**1 INTRODUCTION**

Basically man is involved in at least four identifiable relationships: a) man with himself, the general topic of psychology b) man with the universe, the study of the biological and physical sciences; c) man with unknown, covered in part by theology and philosophy d) man in relation to other men, the general realm of the social sciences, of which economics is a part. It is hazardous to delineate these areas of inquiry explicitly. However, the social sciences are generally defined to include economics, sociology, political science, anthropology and portions of history and psychology, Economists use history, sociology and other fields such as statistics and mathematics as valuable adjuncts to their study.

As a body of knowledge, economics is a relatively new subject, having been around formally a scant two centuries, but subsistence, wealth and the ordinary business of life are, as we all know, as old as mankind. Economics deals with many socioeconomic issues, most of which are of immediate concern to us. Although it is tempting to continue to discuss important economic problems, such a discussion would be premature. To form a reasoned opinion, it is necessary to analyse the issues carefully, a process which requires a meaningful, sequential exposure to economics.

Nature has blessed the humans with abundant natural wealth to live on this earth. Humans would have been contended with what nature provided, had they been able to peg their wants (requirements) at a given level. But it is not so, man being born in this world is influenced by biological, physical and social needs, which keep him always busy in searching out the means to keep him satisfied. To fulfill his requirements arising out of various needs, he involves in an activity called economic activity.

Conversely, man would have freed himself from economic activity, had there been no resource scarcity and also what humans want can be satisfied without limit. But neither of the possibilities being found because of the scarcity of resources imposed by the nature, humans always deeply engage in arriving at an equation, which balances their unlimited wants and limited means. By engaging themselves in the economic activity people aim at maximizing their satisfaction from their scarce resources. Thus, scarcity is the pivot for the economic activity of the people representing consuming and producing segments leading to the origination of a field of study called economics.

The field of economics keeps on going as long as the human race exists on the earth with their toiling to satisfy their ever-new and ever-emerging wants and satisfying the same through their efforts. Thus, the field of economics constitutes wants, efforts and satisfaction. Two major factors are responsible for the emergence of economic problems. They are: i) the existence of unlimited human wants and ii) the scarcity of available resources. The numerous human wants are to be satisfied through the scarce resources available in nature. Economics deals with how the numerous human wants are to be satisfied with limited resources. Thus, the science of economics centres on want - effort - satisfaction. Economics not only covers the decision making behaviour of individuals but also the macro variables of economies like national income, public finance, international trade and so on.

**1.1 Scarcity, Choice and Opportunity Cost**

All choices mean that one alternative is selected over another. Selecting among alternatives involves three ideas central to economics: scarcity, choice, and opportunity cost.

**1.1.1 Scarcity**Economicsis the study of how individuals and societies choose to use the scarce  
resources that nature and previous generations have provided. Our resources are limited. At any one time, we have only so much land, so many factories, so much oil, so many people. But our wants, our desires for the things that we can produce with those resources, are unlimited. We would always like more and better housing, more and better education-more and better of practically everything. If our resources were also unlimited, we could say yes to each of our wants-and there would be no economics. Because our resources are limited, we cannot say yes to everything. To say yes to one thing requires that we say no to another. Whether we like it or not, we must make choices. Our unlimited wants are continually colliding with the limits of our resources, forcing us to pick some activities and to reject others. **Scarcity** is the condition of having to choose among alternatives.

**a) Scarce good**

A scarce good is one for which the choice of one alternative requires that another be given up. Consider a parcel of land. The parcel presents us with several alternative uses. We could build a house on it. We could put a gas station on it. We could create a small park on it. We could leave the land undeveloped in order to be able to make a decision later as to how it should be used. Suppose we have decided the land should be used for housing. Should it be a large and expensive house or several modest ones? Suppose it is to be a large and expensive house. Who should live in the house? If the A’s live in it, the B’s cannot. There are alternative uses of the land both in the sense of the type of use and also in the sense of who gets to use it. The fact that land is scarce means that society must make choices concerning its use.

Virtually everything is scarce. Consider the air we breathe, which is available in huge quantity at no charge to us. Could it possibly be scarce? The test of whether air is scarce is whether it has alternative uses. What uses can we make of the air? We breathe it. We pollute it when we drive our cars, heat our houses, or operate our factories. In effect, one use of the air is as a garbage dump. We certainly need the air to breathe. But just as certainly, we choose to dump garbage in it. Those two uses are clearly alternatives to each other. The more garbage we dump in the air, the less desirable-and healthy-it will be to breathe. If we decide we want to breathe cleaner air, we must limit the activities that generate pollution. Air is a scarce good because it has alternative uses. Not all goods, however, confront us with such choices.

**b) Free good**

A free good is one for which the choice of one use does not require that we give up another. One example of a free good is gravity. The fact that gravity is holding you to the earth does not mean that your neighbor is forced to drift up into space! One person’s use of gravity is not an alternative to another person’s use. There are not many free goods. Outer space, for example, was a free good when the only use we made of it was to gaze at it. But now, our use of space has reached the point where one use can be an alternative to another. Conflicts have already arisen over the allocation of orbital slots for communications satellites. Thus, even parts of outer space are scarce. Space will surely become more scarce as we find new ways to use it. Scarcity characterizes virtually everything. Consequently, the scope of economics is wide indeed.

**1.1.2 Choice**

Economics is a social science that examines how people choose among the alternatives available to them. It is social because it involves people and their behavior. It is a science because it uses, as much as possible, a scientific approach in its investigation of choices. Economics is a behavioral, or social, science. In large measure, it is the study of how people make choices. The choices that people make, when added up, translate into societal choices The choices we confront as a result of scarcity raise three sets of issues. Every economy must answer the following questions:

**a) What should be produced?**

The first question is that of what to produce. Should a society direct most of its resources to the production of military equipment or to other items such as food, clothing, or housing? Suppose the decision is to produce housing. Should its limited resources be used for low-income, middle income, or upper-income housing? How many of each will be needed? A society cannot have everything its people want, so it must decide what to produce. Using the economy’s scarce resources to produce one thing requires giving up another. Producing better education, for example, may require cutting back on other services, such as health care. A decision to preserve a wilderness area requires giving up other uses of the land. Every society must decide what it will produce with its scarce resources.

**b) How should goods and services be produced?**

A second question is that of how to produce. Should factory owners use mass production methods that require a lot of equipment and few workers, or should they use less equipment and more workers? If an area has many unemployed people, the second method might be better. On the other hand, mass production methods in countries where machinery and equipment is widely available can often lower production costs. Lower costs make manufactured items less expensive and, therefore, available to more people. There are all sorts of choices to be made in determining how goods and services should be produced. Should a firm employs a few skilled or a lot of unskilled workers? Should it produce in its own country or should it use foreign plants? Should manufacturing firms use new or recycled raw materials to make their products?

**c) For whom should goods and services be produced?**

The third question deals with for whom to produce. After a society decides what and how to produce, the things produced must be allocated to someone. If the society decides to produce housing, should it be distributed to workers, professional people, or government employees? If there are not enough houses for everyone, a choice must be made as to who will receive the existing supply. These questions concerning what, how, and for whom to produce are not easy for any society to answer. Nevertheless, they must be answered as long as there are not enough resources to satisfy people’s seemingly unlimited wants.

If a good or service is produced, a decision must be made about who will get it. A decision to have one person or group receives a good or service usually means it will not be available to someone else. For example, representatives of the poorest nations on earth often complain that energy consumption per person in the United States is 17 *times* greater than energy consumption per person in the world’s 62 poorest countries. Critics argue that the world’s energy should be more evenly allocated. Should it? That is a “for whom” question. Every economy must determine what should be produced, how it should be produced, and for whom it should be produced. We shall return to these questions again and again.

**1.1.3 Opportunity cost**

It is within the context of scarcity that economists define what is perhaps the most important concept in all of economics, the concept of opportunity cost. Opportunitycost is the value of the best alternative forgone in making any choice. The opportunity cost to you of reading the remainder of this chapter will be the value of the best other use to which you could have put your time. If you choose to spend $20 on a potted plant, you have simultaneously chosen to give up the benefits of spending the $20 on pizzas or a paperback book or a night at the movies. If the book is the most valuable of those alternatives, then the opportunity cost of the plant is the value of the enjoyment you otherwise expected to receive from the book.

The concept of opportunity cost must not be confused with the purchase price of an item. Consider the cost of a college or university education. That includes the value of the best alternative use of money spent for tuition, fees, and books. But the most important cost of a college education is the value of the forgone alternative uses of time spent studying and attending class instead of using the time in some other endeavor. Students sacrifice that time in hopes of even greater earnings in the future or because they place a value on the opportunity to learn. Or consider the cost of going to the doctor. Part of that cost is the value of the best alternative use of the money required to see the doctor. But, the cost also includes the value of the best alternative use of the time required to see the doctor. The essential thing to see in the concept of opportunity cost is found in the name of the concept. Opportunity cost is the value of the best opportunity forgone in a particular choice. It is not simply the amount spent on that choice.

Note that the concepts of scarcity, choice, and opportunity cost are at the heart of economics. A good is scarce if the choice of one alternative requires that another be given up. The existence of alternative uses forces us to make choices. The opportunity cost of any choice is the value of the best alternative forgone in making it. Scarcity affects almost every decision we make. This is where the study of economics comes in. Economicsis the study of how people try to satisfy what appears to be seemingly unlimited and competing wants through the careful use of relatively scarce resources.

**a) Needs and wants**

Economists often talk about people’s needs and wants. A **need** is a basic requirement for survival and includes food, clothing, and shelter. A **want** is a way of expressing a need. Food, for example, is basic need related to survival. To satisfy the need for food, a person may “want” a pizza or other favorite meal. Because any number of foods will satisfy the need for nourishment, the range of things represented by the term *want* is much broader than that represented by the term *need.*

1.2 Definitions of Economics

Several economists have defined economics taking different aspects into account. The word ‘Economics’ was derived from two Greek words, oikos (a house) and nemein (to manage) which would mean ‘managing an household’ using the limited funds available, in the most satisfactory manner possible.

i) Wealth definition

Adam smith (1723 - 1790), in his book “An Inquiry into Nature and Causes of Wealth of Nations” (1776) defined economics as the science of wealth. He explained how a nation’s wealth is created. He considered that the individual in the society wants to promote only his own gain and in this, he is led by an “invisible hand” to promote the interests of the society though he has no real intention to promote the society’s interests.

J.S. Mill, “Economics investigates into the nature of wealth and the laws of production and distribution.”

J.B. Say, “Economics is the study of laws which govern wealth.” Main points of the definition:

a) Economics is the study of wealth only.

b) Only scarce commodities constitute wealth, non material goods and services and free good are not wealth.

c) Economics studies the causes of wealth and how wealth can be increased with increase in

production by division of labour.

d) He mentions about economic man who is interested in accumulating only wealth or economic goods.

e) Economic goods are the good which is having following properties like utility, scarcity,

transferability, possessiveness and externality.

f) He suggested labour is also wealth of nation and division of labour can be down to increase wealth.

Criticism:

The definition of economics is only in terms of wealth and not in terms of human welfare. Ruskin and Carlyle condemned economics as a ‘dismal science’, as it taught selfishness which was against ethics. However, now, wealth is considered only to be a mean to end, the end being the human welfare. Hence, wealth definition was rejected and the emphasis was shifted from ‘wealth’ to ‘welfare’.

**ii) Welfare definition**

Alfred Marshall (1842-1924) wrote a book “Principles of Economics” (1890) in which he defined “Political Economy” or Economics is a study of mankind in the ordinary business of life; it examines that part of individual and social action which is most closely connected with the attainment and with the use of the material requisites of well being”. The important features of Marshall’s definition are as follows:

a) Economics is a study of mankind in the ordinary business of life, i.e., economic aspect of

human life.

b) Economics studies both individual and social actions aimed at promoting economic welfare of people.

c) Marshall makes a distinction between two types of things, viz. material things and immaterial things. Material things are those that can be seen, felt and touched, (E.g.) book, rice etc. Immaterial things are those that cannot be seen, felt and touched. (E.g.) skill in the operation of a thrasher, a tractor etc., cultivation of hybrid cotton variety and so on. In his definition, Marshall considered only the material things that are capable of promoting welfare of people.

d) Wealth is a means of achieving the objective of material welfare.

A.C. Pigou,” The range of our enquiry becomes restricted to the part of social welfare that can be bought directly or indirectly into relation and with the measuring rod of money.”

**Criticism:**

a) Marshall considered only material things. But immaterial things, such as the services of a doctor, a teacher and so on, also promote welfare of the people.

b) Marshall makes a distinction between those things that are capable of promoting welfare of people and those things that are not capable of promoting welfare of people. But anything, (E.g.) liquor, that is not capable of promoting welfare but commands a price, comes under the purview of economics.

c) Marshall’s definition is based on the concept of welfare. But there is no clear-cut definition of welfare. The meaning of welfare varies from person to person, country to country and one period to another. However, generally, welfare means happiness or comfortable living conditions of an individual or group of people. The welfare of an individual or nation is dependent not only on the stock of wealth possessed but also on political, social and cultural activities of the nation.

**iii) Scarcity definition**

Lionel Robbins published a book “An Essay on the Nature and Significance of Economic Science” in 1932. According to him, “economics is a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses”. The major features of Robbins’ definition are as follows:

a) Ends refer to human wants. Human beings have unlimited number of wants.  
b) Resources or means, on the other hand, are limited or scarce in supply. There is scarcity

of a commodity, if its demand is greater than its supply. In other words, the scarcity of a commodity is to be considered only in relation to its demand.

c) The scarce means are capable of having alternative uses. Hence, anyone will choose the resource that will satisfy his particular want. Thus, economics, according to Robbins, is a science of choice.

d) Wants are of different intensity, wants can be graded according to urgency.

e) Man has to make a choice between his wants; he has to decide whether want is to be satisfied at present or in the future. By making a proper choice he can achieve maximum satisfaction.

**Criticism:**

a) Robbins does not make any distinction between goods conducive to human welfare and goods that are not conducive to human welfare. In the production of rice and alcoholic drink, scarce resources are used. But the production of rice promotes human welfare while production of alcoholic drinks is not conducive to human welfare. However, Robbins concludes that economics is neutral between ends.

b) In economics, we not only study the micro economic aspects like how resources are allocated and how price is determined, but we also study the macroeconomic aspect like how national income is generated. But, Robbins has reduced economics merely to theory of resource allocation.

c) Robbins definition does not cover the theory of economic growth and development.

**iv) Growth definition**

Prof. Paul Samuelson defined economics as “the study of how men and society choose, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities over time, and distribute them for consumption, now and in the future among various people and groups of society”. The major implications of this definition are as follows:

a) Samuelson has made his definition dynamic by including the element of time in it. Therefore, it covers the theory of economic growth.

b) Samuelson stressed the problem of scarcity of means in relation to unlimited ends. Not only the means are scarce, but they could also be put to alternative uses.

c) The definition covers various aspects like production, distribution and consumption. Of all the definitions discussed above, the ‘growth’ definition stated by Samuelson appears to be the most satisfactory. However, in modern economics, the subject matter of economics is divided into main parts, viz., micro economics and macro economics. Economics is, therefore, rightly considered as the study of allocation of scarce resources (in relation to unlimited ends) and of determinants of income, output, employment and economic growth.

**2 NATURE OF ECONOMICS**

In order to understand the nature of economics one has to answer the following questions:

Is economics science or an art?

Is economics a positive or normative science?

**2.1 Economics as a Science**

A science is a systematic and comprehensive study of knowledge, which explains the cause and effect relationship. According to M. Poincare,” science is built of facts as a house is built up of stones, but an accumulation of facts in no more a science than a heap of stones is a house.”

**Features**a) A systematized study of a subject.

b) Establishes relationship between cause and effect of a fact.

c) Laws of science are universal. Prof. Robbins, Prof. Briggs and Jordan all consider Economics to be a science. Robertson also regarded Economics as a science because of letters ‘ics’ present in physics and dynamics.

**Arguments in favour of economics as a science:**

a) **Systematized Study:** Economics is systematically divided into consumption, production, exchange, distribution and public finance.

b) **Scientific Laws:** In economics law we establish cause and effect relationship of economic activities. Eg: Law of demand shows the relationship between change in demand and change in price.

c) **Experiments:** Several experiments are conducted by economics. Capitalism, socialism and mixed economy all are the experiments of economics. Different economic laws have been experimented and tried to get rid of economic evils. The laboratory of these experiments is the world and man is the target of these experiments.

d) **Measuring rod of Money:** Marshall said that the measuring rod of money has made economics, a more certain social science. Economics has the quality of quantitative measurement of a science. Money is a good measuring rod to measure individual as well as commercial activities.

e) **Universal:** Many of the economic laws are universally true. They are applicable to all types of economy. Whether it is capitalists, socialists or a mixed economy. Eg: The laws of diminishing marginal ability.

**Arguments against Economics as a Science:**

a) **The laws of economics are not universal:** The applicability of economic laws is limited because of differences in physical and cultural factors between different countries. The laws of economics are based on the habits and tastes of the people. These differ for different countries.

b) **The laws of economics are not exact:** Like physical sciences, all economic laws are conditional they use the phrase “other things remaining the same.”

c) **No possibility of laboratory experiments:** In economics, experimentation is not possible; the reason is that the object of study is man. The data is available is from real world, which cannot be controlled, hence not a pure science.

d) **Conflicting views :** Economists differ in their view regarding their explanations. Lack of uniformity of opinion among economist is the sign of lack of development, in economics as a science.

e) **Difficulty in making predictions:** Pure science can predict accurately but economics cannot, like meteorology where forecasting of weather is not accurate. Still meteorology is a science. Man is the central object of its study, so it is a social science.

**2.2 Economics as an Art**

Art is the practical application of knowledge for achieving definite ends. Lord J.M. Keynes defined, “An art is a system of rules for the attainment of a given end.” Luigi Cossa, “A science teaches us to know, an art teaches us to do.” There is unemployment in INDIA. To achieve full employment government takes fiscal and monetary steps. The study of these measures makes economics an art.

**Arguments in favour:**

a) **Solution of the problems:** Economics helps to utilize the scarce resource is the best possible way. Pigou, “Economics is not only right giving but also fruit bearing. Thus, economics as an art is the practical application of knowledge; it solves the problem of scarcity and the problem of choice.

b) **Modern Trends:** Modern economists are much concerned with solving the economic problems; they spend a lot of time to find solution to problems of rising prices, depression, unemployment, economic development etc. Economics as an art tries to promote the welfare of human beings.

c) **Verification of Economic Laws:** It is possible only if economics is an art. Art is the practical application of knowledge. Only when we apply the economic laws then we come to know whether their results are true or false.

d) **Economic Planning:** It has become very popular to formulate economic plan is an art.,

e)It promotes the welfare of the citizens but using the economic concepts. Thus, we can conclude that economics is a science as well as an art. Prof. Cossa. said, “Science requires art; art requires science, each being complementary to each other.” The positive science explains the real nature of subject. It establishes a cause and effect relationship between events as it happens.

**Arguments in favour:**

a) **It is based upon logic:** It established the cause and effect relationship. It shows us how things are and not what is good or bad. Economics is just an logical an analysis of economic activities.

b) **It is based upon the principle of specialization of labour:** An economist should confine him to only economic activities.

c)  **Fear of confusion:** If economists give their opinions is what ought to be or what is good or bad, then there will be difference of opinion & there will be lot of confusion. E.g. :If they are asked to give their opinions about processing price, each economists will be differing from each other.

d) **More uniformity:** Different economist will give different views and hence uniformity will be there, only when there is a positive science.

e) **More neutrality:** If Economist explain what ought to be then he will give his own suggestion, then the real fact cannot be known. He should be neutral & should not give any value judgments.

f) **Informative:** It gives information of what has happened in the history of economics.

**2.3 Economics as a Normative Science**

Economics is one which explains what should be done or should not be done. Load J.M. Keynes “A normative science is a body of systematized knowledge relating to the criteria of what ought to be and concerned with the ideal as distinguished from the actual.”

**Arguments in favour:**

a) **Man is not only logical but also sentimental:** In reality man is both logical and sentimental. So he has the freedom to express his sentiments and judgments.

b) **The principle of division or specialization of labour misunderstood:** Economics can be helpful only if it explains, explore, condemns & suggests.

c) **Wrong argument of equilibrium is equilibrium:** According to the classical group of economists market equilibrium is attained automatically by the forces of demand and supply. In India, price has raised so much. Price level is determined by equilibrium between demand and supply. But equilibrium price does not mean it is the best price, the government controlled and reduces the prices. Hence economics is a normative science.

d) **A means of social betterment:** Economist gives different views regarding the welfare of human beings. We can choose the best view among the different views. Economics cannot be separated from ethics, hence normative.

e) **Basis of economic planning:** Many countries have developed through the formulation and implementation of plans. Economics plans are made on suggestions of different economist. Hence economics is a normative science.

**2.4 Why Study Economics?**

There are four main reasons to study economics: to learn a way of thinking, to understand society, to understand global affairs, and to be an informed citizen.

**2.4.1 To learn a way of thinking**

Probably the most important reason for studying economics is to learn a way of thinking. Economics has three fundamental concepts that, once absorbed, can change the way you look at everyday choices: opportunity cost, marginalism, and the working of efficient markets. **Opportunity cost** What happens in an economy is the outcome of thousands of individual decisions. People must decide how to divide their incomes among all the goods and services available in the marketplace. They must decide whether to work, whether to go to school, and how much to save. Businesses must decide what to produce, how much to produce, how much to charge, and where to locate. It is not surprising that economic analysis focuses on the process of decision making.

Nearly all decisions involve trade-offs. A key concept that recurs in analyzing the decision making process is the notion of *opportunity cost*. The full “cost” of making a specific choice includes what we give up by not making the alternative choice. The best alternative that we forgo, or give up, when we make a choice or a decision is called the opportunity costof that decision. When asked how much a movie costs, most people cite the ticket price. For an economist, this is only part of the answer: to see a movie takes not only a ticket but also time.

The opportunity cost of going to a movie is the value of the other things you could have done with the same money and time. If you decide to take time off from work, the opportunity cost of your leisure is the pay that you would have earned had you worked. Part of the cost of a college education is the income you could have earned by working full-time instead of going to school. If a firm purchases a new piece of equipment for $3,000, it does so because it expects that equipment to generate more profit. There is an opportunity cost, however, because that $3,000 could have been deposited in an interest-earning account. To a society, the opportunity cost of using resources to launch astronauts on a space shuttle is the value of the private/civilian or other government goods that could have been produced with the same resources.

Opportunity costs arise because resources are scarce. **Scarce** simply means limited. Consider one of our most important resources—time. There are only 24 hours in a day, and we must live our lives under this constraint. A farmer in rural Brazil must decide whether it is better to continue to farm or to go to the city and look for a job. A hockey player at the University of Vermont must decide whether to play on the varsity team or spend more time studying.

**Marginalism** A second key concept used in analyzing choices is the notion of marginalism. In weighing the costs and benefits of a decision, it is important to weigh only the costs and benefits that arise from the decision. Suppose, for example, that you live in New Orleans and that you are weighing the costs and benefits of visiting your mother in Iowa. If business required that you travel to Kansas City, the cost of visiting Mom would be only the additional, or *marginal*, time and money cost of getting to Iowa from Kansas City. Consider the video game business. It has been estimated that to create and produce a complex multiplayer role-playing game like World of War Craft (WOW) costs as much as $500 million.

Once the game has been developed, however, the cost of selling and delivering it to another player is close to zero. The original investment (by Activision) made to create WOW is considered a **sunk cost**. Once the game has been developed, Activision cannot avoid these costs because they have already been incurred. Activision’s business decisions about pricing and distributing WOW depend not on the sunk costs of production, but on the incremental or *marginal* costs of production. For Activision, those costs are close to zero. There are numerous examples in which the concept of marginal cost is useful. For an airplane that is about to take off with empty seats, the marginal cost of an extra passenger is essentially zero; the total cost of the trip is roughly unchanged by the addition of an extra passenger. Thus, setting aside a few seats to be sold at big discounts through www.priceline.com or other Web sites can be profitable even if the fare for those seats is far below the average cost per seat of making the trip. As long as the airline succeeds in filling seats that would otherwise have been empty, doing so is profitable.

**Efficient Markets—No Free Lunch** Suppose you are ready to check out of a busy grocery store on the day before a storm and seven checkout registers are open with several people in each line. Which line should you choose? Usually, the waiting time is approximately the same no matter which register you choose (assuming you have more than 12 items). If one line is much shorter than the others, people will quickly move into it until the lines are equalized again. As you will see later, the term *profit* in economics has a very precise meaning. Economists, however, often loosely refer to “good deals” or risk-free ventures as *profit opportunities*. Using the term loosely, a profit opportunity exists at the checkout lines when one line is shorter than  
the others.

In general, such profit opportunities are rare. At any time, many people are searching for them; as a consequence, few exist. Markets like this, where any profit opportunities are eliminated almost instantaneously, are said to be **efficient markets**. The common way of expressing the efficient markets concept is “there’s no such thing as a free lunch.” How should you react when a stockbroker calls with a hot tip on the stock market?

With skepticism, thousands of individuals each day are looking for hot tips in the market. If a particular tip about a stock is valid, there will be an immediate rush to buy the stock, which will quickly drive up its price. This view that very few profit opportunities exist can, of course, be carried too far. There is a story about two people walking along, one an economist and one not. The non-economist sees a $20 bill on the sidewalk and says, “There’s a $20 bill on the sidewalk.” The economist replies, “That is not possible. If there were, somebody would already have picked it up.” There are clearly times when profit opportunities exist. Someone has to be first to get the news, and some people have quicker insights than others. Nevertheless, news travels fast, and there are thousands of people with quick insights. The general view that large profit opportunities are rare is close to the mark. The study of economics teaches us a way of thinking and helps us make decisions.

**2.4.2 To understand society**

Another reason for studying economics is to understand society better. Past and present economic decisions have an enormous influence on the character of life in a society. The current states of the physical environment, the level of material well-being, and the nature and number of jobs are all products of the economic system. To get a sense of the ways in which economic decisions have shaped our environment, imagine looking out a top-floor window of an office tower in any large city. The workday is about to begin. All around you are other tall glass and steel buildings full of workers. In the distance, you see the smoke of factories. Looking down, you see thousands of commuters pouring off trains and buses and cars backed up on freeway exit ramps. You see trucks carrying goods from one place to another. You also see the face of urban poverty: Just beyond the freeway is a large public housing project and, beyond that, burned-out and boarded-up buildings.

What you see before you is the product of millions of economic decisions made over hundreds of years. People at some point decided to spend time and money building those buildings and factories. Somebody cleared the land, laid the tracks, built the roads, and produced the cars and buses. Economic decisions not only have shaped the physical environment but also have determined the character of society. At no time has the impact of economic change on a society been more evident than in England during the late eighteenth and early nineteenth centuries, a period that we now call the **Industrial Revolution**. Increases in the productivity of agriculture, new manufacturing technologies, and development of more efficient forms of transportation led to a massive movement of the British population from the countryside to the city. At the beginning of the eighteenth century, approximately 2 out of 3 people in Great Britain worked in agriculture. By 1812, only 1 in 3 remained in agriculture; by 1900, the figure was fewer than 1 in 10. People jammed into overcrowded cities and worked long hours in factories. England had changed completely in two centuries—a period that in the run of history was nothing more than the blink of an eye.

It is not surprising that the discipline of economics began to take shape during this period. Social critics and philosophers looked around and knew that their philosophies must expand to accommodate the changes. Adam Smith’s *Wealth of Nations* appeared in 1776. It was followed by the writings of David Ricardo, Karl Marx, Thomas Malthus, and others. Each tried to make sense out of what was happening. Who was building the factories? Why? What determined the level of wages paid to workers or the price of food? What would happen in the future, and what *should* happen? The people who asked these questions were the first economists.

Similar changes continue to affect the character of life in more recent times. In fact, many argue that the late 1990s marked the beginning of a new Industrial Revolution. As we turned the corner into the new millennium, the “e” revolution was clearly having an impact on virtually every aspect of our lives: the way we buy and sell products, the way we get news, the way we plan vacations, the way we communicate with each other, the way we teach and take classes, and on and on. These changes have had and will clearly continue to have profound impacts on societies across the globe, from Beijing to Calcutta to New York.

These changes have been driven by economics. Although the government was involved in the early years of the World Wide Web, private firms that exist to make a profit (such as Facebook, YouTube, Yahoo!, Microsoft, Google, Monster.com, Amazon.com, and E-Trade) created almost all the new innovations and products. How does one make sense of all this? What will the effects of these innovations be on the number of jobs, the character of those jobs, the family incomes, the structure of our cities, and the political process both in the United States and in other countries?

During the last days of August 2005, Hurricane Katrina slammed into the coasts of Louisiana and Mississippi, causing widespread devastation, killing thousands, and leaving hundreds of thousands homeless. The economic impact of this catastrophic storm was huge. Thinking about various markets involved helps frame the problem. For example, the labor market was massively affected. By some estimates, over 400,000 jobs were lost as the storm hit. Hotels, restaurants, small businesses, and oil refineries, to name just a few, were destroyed. All the people who worked in those establishments instantaneously lost their jobs and their incomes. The cleanup and rebuilding process took time to organize, and it eventually created a great deal of employment.

The storm created a major disruption in world oil markets. Loss of refinery capacity sent gasoline prices up immediately, nearly 40 percent to over $4 per gallon in some locations. The price per gallon of crude oil rose to over $70 per barrel. Local governments found their tax bases destroyed, with no resources to pay teachers and local officials. Hundreds of hospitals were destroyed, and colleges and universities were forced to close their doors, causing tens of thousands of students to change their plans.

While the horror of the storm hit all kinds of people, the worst hit were the very poor, who could not get out of the way because they had no cars or other means of escape. The storm raised fundamental issues of fairness, which we will be discussing for years to come. The study of economics is an essential part of the study of society.

**2.4.3 To understand global affairs**

A third reason for studying economics is to understand global affairs. News headlines are filled with economic stories. The environmental disaster associated with BP’s oil spill has the potential to affect the future price of oil if deep sea drilling is banned, the price of fish, the extent of tourism, and tourist-related employment in the Gulf and numerous other markets. The discovery in 2010 of major new diamond deposits in Zimbabwe has implications for the future stability of Mugabe’s government, with implications for developments in the rest of the region.

China’s new position as a major trading partner of both the United States and Europe clearly has implications for political interactions among these nations. Greece’s economic struggle in 2010 over its large debt is, affecting the enthusiasm of the rest of Europe’s citizens for the European Union. In a relatively open, market-oriented world, it is impossible to understand political affairs without grounding in economics. While there is much debate about whether or not economic considerations dominate international relations, it is clear that they play a role as political leaders seek the economic well-being of their citizenry. An understanding of economics is essential to an understanding of global affairs.

**2.4.4 To be an informed citizen**

Knowledge of economics is essential to being an informed citizen. In 2009, most of the world suffered from a major recession, with diminished economic growth and high unemployment. Millions of people around the world lost their jobs. Governments from China to the United Kingdom to the United States all struggled to figure out policies to help their economies recover. Understanding what happens in a recession and what the government can and cannot do to help in a recovery is an essential part of being an informed citizen. Economics is also essential in understanding a range of other everyday government decisions at the local and federal levels.

Why do governments pay for public schools and roads, but not cell phones? In 2010, the federal government under President Obama moved toward universal health care for U.S. citizens. How do you understand the debate of whether this is or is not a good idea? In some states, scalping tickets to a ball game is illegal. Is this a good policy or not? Some governments control the prices that firms can charge for some goods, especially essentials like milk and bread. Is this a good idea? Every day, across the globe, people engage in political decision making around questions like these, questions that depend on an understanding of economics. To be an informed citizen requires a basic understanding of economics.

**3 THE SCOPE OF ECONOMICS**

Most students taking economics for the first time are surprised by the breadth of what they study. Some think that economics will teach them about the stock market or what to do with their money. Others think that economics deals exclusively with problems such as inflation and unemployment. In fact, it deals with all those subjects, but they are pieces of a much larger puzzle.

Economics has deep roots in and close ties to social philosophy. An issue of great importance to philosophers, for example, is distributional justice. Why are some people rich and others poor? And whatever the answer is this fair? A number of nineteenth-century social philosophers wrestled with these questions, and out of their musings, economics as a separate discipline was born. The easiest way to get a feel for the breadth and depth of what you will be studying is to explore briefly the way economics is organized. First of all, there are two major divisions of economics: microeconomics and macroeconomics.

**3.1 Microeconomics and Macroeconomics**

**Microeconomics** deals with the functioning of individual industries and the behavior of individual economic decision-making units: firms and households. Firms’ choices about what to produce and how much to charge and households’ choices about what and how much to buy help to explain why the economy produces the goods and services it does. Another big question addressed by microeconomics is who gets the goods and services that are produced. Wealthy households get more than poor households, and the forces that determine this distribution of output are the province of microeconomics. Why does poverty exist? Who is poor? Why do some jobs pay more than others?

Think again about what you consume in a day, and then think back to that view over a big city. Somebody decided to build those factories. Somebody decided to construct the roads, build the housing, produce the cars, and smoke the bacon. Why? What is going on in all those buildings? It is easy to see that understanding individual micro decisions is very important to any understanding of society.

**Macroeconomics** looks at the economy as a whole. Instead of trying to understand what determines the output of a single firm or industry or what the consumption patterns are of a single household or group of households, macroeconomics examines the factors that determine national output, or national product. Microeconomics is concerned with *household* income; macroeconomics deals with *national* income. Whereas microeconomics focuses on individual product prices and relative prices, macroeconomics looks at the overall price level and how quickly (or slowly) it is rising (or falling).

Microeconomics questions how many people will be hired (or fired) this year in a particular industry or in a certain geographic area and focuses on the factors that determine how much labor a firm or an industry will hire. Macroeconomics deals with *aggregate* employment and unemployment: how many jobs exist in the economy as a whole and how many people who are willing to work are not able to find work. In a null shell, microeconomics looks at the individual unit—the household, the firm, the industry. It sees and examines the “trees.” Macroeconomics looks at the whole, the aggregate. It sees and analyzes the “forest.”

**3.2 The Diverse Fields of Economics**

Individual economists focus their research and study in many diverse areas. Many of these specialized fields are reflected in the advanced courses offered at most colleges and universities. Some are concerned with economic history or the history of economic thought. Others focus on international economics or growth in less developed countries. Still others study the economics of cities (urban economics) or the relationship between economics and law. These fields are summarized below:

**a) Behavioral economics**

Uses psychological theories relating to emotions and social context to help understand economic decision making and policy. Much of the work in behavioral economics focuses on the biases that individuals have that affect the decisions they make.

**b) Comparative economic systems**

Examines the ways alternative economic systems function. What are the advantages and disadvantages of different systems? *Econometrics* applies statistical techniques and data to economic problems in an effort to test hypotheses and theories. Most schools require economics majors to take at least one course in statistics or econometrics.

**c) Economic development**

Focuses on the problems of low-income countries. What can be done to promote development in these nations? Important concerns of development for economists include population growth and control, provision for basic needs, and strategies for international trade.

**d) Economic history**

Traces the development of the modern economy. What economic and political events and scientific advances caused the Industrial Revolution? What explains the tremendous growth and progress of post—World War II Japan? What caused the Great Depression of the 1930s?

**e) Environmental economics**

Studies the potential failure of the market system to account fully for the impacts of production and consumption on the environment and on natural resource depletion. Have alternative public policies and new economic institutions been effective in correcting these potential failures?

**f) Finance**

Examines the ways in which households and firms actually pay for, or finance, their purchases. It involves the study of capital markets (including the stock and bond markets), futures and options, capital budgeting, and asset valuation.

**g) Health economics**

Analyzes the health care system and its players: government, insurers, health care providers, and patients. It provides insight into the demand for medical care, health insurance markets, cost controlling insurance plans (HMOs, PPOs, IPAs), government health care programs (Medicare and Medicaid), variations in medical practice, medical malpractice, competition versus regulation, and national health care reform.

**h) The history of economic thought**

Grounded in philosophy, studies the development of economic ideas and theories over time, from Adam Smith in the eighteenth century to the works of economists such as Thomas Malthus, Karl Marx, and John Maynard Keynes. Because economic theory is constantly developing and changing, studying the history of ideas helps give meaning to modern theory and puts it in perspective.

**i) Industrial organization**

Looks carefully at the structure and performance of industries and firms within an economy. How do businesses compete? Who gains and who loses?

**j) International economics**

Studies trade flows among countries and international financial institutions. What are the advantages and disadvantages for a country that allows its citizens to buy and sell freely in world markets? Why is the dollar strong or weak?

**k) Labor economics**

Deals with the factors that determine wage rates, employment, and unemployment. How do people decide whether to work, how much to work, and at what kind of job? How have the roles of unions and management changed in recent years?

**l) Law and economics**

Analyzes the economic function of legal rules and institutions. How does the law change the behavior of individuals and businesses? Do different liability rules make accidents and injuries more or less likely? What are the economic costs of crime?

**m) Public economics**

Examines the role of government in the economy. What are the economic functions of government, and what should they be? How should the government finance the services that it provides? What kinds of government programs should confront the problems of poverty, unemployment, and pollution? What problems does government involvement create?

**n) Urban and regional economics**

Studies the spatial arrangement of economic activity. Why do we have cities? Why are manufacturing firms locating farther and farther from the center of urban areas?

**4 METHODOLOGY OF ECONOMICS**

Economics is the study of human efforts to satisfy what appear to be unlimited and competing wants through the careful use of relatively scarce resources. As such, it is a *social science* because it deals with the behavior of people as they deal with this basic issue. There are four key elements to this study: description, analysis, explanation, and prediction.

**a) Description**

Economics deals with the description of economic activity. For example, you will often hear about the **Gross Domestic Product (GDP)**—the dollar value of all final goods and services, and structures produced within a country’s borders in a 12-month period. GDP is the most comprehensive measure of a country’s total output and is a key measure of the nation’s economic health. Economics is also concerned with what is produced and who gets how much, as well as with topics such as unemployment, inflation, international trade, the interaction of business and labor, and the effects of government spending and taxes. Description is important because we need to know what the world around us looks like. However, description is only part of the picture because it leaves many important “why” and “how” questions unanswered.

**b) Analysis**

In order to answer such questions, economics must focus on the analysis of economic activity a well. Why, for example, are prices of some items high while others are low? Why do some people earn higher incomes than others? How do taxes affect people’s desire to work and save? The importance of analysis is that it helps us to discover why things work and how things happen. This, in turn, will help us deal with problems that we would like to solve.

**c) Explanation**

Economics is also concerned with the explanation of economic activity. After economists understand why and how things work, it is useful and even necessary to communicate this knowledge to others. If we all have a common understanding of the way our economy works, some economic problems will be much easier to address or even fix in the future. When it comes to the GDP, you will soon discover that economists spend much of their time explaining why the measure is, or is not, performing in the manner expected.

**d) Prediction**

Finally, economics is concerned with prediction. For example, we may want to know if people’s incomes are going to rise or fall in the future, affecting their spending habits in the marketplace. Or, perhaps a community is trying to choose between higher taxes on homeowners or higher taxes on businesses needs to know the consequences of each alternative before it makes its choice. The study of economics can help to make the best decision in both situations. Because economics deals with the study of what is, or what tends to be, it can help predict what may happen in the future, as well as the likely consequences of different courses of action. Finally, it is also important to realize that the actual decisions about the economic choices to be made are the responsibility of all citizens in a free and democratic society. Therefore, the study of economics helps all of us to become more informed citizens and better decision makers.

**4.1 Methodology**

Economics as a science adopts two methods for the discovery of its laws and principles, viz., deductive method and inductive method.

**a) Deductive or analytical or abstract or *a priori* method**

Here, we descend from the general to particular, i.e., we start from certain principles that are self evident or based on strict observations. Then, we carry them down as a process of pure reasoning to the consequences that they implicitly contain. For instance, traders earn profit in their businesses is a general statement which is accepted even without verifying it with the traders. The deductive method is useful in analyzing complex economic phenomenon where cause and effect are inextricably mixed up. However, the deductive method is useful only if certain assumptions are valid. (Traders earn profit, if the demand for the commodity is more). Economist like **Ricardo** and **Mill** advocated this method.

**b) Inductive or historical or realistic method**

This method mounts up from particular to general, i.e., we begin with the observation of particular facts and then proceed with the help of reasoning founded on experience so as to formulate laws and theorems on the basis of observed facts. E.g. Data on consumption of poor, middle and rich income groups of people are collected, classified, analyzed and important conclusions are drawn out from the results. Classical Economists like **Engel** and **Malthus** followed this method of reasoning.

In **deductive** method, we start from certain principles that are either indisputable or based on strict observations and draw inferences about individual cases. In **inductive** method, a particular case is examined to establish a general or universal fact. Both deductive and inductive methods are useful in economic analysis.

**4.2 The Method of Economics**

Economics asks and attempts to answer two kinds of questions: positive and normative. **Positive economics** attempts to understand behavior and the operation of economic systems *without making judgments* about whether the outcomes are good or bad. It strives to describe what exists and how it works. What determines the wage rate for unskilled workers? What would happen if we abolished the corporate income tax? The answers to such questions are the subject of positive economics.

In contrast, **normative economics** looks at the outcomes of economic behavior and asks whether they are good or bad and whether they can be made better. Normative economics involves judgments and prescriptions for courses of action. Should the government subsidize or regulate the cost of higher education? Should medical benefits to the elderly under Medicare be available only to those with incomes below some threshold? Should the United States allow importers to sell foreign-produced goods that compete with U.S.-made products? Should we reduce or eliminate inheritance taxes? Normative economics is often called *policy economics*.

Of course, most normative questions involve positive questions. To know whether the government *should* take a particular action, we must know first if it *can* and second what the consequences are likely to be. (For example, if we lower import fees, will there be more competition and lower prices?) Some claim that positive, value-free economic analysis is impossible. They argue that analysts come to problems with biases that cannot help but influence their work. Furthermore, even in choosing what questions to ask or what problems to analyze, economists are influenced by political, ideological, and moral views.

Although this argument has some merit, it is nevertheless important to distinguish between analyses that attempt to be positive and those that are intentionally and explicitly normative. Economists who ask explicitly normative questions should be required to specify their grounds for judging one outcome superior to another.

**a) Descriptive economics and economic theory**

Positive economics is often divided into descriptive economics and economic theory.

**Descriptive economics** is simply the compilation of data that describe phenomena and facts. Examples of such data appear in the *Statistical Abstract of the United States*, a large volume of data published by the Department of Commerce every year that describes many features of the U.S. economy. Massive volumes of data can now be found on the World Wide Web. As an example, look at www. bls.gov (Bureau of Labor Statistics). Where do these data come from? The Census Bureau collects an enormous amount of raw data every year, as do the Bureau of Labor Statistics, the Bureau of Economic Analysis, and nongovernment agencies such as the University of Michigan Survey Research Center. One important study now published annually is the *Survey of Consumer Expenditure*, which asks individuals to keep careful records of all their expenditures over a long period of time. Another is the *National Longitudinal Survey of Labor Force Behavior*, conducted over many years by the Center for Human Resource Development at the Ohio State University.

Economic theory attempts to generalize about data and interpret them. An **economic theory** is a statement or set of related statements about cause and effect, action and reaction. One of the first theories you will encounter in this text is the *law of demand*, which was most clearly stated by Alfred Marshall in 1890: When the price of a product rises, people tend to buy less of it; when the price of a product falls, people tend to buy more.

Theories do not always arise out of formal numerical data. All of us have been observing people’s behavior and their responses to economic stimuli for most of our lives. We may have observed our parents’ reaction to a sudden increase—or decrease—in income or to the loss of a job or the acquisition of a new one. We all have seen people standing in line waiting for a bargain. Of course, our own actions and reactions are another important source of data.

**b) Theories and models**

In many disciplines, including physics, chemistry, meteorology, political science, and economics, theorists build formal models of behavior. A **model** is a formal statement of a theory. It is usually a mathematical statement of a presumed relationship between two or more variables. A **variable** is a measure that can change from time to time or from observation to observation. Income is a variable—it has different values for different people and different values for the same person at different times. The rental price of a movie on a DVD is a variable; it has different values at different stores and at different times. There are countless other examples. Because all models simplify reality by stripping part of it away, they are abstractions. Critics of economics often point to abstraction as a weakness.

Most economists, however, see abstraction as a real strength. The easiest way to see how abstraction can be helpful is to think of a map. A map is a representation of reality that is simplified and abstract. A city or state appears on a piece of paper as a series of lines and colors. The amount of reality that the mapmaker can strip away before the map loses something essential depends on what the map will be used for. If you want to drive from St. Louis to Phoenix, you need to know only the major interstate highways and roads. You lose absolutely nothing and gain clarity by cutting out the local streets and roads. However, if you need to get around Phoenix, you may need to see every street and alley. Most maps are two-dimensional representations of a three-dimensional world; they show where roads and highways go but do not show hills and valleys along the way. Trail maps for hikers, however, have “contour lines” that represent changes in elevation. When you are in a car, changes in elevation matter very little; they would make a map needlessly complex and more difficult to read.

However, if you are on foot carrying a 50-pound pack, a knowledge of elevation is crucial. Like maps, economic models are abstractions that strip away detail to expose only those aspects of behavior that is important to the question being asked. The principle that irrelevant detail should be cut away is called the principle of **Ockham’s razor** after the fourteenth-century philosopher William of Ockham. Be careful—although abstraction is a powerful tool for exposing and analyzing specific aspects of behavior, it is possible to oversimplify. Economic models often strip away a good deal of social and political reality to get at underlying concepts.

When an economic theory is used to help formulate actual government or institutional policy, political and social reality must often be reintroduced if the policy is to have a chance of working. The key here is that the appropriate amount of simplification and abstraction depends on the use to which the model will be put. To return to the map example: You do not want to walk around San Francisco with a map made for drivers—there are too many very steep hills.

**c) All Else Equal: *Ceteris Paribus***

It is usually true that whatever you want to explain with a model depends on more than one factor. Suppose, for example, that you want to explain the total number of miles driven by automobile owners in the United States. The number of miles driven will change from year to year or month to month; it is a variable. The issue, if we want to understand and explain changes that occur, is what factors cause those changes. Obviously, many things might affect total miles driven. First, more or fewer people may be driving. This number, in turn, can be affected by changes in the driving age, by population growth, or by changes in state laws. Other factors might include the price of gasoline, the household’s income, the number and age of children in the household, the distance from home to work, the location of shopping facilities, and the availability and quality of public transport.

When any of these variables change, the members of the household may drive more or less. If changes in any of these variables affect large numbers of households across the country, the total number of miles driven will change. Very often we need to isolate or separate these effects. For example, suppose we want to know the impact on driving of a higher tax on gasoline. This change would raise the price of gasoline at the pump but would not (at least in the short run) affect income, workplace location, number of children, and so on.

To isolate the impact of one single factor, we use the device of ***ceteris paribus***, or **all else equal**. We ask, “What is the impact of a change in gasoline price on driving behavior, *ceteris paribus*, or assuming that nothing else changes?” If gasoline prices rise by 10 percent, how much less driving will there be, assuming no simultaneous change in anything else—that is, assuming that income, number of children, population, laws, and so on, all remain constant? Using the device of *ceteris paribus* is one part of the process of abstraction. In formulating economic theory, the concept helps us simplify reality to focus on the relationships that interest us.

**d) Expressing models in words, graphs, and equations**

Consider the following statements Lower airline ticket prices cause people to fly more frequently. Higher interest rates slow the rate of home sales. When firms produce more output, employment increases. Higher gasoline prices cause people to drive less and to buy more fuel-efficient cars. Each of those statements expresses a relationship between two variables that can be quantified. In each case, there is a stimulus and a response, a cause and an effect. Quantitative relationships can be expressed in a variety of ways. Sometimes words are sufficient to express the essence of a theory, but often it is necessary to be more specific about the nature of a relationship or about the size of a response. The most common method of expressing the quantitative relationship between two variables is *graphing* that relationship on a two-dimensional plane.

Quantitative relationships between variables can also be presented through *equations*. For example, suppose we discovered that over time, U.S. households collectively spend, or consume, 90 percent of their income and save 10 percent of their income.

We could then write:

*C* = .90 *Y* and *S* = .10*Y*

where

*C* is consumption spending,

*Y* is income, and

*S* is saving.

Writing explicit algebraic expressions like these helps us understand the nature of the underlying process of decision making. Understanding this process is what economics is all about.

**e) Cautions and pitfalls**

In formulating theories and models, it is especially important to avoid two pitfalls: the *post hoc* fallacy and the fallacy of composition.

**i) The Post Hoc Fallacy:**Theories often make statements or sets of statements about cause and effect. It can be quite tempting to look at two events that happen in sequence and assume that the first caused the second to happen. This is not always the case. This common error is called the ***post hoc, ergo propter hoc*** (or “after this, therefore because of this”) fallacy. There are thousands of examples. The Colorado Rockies have won seven games in a row. Last night you went to the game and they lost. You must have jinxed them. They lost *because* you went to the game. Stock market analysts indulge in what is perhaps the most striking example of the *post hoc* fallacy in action. Every day the stock market goes up or down, and every day some analyst on some national news program singles out one or two of the day’s events as *the* cause of some change in the market: “Today the Dow Jones industrial average rose 5 points on heavy trading; analysts say that the increase was due to progress in talks between Israel and Syria.” Research has shown that daily changes in stock market averages are very largely random. Although major news events clearly have a direct influence on certain stock prices, most daily changes cannot be linked directly to specific news stories.

Very closely related to the *post hoc* fallacy is the often erroneous link between correlation and causation. Two variables are said to be *correlated* if one variable changes when the other variable changes. However, correlation does not imply causation. Cities that have high crime rates also have many automobiles, so there is a very high degree of correlation between number of cars and crime rates. Can we argue, then, that cars *cause* crime? No. The reason for the correlation may have nothing to do with cause and effect. Big cities have many people, many people have many cars; therefore, big cities have many cars. Big cities also have high crime rates for many reasons—crowding, poverty, anonymity, unequal distribution of wealth, and readily available drugs, to mention only a few. However, the presence of cars is probably not one of them.

This caution must also be viewed in reverse. Sometimes events that seem entirely unconnected actually *are* connected. In 1978, Governor Michael Dukakis of Massachusetts ran for reelection. Still quite popular, Dukakis was nevertheless defeated in the Democratic primary that year by a razor-thin margin. The weekend before, the Boston Red Sox, in the thick of the division championship race, had been badly beaten by the New York Yankees in four straight games. Some very respectable political analysts believe that hundreds of thousands of Boston sports fans vented their anger on the incumbent governor the following Tuesday.

**ii) The Fallacy of Composition*:*** To conclude that what is true for a part is necessarily true for the whole is to fall into the fallacy of composition. Suppose that a large group of cattle ranchers graze their cattle on the same range. To an individual rancher, more cattle and more grazing mean a higher income. However, because its capacity is limited, the land can support only so many cattle. If every cattle rancher increased the number of cattle sent out to graze, the land would become overgrazed and barren; as a result, everyone’s income would fall. In short, theories that seem to work well when applied to individuals or households often break down when they are applied to the whole.

**f) Testing theories and models: Empirical economics**

In science, a theory is rejected when it fails to explain what is observed or when another theory better explains what is observed. The collection and use of data to test economic theories is called empiricaleconomics. Numerous large data sets are available to facilitate economic research. For example, economists studying the labor market can now test behavioral theories against the actual working experiences of thousands of randomly selected people who have been surveyed continuously since the 1960s. Macroeconomists continuously monitoring and studying the behavior of the national economy at the National Bureau of Economic Research (NBER) pass thousands of items of data, collected by both government agencies and private companies, over the Internet.

In the natural sciences, controlled experiments, typically done in the lab, are a standard way of testing theories. In recent years, economics has seen an increase in the use of experiments, both in the field and in the lab, as a tool to test its theories. One economist, John List of Chicago, tested the effect of changing the way an auction was run on bid prices for rare baseball cards with the help of the sports memorabilia dealers in trade show. (The experiment used a standard Cal Ripkin Jr. card.) Another economist, Keith Chen of Yale, has used experiments with monkeys to investigate the deeper biological roots of human decision making. The *Economics in Practice* on describes another experiment on trust and gender.

**g) Economic policy**

Economic theory helps us understand how the world works, but the formulation of *economic policy* requires a second step. We must have objectives. What do we want to change? Why? What is good and what is bad about the way the system is operating? Can we make it better? Such questions force us to be specific about the grounds for judging one outcome superior to another. What does it mean to be better? Four criteria are frequently applied in judging economic outcomes:

**1.** Efficiency  
**2.** Equity  
**3.** Growth  
**4.** Stability

**Efficiency:** In physics, “efficiency” refers to the ratio of useful energy delivered by a system to the energy supplied to it. An efficient automobile engine, for example, is one that uses a small amount of fuel per mile for a given level of power. In economics, **efficiency** means *allocative efficiency*. An efficient economy is one that produces what people want at the least possible cost. If the system allocates resources to the production of goods and services that nobody wants, it is inefficient. If all members of a particular society were vegetarians and somehow half of all that society’s resources were used to produce meat, the result would be inefficient. It is inefficient when steel beams lie in the rain and rust because somebody fouled up a shipping schedule. If a firm could produce its product using 25 percent less labor and energy without sacrificing quality, it too is inefficient.

The clearest example of an efficient change is a voluntary exchange. If you and I each want something that the other has and we agree to exchange, we are both better off and no one loses. When a company reorganizes its production or adopts a new technology that enables it to produce more of its product with fewer resources, without sacrificing quality, it has made an efficient change. At least potentially, the resources saved could be used to produce more of something. Inefficiencies can arise in numerous ways. Sometimes they are caused by government regulations or tax laws that distort otherwise sound economic decisions. Suppose that land in Ohio is best suited for corn production and that land in Kansas is best suited for wheat production. A law that requires Kansas to produce only corn and Ohio to produce only wheat would be inefficient. If firms that cause environmental damage are not held accountable for their actions, the incentive to minimize those damages is lost and the result is inefficient.

**Equity:** While efficiency has a fairly precise definition that can be applied with some degree of rigor, **equity** (fairness) lies in the eye of the beholder. To many, fairness implies a more equal distribution of income and wealth. Fairness may imply alleviating poverty, but the extent to which the poor should receive cash benefits from the government is the subject of enormous disagreement. For thousands of years, philosophers have wrestled with the principles of justice that should guide social decisions. They will probably wrestle with such questions for thousands of years to come.

Despite the impossibility of defining equity or fairness universally, public policy makers judge the fairness of economic outcomes all the time. Rent control laws were passed because some legislators thought that landlords treated low-income tenants unfairly. Certainly, most social welfare programs are created in the name of equity.

**Growth:** As the result of technological change, the building of machinery, and the acquisition of knowledge, societies learn to produce new goods and services and to produce old ones better. In the early days of the U.S. economy, it took nearly half the population to produce the required food supply. Today less than 2.0 percent of the country’s population works in agriculture. When we devise new and better ways of producing the goods and services we use now and when we develop new goods and services, the total amount of production in the economy increases.

Economic growthis an increase in the total output of an economy. If output grows faster than the population, output per capita rises and standards of living increase. Presumably, when an economy grows, it produces more of what people want. Rural and agrarian societies become modern industrial societies as a result of economic growth and rising per capita output. Some policies discourage economic growth, and others encourage it. Tax laws, for example, can be designed to encourage the development and application of new production techniques.

Research and development in some societies are subsidized by the government. Building roads, highways, bridges, and transport systems in developing countries may speed up the process of economic growth. If businesses and wealthy people invest their wealth outside their country rather than in their country’s industries, growth in their home country may be slowed.

**Stability:** Economic stabilityrefers to the condition in which national output is growing steadily, with low inflation and full employment of resources. During the 1950s and 1960s, the U.S. economy experienced a long period of relatively steady growth, stable prices, and low unemployment. Between 1951 and 1969, consumer prices never rose more than 5 percent in a single year, and in only 2 years did the number of unemployed exceed 6 percent of the labor force. From the end of the Gulf War in 1991 to the beginning of 2001, the U.S. economy enjoyed price stability and strong economic growth with rising employment. It was the longest expansion in American history.

The decades of the 1970s and 1980s, however, were not as stable. The United States experienced two periods of rapid price inflation (over 10 percent) and two periods of severe unemployment. In 1982, for example, 12 million people (10.8 percent of the workforce) were looking for work. The beginning of the 1990s was another period of instability, with a recession occurring in 1990 1991. In 2008–2009 much of the world, including the United States, experienced a large contraction in output and rise in unemployment. This was clearly an unstable period.  
The causes of instability and the ways in which governments have attempted to stabilize the economy are the subject matter of macroeconomics.