus there is excess capacity available with each firm, economists have rationalized this by attributing the higher price to the variety available. Further, consumers are willing to pay the higher price for the increased variety available in the market.

In short run, therefore, the firm will be in equilibrium when it is maximizing profits, i.e., when MR = MC.

1. **Short Run Equilibrium:** Short run equilibrium is illustrated in the following diagram:



In the above diagram, the short run average cost is MT and short run average revenue is MP. Since the AR curve is above the AC curve, therefore, the profit is shown as PT. PT is the supernormal profit per unit of output. Total supernormal profit will be measured by multiplying the supernormal profit to the total output, i.e. PT × OM or PTT'P' as shown in figure (a). The firm may also incur losses in the short run if it is facing AR curve below the AC curve.

In figure (b) MP is less than MT and TP is the loss per unit of output. Total loss will be measured by multiplying loss per unit of output to the total output, i.e., TP × OM or TPP'T'.

2. **Long Run Equilibrium:** Under monopolistic competition, the supernormal profit in the long run is disappeared as new firms are entered into the industry. As the new

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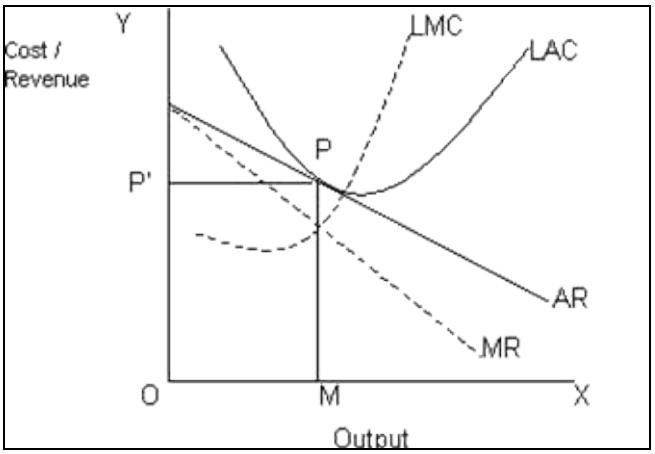
firms are entered into the industry, the demand curve or AR curve will shift to the left, and therefore, the supernormal profit will be competed away and the firms will be earning normal profits.

If in the short run firms are suffering from losses, then in the long run some firms will leave the industry so that remaining firms are earning normal profits.

The AR curve in the long run will be more elastic, since a large number of substitutes will be available in the long run.

Therefore, in the long run, equilibrium is established when firms are earning only normal profits. Now profits are normal only when AR = AC. It is further illustrated in the following diagram:



Long-run Equilibrium in Monopolistic Competition

10.6 Pricing under Oligopoly

Oligopoly is the most prevalent form of market organization in the manufacturing sector of most nations, including India. Some oligopolistic industries in India are automobiles, primary aluminium, steel, electrical equipment, glass, breakfast cereals, cigarettes, and many others. Some of these products (such as steel and aluminium) are homogeneous, while others (such as automobiles, cigarettes, breakfast cereals, and soaps and detergents) are differentiated.

Oligopoly exists also when transportation costs limit the market area. For example, even though there are many cement producers in India, competition is limited to the few local producers in a particular area. Since there are only a few firms selling a homogeneous or differentiated product in oligopolistic markets, the action of each firm affects the other firms in the industry and vice versa.

For example, when General Motors introduced price rebates in the sale of its automobiles, Ford and Maruti immediately followed with price rebates of their own. Furthermore, since price competition can lead to ruinous price wars, oligopolists usually prefer to compete on the basis of product differentiation, advertising, and service.

These are referred to as non price competition. Yet, even here, if GM mounts a major advertising campaign, Ford and Maruti are likely to soon respond in kind. When Pepsi mounted a major advertising campaign in the early 1980s Coca-Cola responded with a large advertising campaign of its own in the United States. From what has been said, it is clear that the distinguishing characteristic of oligopoly is the interdependence or rivalry among firms in the industry.

This is the natural result of fewness. Since an oligopolistic knows that its own actions will have a significant impact on the other oligopolists in the industry, each oligopolistic must consider the possible reaction of competitors in deciding its pricing policies, the degree of product differentiation to introduce, the level of advertising to be

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undertaken, the amount of service to provide, etc. Since competitors can react in many different ways (depending on the nature of the industry, the type of product, etc.) We do not have a single oligopoly model but many-each based on the particular behavioural response of competitors to the actions of the first. Because of this interdependence, managerial decision making is much more complex under oligopoly than under other forms of market structure. In what follows we present some of the most important oligopoly models. We must keep in mind, however, that each model is at best incomplete. The sources of oligopoly are generally the same as for monopoly. That is,

1. Economies of scale may operate over a sufficiently large range of outputs as to leave only a few firms supplying the entire market;
2. Huge capital investments and specialized inputs are usually required to enter an oligopolistic industry (say, automobiles, aluminium, steel, and similar industries), and this acts as an important natural barrier to entry;
3. A few firms may own a patent for the exclusive right to produce a commodity or to use a particular production process;
4. Established firms may have a loyal following of customers based on product quality and service that new firms would find very difficult to match;
5. A few firms may own or control the entire supply of a raw material required in the production of the product; and
6. The government may give a franchise to only a few firms to operate in the market.

The above are not only the sources of oligopoly but also represent the barriers to other firms entering the market in the long run. If entry were not so restricted, the industry could not remain oligopolistic in the long run. A further barrier to entry is provided by limit pricing, whereby, existing firms charge a price low enough to discourage entry into the industry. By doing so, they voluntarily sacrifice short-run profits in order to maximize long-run profits. As discussed earlier oligopolies can be classified on the basis of type of product produced. They can be homogeneous or differentiated. Steel, Aluminium etc. come under homogeneous oligopoly and television, automobiles etc. come under heterogeneous oligopoly.

The type of product produced may affect the strategic behaviour of oligopolists. According to economists, two contrasting behaviour of oligopolists arise that is the cooperative oligopolists where an oligopolistic follows the pattern followed by rival firms and the non-cooperative oligopolists where the firm does not follow the pattern followed by rival firms. For example, a firm raises price of its product, the other firms may keep their prices low so as to attract the sales away from the firm, which has raised its price. But as stated above, price is not the only factor of competition. As a matter of fact other factors on the basis of which the firms compete include advertising, product quality and other marketing strategies. Therefore, we normally have four general oligopolistic market structures, two each under cooperative as well as non-cooperative structures.

We have firms producing homogeneous and differentiated products under each of the two basic structures. All these differences exist in the oligopolistic market. This shows that each firm tries to make an impact in the existing market structure and have an effect on the rival firms. This tends to be a distinguishing characteristic of an oligopolistic market. Price Rigidity: Kinked Demand Curve. Our study of pricing and market structure has so far suggested that a firm maximizes profit by setting MR = MC. While this is also true for oligopoly firms, it needs to be supplemented by other behavioural features of firm rivalry.

1. If an industry is composed of few firms each selling identical or homogenous products and having powerful influence on the total market, the price and output policy of each is likely to affect the other appreciably, therefore they will try to promote collusion.
2. In case there is product differentiation, an oligopolistic can raise or lower his price without any fear of losing customers or of immediate reactions from his rivals.

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However, keen rivalry among them may create condition of monopolistic competition.

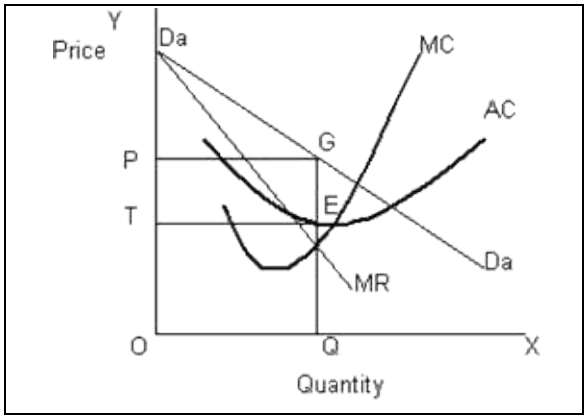
10.6.1 Collusive Oligopoly

The degree of imperfect competition in a market is influenced not just by the number and size of firms but by how they behave. When only a few firms operate in a market, they see what their rivals are doing and react. 'Strategic interaction' is a term that describes how each firm's business strategy depends upon its rivals' business behavior.

When there are only a small number of firms in a market, they have a choice between 'cooperative' and 'non-cooperative' behavior:

Firms act non-cooperatively when they act on their own without any explicit or implicit agreement with other firms. That's what produces 'price wars'.

It is more illustrated in the following diagram:



The above diagram illustrates the situation of oligopolistic A and his demand curve DaDa assuming that the other firms all follow firm A's lead in raising and lowering prices. Thus the firm's demand curve has the same elasticity as the industry's DD curve. The optimum price for the collusive oligopolistic is shown at point G on DaDa just above point E. This price is identical to the monopoly price, it is well above marginal cost and earns the colluding oligopolists a handsome monopoly profit.

10.7 Different Pricing Strategies

Pricing is one of the four elements of the marketing mix, along with product, place and promotion. Pricing strategy is important for companies who wish to achieve success by finding the price point where they can maximize sales and profits. Companies may use a variety of pricing strategies, depending on their own unique marketing goals and objectives.

A pricing strategy takes into account segments, ability to pay, market conditions, competitor actions, trade margins and input costs, amongst others.

Price is the value that is put to a product or service and is the result of a complex set of calculations, research and understanding and risk taking ability. A pricing strategy takes into account segments, ability to pay, market conditions, competitor actions, trade margins and input costs, amongst others. It is targeted at the defined customers and against competitors.

When fixing the first price, the decision is obviously a major one. When the company introduces its product for the first time, the whole future depends heavily on the soundness of initial pricing decision. Top management is accountable for the new product's success record.

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Pricing is the process of determining what a company will receive in exchange for its product or service. A business can use a variety of pricing strategies when selling a product or service. The price can be set to maximize profitability for each unit sold or from the market overall. It can be used to defend an existing market from new entrants, to increase market share within a market or to enter a new market.

There is a need to follow certain guidelines in pricing of the new product. Following are the common pricing strategies.

10.7.1 Pricing a New Product

Most companies do not consider pricing strategies in a major way, on a day-today basis. The marketing of a new product poses a problem because new products have no past information.

Fixing the first price of the product is a major decision. The future of the company depends on the soundness of the initial pricing decision of the product. In large multidivisional companies, top management needs to establish specific criteria for acceptance of new product ideas.

The price fixed for the new product must have completed the advanced research and development, satisfy public criteria such as consumer safety and earn good profits.

Top management must establish specific criteria for acceptance of new product ideas especially in a large multidivisional company where all kinds of projects bubble up as favorites of various managers. There are always competitors who would also like to produce it at the earliest opportunity. Pricing decision assumes special importance when one or more competitors change their prices or products or both.

Pricing strategies to attract customers / increase profit

1. **Premium pricing:** This occurs when a firm makes a good more expensive to try and give the impression that it is better quality, e.g. ‘premium unleaded fuel’, fashion labels.
2. **Loss Leaders:** This involves setting a low price on some products to entice customers into shop where hopefully they will also buy other goods as well. However, it is illegal to sell goods below cost, so firms could be investigated by OFT.
3. **Price Discrimination:** This involves charging a different price to different groups of consumers to take advantage of different elasticities of demand. There are different types of price discrimination from second degree to third degree.
4. **Reference Pricing.** This involves setting an artificially high price to be able to later offer discounts on previously advertised price.
5. **Price Matching.** The purpose behind price matching is making a promise to match any price cuts by your competitors. The argument is that this discourages your competitors from cutting price. This is because they know there is little point in cutting prices, because you will respond straight away. Very clear price matching stance’s can thus avoid price wars and give the impression of being very competitive. For example, Tescos are offering £10 voucher to customers who can prove their shopping basket would have been cheaper at other supermarkets.
6. **Retail price mechanism RPM** – when manufacturers set minimum prices for retailers, e.g. net book agreement.
7. **Psychological pricing.** Setting price at important psychological levels to trigger purchase, e.g. selling good at £9.99 to make it appear cheaper. Some firms use reverse psychology and charge exact prices, e.g. clothes for £40 to indicate quality rather than cheapness.
8. **Premium decoy pricing.** Where a firm sets the price of one good deliberately high to encourage demand for lower price. E.g. a car company may bring out a top of the

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range sports car, which is very expensive to make the general brand more attractive.

9. **Pay what you want.** A situation where consumers are left free to decide how much to pay, e.g. restaurants cafe where there is no cost – only tipping. When music companies release a new recording and ask for donations.
10. **Bundle pricing.** When a firm gives special offers, e.g. buy 3 for the price of 2 – very common for book sales etc.
11. **Price skimming.** When a firm releases a new product, it initially sets a high price to take advantage of those consumers with inelastic demand. Over time, the price is reduced to attract those customers with more price elastic demand.
12. **Penetration pricing.** When a firm sets a low price to help establish market share and get established. For example a new printing company may offer very low price for its printers to get established. Then it get make profits on selling ink and over time increase the price. Or satellite TV Company offering introductory offer for a few months.
13. **Optional pricing.** When a firm tries to receive a higher price by selling extras. For example, if you buy a DVD, you can get sold insurance or additional features.
14. **Dynamic pricing.** When prices are regularly updated in response to shifting market conditions. For example, if an airline receives high demand for certain flights, it will increase the price to help fill up other departure times and maximize revenue from the flight.

Pricing strategies to cement market share / market position

1. **Limit pricing.** This occurs when a monopoly set price lower than profit maximization to discourage entry. This enables the firm to make supernormal profit, but the price is still low enough to deter new firms to enter the market.
2. **Predatory pricing.** Selling price below cost to try and force rival out of business. Predatory pricing is illegal. Predatory pricing can be made easier through cross Subsidization. This occurs when a big multinational may use profits in one area to subsidies a price war in another. The cross subsidization enables a firm to sell a product very competitively (or even at a loss) to try and force the rival firms out of business.

Pricing strategies to help determine the price

1. **Average cost pricing.** When a firm sets the price equal to average cost plus a certain profit margin.
2. **Market based pricing.** When firms set a price depending on supply and demand. For example, if football clubs, used market based pricing, clubs like Manchester United would probably increase the ticket price – because at the moment, all tickets are sold out – suggesting price is below the equilibrium.
3. **Mark-up pricing.** This involves setting a price equal to marginal cost of production + x. (where x = the profit margin a firm wants to make on each sale)
4. **Profit maximization:** Setting price and quantity so MR=MC

Sometimes, the competitors may introduce a new brand without altering the price of an existing brand. If the new brand is perceived to compete with a given brand more effectively, then the firm in question may have to think on its pricing policy once again.

The price fixed for the new product must:

1. Earn good profits for the firm over the life of the product;
2. Provide better quality at a cheaper price and at a faster speed than competitors;
3. Face rising R & D, manufacturing and marketing costs and
4. Satisfy public criteria such as consumer safety and ecological compatibility.

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Premium Pricing

Premium pricing strategy establishes a price higher than the competitors. It's a strategy that can be effectively used when there is something unique about the product or when the product is first to market and the business has a distinct competitive advantage. Premium pricing can be a good strategy for companies entering the market with a new market and hoping to maximize revenue during the early stages of the product life cycle.

Penetration Pricing

A penetration pricing strategy is designed to capture market share by entering the market with a low price relative to the competition to attract buyers. The idea is that the business will be able to raise awareness and get people to try the product. Even though penetration pricing may initially create a loss for the company, the hope is that it will help to generate word-of-mouth and create awareness amid a crowded market category.

Penetration price is known as charging lowest price for the new product. This is aimed to quick in sales, capture market share, utilize full capacity and economies of scale in productive process and keep the competitors away from the market.

Penetration price policy can be adopted in the following circumstances:

1. There is very high price elasticity of demand.
2. There are substantial cost savings due to enhanced production process.
3. By nature the product is acceptable to the mass of consumers.
4. There is no strong patent protection.
5. There is imminent threat of potential competition so that a big share of the market must be captured quickly.

Penetration price is a long term pricing strategy and should be adopted with great caution. Penetration pricing is successful also when there is no elite market. When a firm adopts a penetrating pricing policy, adjustments to price throughout the product life cycle are minimal. Since this policy prevents competition, it is also referred to as 'Stay-out' price policy.

Economy Pricing

Economy pricing is a familiar pricing strategy for organizations that include Wal-Mart, whose brand is based on this strategy. Aldi, a food store, is another example of economy pricing strategy. Companies take a very basic, low-cost approach to marketing--nothing fancy, just the bare minimum to keep prices low and attract a specific segment of the market that is very price sensitive.

Price Skimming

Businesses that have a significant competitive advantage can enter the market with a price skimming strategy designed to gain maximum revenue advantage before other competitors begin offering similar products or product alternatives.

Skimming pricing is known as charging high price in initial stages. This can be followed by a firm by charging skimming price for a new product in pio-neering stage. When demand is either unknown or more inelastic at this stage, market is divided into segments on the basis of different degree of elasticity of demand of different consumers.

This is a short period device for pricing. The demand for new products is likely to be less price elastic in the early stages, that is, the initial high price helps to "Skim the Cream" of the market which is relatively insensitive to price.

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Psychological Pricing

Psychological pricing strategy is commonly used by marketers in the prices they establish for their products. For instance, $99 is psychologically "less" in the minds of consumers than $100. It's a minor distinction that can make a big difference.

10.8 Price Discrimination

Price discrimination is the practice of charging a different price for the same good or service. There are three types of price discrimination – first-degree, second-degree, and third-degree price discrimination.

Price discrimination is a pricing strategy that charges customers different prices for the same product or service. In pure price discrimination, the seller will charge each customer the maximum price that he or she is willing to pay. In more common forms of price discrimination, the seller places customers in groups based on certain attributes and charges each group a different price.

Price discrimination allows a company to earn higher profits than standard pricing because it allows firms to capture every last dollar of revenue available from each of its customers.

Price discrimination is a microeconomic pricing strategy where identical or largely similar goods or services are transacted at different prices by the same provider in different markets. Price differentiation is distinguished from product differentiation by the more substantial difference in production cost for the differently priced products involved in the latter strategy. Price differentiation essentially relies on the variation in the customers' willingness to pay and in the elasticity of their demand.

The term differential pricing is also used to describe the practice of charging different prices to different buyers for the same quality and quantity of a product, but it can also refer to a combination of price differentiation and product differentiation.

While perfect price discrimination is illegal, when the optimal price is set for every customer, imperfect price discrimination exists. For example, movie theaters usually charge three different prices for a show. The prices target various age groups, including youth, adults and seniors. The prices fluctuate with the expected income of each age bracket, with the highest charge going to the adult population.

In a theoretical market with perfect information, perfect substitutes, and no transaction costs or prohibition on secondary exchange (or re-selling) to prevent arbitrage, price discrimination can only be a feature of monopolistic and oligopolistic markets, where market power can be exercised. Otherwise, the moment the seller tries to sell the same good at different prices, the buyer at the lower price can arbitrage by selling to the consumer buying at the higher price but with a tiny discount. However, product heterogeneity, market frictions or high fixed costs (which make marginal-cost pricing unsustainable in the long run) can allow for some degree of differential pricing to different consumers, even in fully competitive retail or industrial markets.

The effects of price discrimination on social efficiency are unclear. Output can be expanded when price discrimination is very efficient. Even if output remains constant, price discrimination can reduce efficiency by misallocating output among consumers.

Price discrimination requires market segmentation and some means to discourage discount customers from becoming resellers and, by extension, competitors. This usually entails using one or more means of preventing any resale: keeping the different price groups separate, making price comparisons difficult, or restricting pricing information. The boundary set up by the marketer to keep segments separate is referred to as a rate fence. Price discrimination is thus very common in services where resale is not possible; an example is student discounts at museums: In theory, students, for their condition as students, may get lower prices than the rest of the population for a certain product or service, and later will not become resellers, since what they received,

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may only be used or consumed by them. Another example of price discrimination is intellectual property, enforced by law and by technology. In the market for DVDs, laws require DVD players to be designed and produced with hardware or software that prevents inexpensive copying or playing of content purchased legally elsewhere in the world at a lower price. In the US the Digital Millennium Copyright Act has provisions to outlaw circumventing of such devices to protect the enhanced monopoly profits that copyright holders can obtain from price discrimination against higher price market segments.

Price discrimination can also be seen where the requirement that goods be identical is relaxed. For example, so-called "premium products" (including relatively simple products, such as cappuccino compared to regular coffee with cream) have a price differential that is not explained by the cost of production. Some economists have argued that this is a form of price discrimination exercised by providing a means for consumers to reveal their willingness to pay.

10.8.1 Conditions necessary for price discrimination to work

Price discrimination can only occur if certain conditions are met:

- The firm must be able to identify different market segments, such as domestic users and industrial users.
- Different segments must have different price elasticities (PEDs).
- Markets must be kept separate, either by time, physical distance and nature of use, such as Microsoft Office 'Schools' edition which is only available to educational institutions, at a lower price.
- There must be no seepage between the two markets, which means that a consumer cannot purchase at the low price in the elastic sub-market, and then re-sell to other consumers in the inelastic sub-market, at a higher price.
- The firm must have some degree of monopoly power.
- Differences in price elasticity of demand: There must be a different price elasticity of demand for each group of consumers. The firm is then able to charge a higher price to the group with a more price inelastic demand and a lower price to the group with a more elastic demand. By adopting such a strategy, the firm can increase total revenue and profits (i.e. achieve a higher level of producer surplus). To profit maximize, the firm will seek to set marginal revenue = to marginal cost in each separate (segmented) market.
- Barriers to prevent consumers switching from one supplier to another: The firm must be able to prevent "consumer switching" – i.e. consumers who have purchased a product at a lower price are able to re-sell it to those consumers who would have otherwise paid the expensive price.
- This can be done in a number of ways, – and is probably easier to achieve with the provision of a unique service such as a haircut, dental treatment or a consultation with a doctor rather than with the exchange of tangible goods such as a meal in a restaurant.

Advantages of Price Discrimination

- Firms will be able to increase revenue. This will enable some firms to stay in business who otherwise would have made a loss. For example price discrimination is important for train companies who offer different prices for peak and off peak.
- Increased revenues can be used for research and development which benefit consumers
- Some consumers will benefit from lower fares. E.G. old people benefit from lower train companies, old people are more likely to be poor.

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Disadvantages of Price Discrimination

1. Some consumers will end up paying higher prices. These higher prices are likely to be allocative inefficient because P > MC.
2. Decline in consumer surplus.
3. Those who pay higher prices may not be the poorest. E.g. adults could be unemployed, OAPs well off.
4. There may be administration costs in separating the markets.
5. Profits from price discrimination could be used to finance predatory pricing.

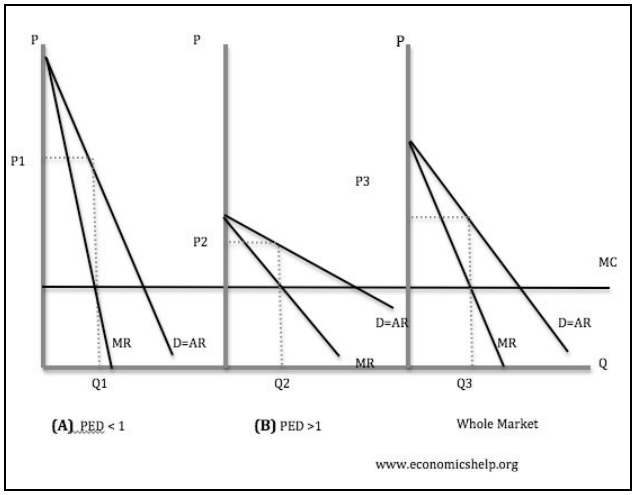
10.8.2 Importance of Marginal Cost in Price Discrimination

In markets where the marginal cost of an extra passenger is very low. E.G. a bus traveler the firm has an incentive to use price discrimination to sell all the tickets. This is why sometimes prices for airlines can be very low just before their date. Once the company is due to fly the MC of an extra passenger will be very low. Therefore this justifies selling the remaining tickets at a low price.

Examples of price discrimination

1. Student discounts on trains
2. Discounts for buying train tickets in advance
3. Discounts for travelling at off peak time
4. Lower unit cost price for buying high quantity.

Profit Maximization under Price Discrimination



Profit is maximized where MR=MC. Because demand is more inelastic in market (A) it leads to a higher price being set. In market (B) demand is price elastic, so profit maximizing price is lower.

Price discrimination is one of the competitive practices used by larger, established businesses in an attempt to profit from differences in supply and demand from consumers. Price discrimination is a pricing strategy that occurs when a business or seller charges a different price to various customers for the same product or service. A company can enhance its profits by charging each customer the maximum amount he is willing to pay, eliminating consumer surplus, but it is often a challenge to determine what that exact price is for every buyer. For price discrimination to succeed, businesses must understand their customer base and its needs, and there must be familiarity with the various types of price discrimination used in economics. The most common types of price discrimination are first, second and third degree discrimination.

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First Degree Price Discrimination

In an ideal business world, companies would be able to eliminate all consumer surplus through first degree price discrimination. This type of pricing strategy takes place when businesses can accurately determine what each customer is willing to pay for a specific product or service and selling that good or service for that exact price.

In some industries, such as used car or truck sales, an expectation to negotiate final purchase price is part of the buying process. The company selling the used car can gather information through data mining relating to each buyer's past purchase habits, income, budget and maximum available output to determine what to charge for each car sold. This pricing strategy is time-consuming and difficult to perfect for most businesses, but it allows the seller to capture the highest amount of available profit for each sale.

This first type of product pricing is based on the seller's ability to determine exactly how much each and every customer is willing to pay for a good. Different consumers have different preferences and levels of purchasing power and thus the amount they would be willing to pay for a good often exceeds a single competitive price. This difference between what a consumer is willing to pay and the price actually paid is known, of course, as consumer's surplus. Thus a firm engaging in first degree price discrimination is attempting to extract all the consumers' surplus from its customers as profits.

The seller will take the time to bargain or 'haggle' with the customer about the price that customer is willing to pay - some buyers willing to pay a higher price other buyers a lower price. The firm will sell a quantity of output 'Q*' up to the point where the price of the last unit sold just covers the marginal costs of production. The difference between the price charged on each unit and the average costs of producing 'Q*' units of output will be the firm's profits.

Common examples of first degree price discrimination include car sales at most dealerships where the customer rarely expects to pay full sticker price, scalpers of concert and sporting-event tickets, and road-side sellers of fruit and produce.

Second Degree Price Discrimination

In second degree price discrimination, the ability to gather information on every potential buyer is not present. Instead, companies price products or services differently based on the preferences of various groups of consumers.

Most often, businesses apply second-degree price discrimination through quantity discounts; customers who buy in bulk receive special offers that are not granted to those who buy a single product. This type of pricing strategy is used most often in warehouse retailers, such as Sam's Club or Costco, but it can also be seen in companies that offer loyalty or rewards cards to frequent customers.

Second degree price discrimination does not altogether eliminate consumer surplus, but it does allow a company to increase its profit margin on a subset of its consumer base.

The second type of price discrimination involves the establishment of a pricing structure for a particular good based on the number of units sold. Quantity discounts are a common example. In this case the seller charges a higher per-unit price for fewer units sold and a lower per-unit price for larger quantities purchased. In this case the seller is attempting to extract some of the consumer's surplus value as profits with residual surplus remaining with the consumer over and above the actual price paid. Like the case of first degree price discrimination, the firm will produce a level of output where the price charged just covers the marginal costs of production.

In the diagram below, we find an example of a firm charging three different prices for the same product. The price P0 is charged per unit if the buyer chooses to buy Q0 units of the good. A lower price P1 is charged for a greater quantity Q1 and the price P2

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is charged for the quantity Q*2 (the level of output such that P2 = MC -- the marginal costs of production):

Common examples of second degree price discrimination include quantity discounts for energy use; the variations in price for different sizes of boxed cereal, packaged paper products; and sodas and French fries at fast food outlets.

Third Degree Price Discrimination

Third degree price discrimination occurs when companies price products and services differently based on the unique demographics of subsets of its consumer base, such as students, military personnel or seniors.

Companies can understand the broad characteristics of consumers more easily than the buying preferences of individual buyers. Third degree price discrimination provides a way to reduce consumer surplus by catering to the price elasticity of demand of specific consumer subsets.

This type of pricing strategy is often seen in movie theater ticket sales, admission prices to amusement parks or restaurant offers. Consumer groups that may otherwise not be able or willing to purchase a product due to their lower income are captured by this pricing strategy, increasing company profits.

The last type of price discrimination exists where the firm is able to segment its customers into two or more separate markets, each market defined by unique demand characteristics. Some of these markets might be less price sensitive (price inelastic) relative to other markets where quantity demanded is more sensitive to price changes (price elastic). The firm might find that by charging a higher price 'P1' and selling a level of output 'Q1' in the first market and a lower price 'P2' selling a level of output 'Q2' in the second market; profits are greater than in that firm charged a single price 'P* ' (P2 < P* < P1) for all units sold. Specifically, the firm will attempt third degree price discrimination if:

P1Q1 + P2Q2 > P*Q* (Q* = Q1 + Q2, Total Costs are the same in either case)

In order for this type of price discrimination to be effective, the firm must be able to prevent a third party from engaging in arbitrage (buying in the second market at a price slightly above P2 and selling in the first market at a price slightly below P1 forcing both prices towards P*) and profiting from the price differences. The markets must be kept separate!

Examples of third degree price discrimination include: business vs. tourist airfares, business vs. residential telephone service, and senior discounts.

Price discrimination means charging different prices from different customers or for different units of the same product. In the words of Joan Robinson: “The act of selling the same article, produced under single control at different prices to different buyers is known as price discrimination.” Price discrimination is possible when the monopolist sells in different markets in such a way that it is not possible to transfer any unit of the commodity from the cheap market to the dearer market.

Price discrimination is, however, not possible under perfect competition, even if the two markets could be kept separate. Since the market demand in each market is perfectly elastic, every seller would try to sell in that market in which he could get the highest price. Competition would make the price equal in both the markets. Thus price discrimination is possible only when markets are imperfect.

10.9 Summary

Price system, a means of organizing economic activity. It does this primarily by coordinating the decisions of consumers, producers, and owners of productive resources.

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Millions of economic agents who have no direct communication with each other are led by the price system to supply each other's wants. In a modern economy the price system enables a consumer to buy a product he has never previously purchased, produced by a firm of whose existence he is unaware, which is operating with funds partially obtained from his own savings.

A system of prices exists because individual prices are related to each other. If, for example, copper rods cost 40 cents a pound and the process of drawing a rod into wire costs 25 cents a pound, then it will be profitable to produce wire from a copper rod if its price exceeds 65 cents.

In a highly competitive beauty industry, the owner of Images Beauty Salon decides to undercut her local competitors by offering identical services for half price. But, how might this be accomplished? Could she pay her employees less? Possibly.

To figure this out, first we must discuss a price floor, which, in economics, is a minimum price imposed by a government or agency, for a particular product or service. An effective price floor needs to be higher than the equilibrium price, the price at which supply and demand are equal. If not, the market would not sell below the equilibrium, and the price floor would mean nothing. Additionally, sellers who charge a price lower than the imposed floor price would be breaking the law.

Today, there are a few instances where a price floor has been imposed, for protecting various groups of people. Let's look at some common examples.

The Minimum Wage

Using the example from above, the owner of Images Beauty Salon might not be able to charge $20 for a perm when the competing salons are charging $40-$60 each, if this means paying her employees less than minimum wage to make a profit. The minimum wage is the price that employers pay for labor, and a common example of a price floor. The federal minimum wage is, as of 2015, $7.25 per hour; this is established by the Federal government and applied across the United States.

States have various, higher minimum wages, but paying an employee less than $7.25 an hour would be illegal. This price floor protects the employees from being exploited.

Conversely, it will be unprofitable to produce wire if its price falls below 65 cents. Competition will hold the price of wire about 25 cents per pound above that of rods. A variety of such economic forces tie the entire structure of prices together.

Price stability implies avoiding both prolonged inflation and deflation:

Inflation is a rise in the in the general price level of goods and services in an economy over a longer period of time resulting in a decline in the value of money and purchasing power. Deflation is a decrease in the general price level of goods and services over a longer period of time. Too rapid inflation is negative for many reasons: it complicates the economic decision-making process and slows economic growth. In addition, inflation diminishes the value of savings. Deflation is accompanied by the threat of a slowdown in economic growth, because the general level of prices declines, and thus, people postpone consumption and companies postpone investment. There may emerge an inflationary gap which is very difficult to overcome. The real value of loans that are not repaid increases, which means that borrowers run into difficulty, and loan losses pose a threat to financial institutions as well. Often, enterprises find it hard to lower wages, even if the price of their output declines. This causes an increase in unemployment and in the number of bankruptcies.

1. Price stability contributes to achieving high levels of economic activity and employment by
2. Improving the transparency of the price mechanism. Under price stability people can recognize changes in relative prices (i.e. prices between different goods), without being confused by changes in the overall price level. This allows them to

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make well-informed consumption and investment decisions and to allocate resources more efficiently;

3. Reducing inflation risk premier in interest rates (i.e. compensation creditors ask for the risks associated with holding nominal assets). This reduces real interest rates and increases incentives to invest;
4. avoiding unproductive activities to hedge against the negative impact of inflation or deflation;
5. reducing distortions of inflation or deflation, which can exacerbate the distortionary impact on economic behavior of tax and social security systems;
6. Preventing an arbitrary redistribution of wealth and income as a result of unexpected inflation or deflation.

In 1998, the ECB Governing Council formulated the quantitative definition of price stability: "Price stability is a year-on-year increase in the Harmonized Index of Consumer Prices (HICP) for the euro area of below 2%. Price stability must be maintained over a medium-term perspective." In addition, in May 2003 the Governing Council also clarified that, in the pursuit of price stability, it aims to maintain inflation rates "below, but close to, 2% over the medium term".

Why "below, but close to 2%"?

The inflation rate below but close to 2% is low enough to allow the economy to benefit fully from price stability.

1. It also stresses the Euro system's obligation to guarantee the appropriate inflation rate in order to
2. Avoid deflation risk. This is important to keep the nominal interest rates above zero. In a deflationary environment monetary policy may not be able to sufficiently stimulate aggregate demand by using its interest rate instrument. This makes it more difficult for monetary policy to fight deflation than to fight inflation. One should also take into account the possibility of HICP inflation slightly overstating true inflation as a result of a small but positive bias in the measurement of price level changes using the HICP;
3. Provide a sufficient margin to address the implications of inflation differentials in the euro area. It avoids that individual countries in the euro area have to structurally live with too low inflation rates or even deflation.

The theory of price is an economic theory that contends that the price for any specific good/service is the relationship between the forces of supply and demand. The theory of price says that the point at which the benefit gained from those who demand the entity meets the seller's marginal costs is the most optimal market price for the good/service.

For example, suppose that market forces determine that it costs $5 for a widget. This suggests that widget buyers are willing to forgo the utility in $5 in order to possess the widget and that the widget seller perceives that $5 is a fair price in exchange for giving up the widget. This simple theory of determining prices is one of the core principles underlying economic theory.

Firms that produce goods and services are constantly seeking out buyers willing to pay the highest price. But what keeps firms from simply charging higher and higher prices, what some might call price gouging? Well, in markets with many producers, firms must compete for buyers' dollars. So, firms have an incentive to price their goods at a level that is attractive to consumers. If a firm tries to charge a price that's too high, its buyers will simply shop elsewhere. That firm will find itself with few buyers and subsequently reduce its price to attract more consumers. In fact, firms are most successful when they offer consumers a good or service that is a better value than the same good or service provided by a competitor. Such a competitive market ensures that the market price of a good or service closely reflects the cost of producing that good or service.

Notes

A competitive market system rewards firms that are the most successful at satisfying consumers. This is called "consumer sovereignty." Stated differently, consumer sovereignty means that consumers determine what is produced in the economy. While this seems counterintuitive, firms are most successful when they produce what consumers want to buy. Think of dollars like ballots: Each dollar a consumer spends is like casting a vote for what producers should produce. As consumers shift their purchasing decisions, producers must shift their production decisions to earn those dollars—or votes. Think about this: For centuries the slide rule was used by mathematicians to perform a variety of calculations. Have you ever used one? Probably not. The development of the electronic calculator in the 1970s made the slide rule obsolete. So, as consumers shifted from buying slide rules to electronic calculators, firms that produced slide rules had to shift to producing something else or go out of business. In this case, consumers determined what would be produced by voting with their dollars.

Although price signals are effective in preventing shortages and surpluses, they do not eliminate the pain of paying higher prices. At times, governments may try to ease the pain of high prices by imposing price controls. One such control is called a price ceiling. When imposed, a price ceiling prevents a price from rising beyond a certain level. So, for example, if the market price of gasoline reached six dollars per gallon, the government might forbid further increases. Although this might sound like good news to consumers, price controls tend to distort—or muffle—the price signal, causing it to fall short of its intended message. For example, if gas prices were not allowed to rise to their actual market price, consumers would not reduce their consumption as much as they should because their behavior would be driven by the artificially lower price. They would not have the incentive to reduce consumption. Likewise, producers would not increase production as much as they should because they would be responding to the artificially lower price. They would not have the incentive to increase production. In this way, under price controls, the price signal results in a shortage that would not occur had the price been allowed to rise to a level determined by the market.

10.10 Check Your Progress

Multiple Choice Questions

1. Which is a pricing strategy that charges customers different prices for the same product or service:
   (a) Price discrimination
   (b) Economic pricing
   (c) Penetration pricing
   (d) Price skimming
2. Price discrimination allows a company to earn _____ than standard pricing:
   (a) Higher revenue
   (b) Lower revenue
   (c) Higher profit
   (d) Lower profit
3. Which of the following pricing strategy is commonly used by marketers in the prices they establish for their products:
   (a) Economic
   (b) Penetration
   (c) Price skimming
   (d) Psychological
4. Which strategy establishes a price higher than the competitors:
   (a) premium

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(b) Economic
(c) Psychological
(d) None of these

5. The firm will be in equilibrium when:
   (a) MR>MC
   (b) MR<MC
   (c) MR=MC
   (d) None of these
6. The AR curve in the long run will be:
   (a) Less elastic
   (b) More elastic
   (c) Less inelastic
   (d) More inelastic
7. The aim of a monopolist is to maximize his:
   (a) Cost
   (b) Profit
   (c) Revenue
   (d) all of the above
8. In which of the following the number of buyers and sellers is very large:
   (a) Oligopoly
   (b) Monopoly
   (c) Monopolistic
   (d) Perfect competition
9. In which strategy is designed to capture market share by entering the market with a low price relative to the competition to attract buyers:
   (a) premium
   (b) Penetration
   (c) Price skimming
   (d) Economic
10. The price prevailing in the long run is called:
    (a) Higher price
    (b) Lower price
    (c) Normal price
    (d) None of these

10.11 Questions and Exercises

1. Briefly explain importance of price.
2. Explain Pricing and Profit analysis.
3. Explain Pricing under perfect competition.
4. Briefly explain pricing under monopoly.
5. What is price discrimination?
6. What are the different pricing strategies?
7. Explain pricing under oligopoly.
8. Explain pricing under monopolistic

9. What is penetration pricing?
10. What do you mean by price skimming and economic pricing?

Notes

10.12 Key Terms

- **Break-even point (B.E.P.):** The break-even point (BEP) in economics, business, and specifically cost accounting, is the point at which total cost and total revenue are equal: there is no net loss or gain, and one has "broken even." A profit or a loss has not been made, although opportunity costs have been "paid", and capital has received the risk-adjusted, expected return. In short, all costs that needs to be paid are paid by the firm but the profit is equal to 0.
- **Black-Scholes Theory:** Another name for option pricing theory. Differential equations approach is an informal name for derivatives pricing models based upon the original Black-Scholes methodology.
- **Bias:** Bias is the difference between the parameter and the expected value of the estimator of the parameter considered to be three to five periods.
- **Buyer's Market:** A buyer's market is a market for a good (stocks, housing, etc.) where prices are falling and there are more parties interested in selling than in buying.
- **Business risk:** Exposure to uncertainty in economic value that cannot be marked-to-market.

Check Your Progress: Answers

1. a, 2. c, 3. d, 4. a, 5. c, 6. b, 7. b, 8. d, 9. b, 10. c.

10.13 Further Readings

- *Ecological Economics, Second Edition*: Principles and Herman E. Daly, Joshua Farley – 2011.
- *Handbook of Regional and Urban Economics: Regional economics*, Peter Nijkamp - 1986.
- Labor Economics, Pierre Cahuc, André Zylberberg – 2004.
- *Economics: The User's Guide: A Pelican Introduction*, Ha-Joon Chang – 2014.
- *Economics: A New Introduction*, Hugh Stretton – 1999.