



1

THE FOUNDATIONS OF ECONOMICS

1.1

Economics is a social science

Learning outcomes

- Explain that economics is a social science.
- Outline the social scientific method.



Looking over the ever-changing cityscape of Singapore.

Look around you. What do you see? Are there tall buildings made of steel? Paved roads and parking lots? Strip malls? Fields of crops awaiting harvest? Homes built of wood, brick and glass? Factories producing goods for consumers? Perhaps you see a thick forest or a view of hills stretching to the distance. Or do you see school buildings? Now ask yourself, how did things get to be this way? Why are there fields of corn beyond my town? Why are there factories surrounding my city? Why do people live the way they do in my state, region or country? Why am I wearing the clothes I wear and speaking the language I speak and going to the school I attend? How did things get to be this way?

There are many ways to attempt to answer these questions. Biologists tell a story of evolution based on natural selection. Physicists answer difficult questions by studying the elemental forces of nature that shaped our universe over billions of years, while mathematicians observe the quantifiable variables of our lives and seek to understand our world through numbers. Every field of science views the world through a lens shaped by its own tools and methodologies. Economics is no different.



What distinguishes a social science from a natural science? Is there a 'social scientific method' as opposed to a 'natural scientific method'? What might be the similarities and differences?

A social science is a field of academic scholarship that examines the interactions between humans, our institutions, our organizations and the natural and social environment we inhabit.



Regardless of what continent you live on, which country you live in, what city or town you call home, what school you go to, whether you are a native English speaker, a citizen of one or more countries, or a third culture kid, economics is about you. Actually, to be more general, economics is about us and the world we live in. Economics is a social science: it is one of the fields of academic scholarship that examine the interactions between humans, our institutions, our organizations, and the natural and social environment we inhabit. Economics is specifically the field of study that addresses the problems that arise as human societies attempt to balance their infinite physical needs and wants with the finite resources of the world which are required to meet those needs and wants.

1.2

Scarcity

Learning outcomes

- Explain that scarcity exists because factors of production are finite and wants are infinite.
- Explain that economics studies the ways in which resources are allocated to meet needs and wants.
- Explain that the three basic economic questions that must be answered by any economic system are: 'What to produce?', 'How to produce?' and 'For whom to produce?'

Scarcity is the basic economic problem. Something is scarce when it is both limited in supply and desired.



Economics is not rocket science, but it does have something in common with rocket science. Think of it this way: rocket scientists dedicate their efforts to overcoming one basic problem of nature. What is it? Well, to get a rocket into space, it must overcome the problem of gravity. The existence of gravity creates a need for the field of study called rocket science. Economists also dedicate themselves and their studies to helping mankind overcome a basic problem of nature.

To learn more about scarcity, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.1.



Scarcity is the basic problem of economics. Rockets are the tools that enable us to overcome the problem of gravity and launch ourselves into the sky; the tools of economics help us overcome scarcity and achieve an allocation and use of the world's scarce resources to meet the needs and wants of society. The goal of rocket science is to expand the frontiers of human knowledge and our understanding of outer space. The goal of economics is to expand the frontiers of the human experience here on earth, to improve efficiency in the use of and allocation of the world's scarce resources.

CASE STUDY

Scarcity - the basic economic problem

Something is scarce when it is desired but limited. Scarce resources are those things, both natural and man-made, that are used in the production of the goods and services that humans consume to survive and to enjoy life. The problem with scarcity is that while resources are finite, the wants and needs of humans are infinite. There are simply not enough resources available in the world to satisfy the wants of the world's people. In our pursuit of our material desires, we use up more and more of the world's resources, so scarcity is intensified.

The scarce resources discussed below are also known as the 'factors of production' because all three are required for the production of any good or service that might be exchanged in an economy.

To learn more about the factors of production, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.2.



- **Land is scarce.** Land resources are those things that are 'gifts of nature'. The soil in which we grow food is scarce because fertile land is in limited supply but there is a huge desire for the food which grows on such land. Wood is a scarce resource because ultimately all wood comes from trees which are grown on scarce land. Minerals such as copper and tin, and resources such as oil, coal, gas and uranium are scarce. This is because these materials are all used to produce energy and other things we desire but they are all in limited supply and the supplies do not renew themselves.
- **Labour is scarce.** Labour refers to the human resources used in the production of goods and services. In a world of nearly seven billion people, it may sound silly to say labour is scarce, but it most certainly is. Labour is the human work, both physical and intellectual, that contributes to the production of goods and services. Some types of labour are more scarce than others. For example, factory workers are desirable in huge numbers in some parts of the world; in China and India they are not very limited but are greatly desired, therefore they are scarce. Medical doctors are desired in all parts of the world, but they are more limited in number than people able to work in factories; therefore, doctors are scarcer relative to factory workers.
- **Capital is scarce.** Capital refers to the tools and technologies that are used to produce the goods and services we desire. The word 'capital' is also sometimes used to refer to the money that individuals and businesses need to acquire the tools and technologies of production. More and better tools enhance the production of all types of goods and services but the amount of capital in the world is limited, so capital is a scarce resource.

A resource worth mentioning that is not scarce is entrepreneurship, which can be defined as the innovation and creativity applied in the production of goods and services. Creativity and innovation have contributed more to improvements in the well-being of the world's people than any other resource. The physical scarcity of land, labour and capital does not apply to human ingenuity, which itself is a resource that goes into the production of economic output.

The basic economic problem of scarcity has led to the development of various economic systems and their methods for allocating the resources of land, labour and capital, and distributing the output produced.



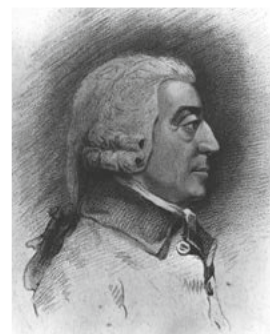
Economics is the field of study that concerns itself with the allocation of the scarce resources between the competing needs and wants of society.

A brief history of economic thought

The study of economics as its own field of science is relatively young and can be traced back to the late 18th century. The observations of Adam Smith, a Scottish social philosopher, spawned a revolution in society's views of how we interact with one another in the commercial realm. He wrote two books that would contribute to the field that you are studying today: *The Theory of Moral Sentiments* (1759) and *An Inquiry Into the Nature and Causes of the Wealth of Nations* (1776). In these works, Smith laid out his views on the importance of liberty and the pursuit of self-interest in achieving an efficient allocation of society's scarce resources.

While he did not invent economics, Smith was the first thinker to formalize the process of observing and reflecting on humans' economic behaviour. He formulated several of the principles that still underlie our understanding of economics today.

While the revolution in social science brought on by the development of economics as a field of study occurred less than 250 years ago, a very different revolution occurred thousands of years ago that led to the development of economies. *An economy is a system of interactions between individuals in a geographical area (village, town, state; national or international) that brings together those involved in the production, distribution, exchange and consumption of resources, goods and services of that area.* The key word in this definition is 'exchange': to



Adam Smith (1723–90) – the father of modern economics.

understand how human society came to involve economies, we must understand how the need for them arose in the first place.

In his book *The Worldly Philosophers*, historian Robert L Heilbroner writes about the 'economic revolution' that occurred thousands of years ago in human society.

Since he came down from the trees, man has faced the problem of survival, not as an individual but as a member of a social group. His continued existence is testimony to the fact that he has succeeded in solving the problem; but the continued existence of want and misery, even in the richest of nations, is evidence that his solution has been, at best, a partial one.



Bushmen of the Kalahari have an economy based on tradition.

Heilbroner points out that early humans, whose survival depended on the ability to hunt and gather food, were not concerned so much with the complex web of exchanges that a modern economy exhibits, thus there would have been little need for economists in early human society. He explains how studies of the African Bushmen of the early 20th century revealed interactions that solved the economic problem in communities that were most likely to represent life in pre-agricultural and pre-industrial human societies.

[Anthropologists] describe how a gemsbok is divided among relatives and relatives' relatives, until in the end 'no person eats more than any other.' But in an advanced community this tangible pressure of the environment, or this web of social obligations, is lacking. When men and women no longer work shoulder to shoulder in tasks directly related to survival – indeed when two-thirds of the population never touches the earth, enters the mines, builds with its hands, or even enters a factory – or when the claims of kinship have all but disappeared, the perpetuation of the human animal becomes a remarkable social feat.

So remarkable, in fact, that society's existence hangs by a hair. A modern community is at the mercy of a thousand dangers: if its farmers should fail to plant enough crops; if its railroad men should take it into their heads to become bookkeepers or its bookkeepers should decide to become railroad men; if too few should offer their services as miners, puddlers of steel, candidates for engineering degrees – in a word, if any of a thousand intertwined tasks of society should fail to get done – industrial life would soon become hopelessly disorganized. Every day the community faces the possibility of breakdown – not from the forces of nature, but from sheer human unpredictability.

Robert L Heilbroner, *The Worldly Philosophers*, 1999

In today's world, argues Heilbroner, there is a need for a science that examines and develops tools to assist in the allocation of scarce resources and the goods and services which they are used to produce. This is precisely because the systems of exchange, or the economies, of modern society are so complex. And that science is economics.

Without ancient traditions governing the ways in which humans exchange with one another, and in the absence of an absolute dictator who determines how much of which resources will be used to produce what and for whom, it can appear to be a miracle that anything productive gets done in modern economies.

It is not a miracle, however, as you will see throughout your study of economics over the coming months. Complex modern economies can be understood by examining the exchanges that take place in markets that lead to the satisfaction of the wants and needs of the world's people.

CASE STUDY

The basic economic questions

The existence of scarcity in our world gives rise to some basic questions that any economic system must answer. Some economic systems rely on customs and traditions to answer these questions, some rely on the commands of a central authority or government, and some rely on free exchanges between individuals in a market system. Regardless of whether it is governed by tradition, command, or exchanges in the marketplace, there are three basic economic questions that any economic system must address.

- **What should be produced?** Should society's scarce resources (land, labour and capital) be used to grow food, make clothes, toys and tools, or should they be used to provide services such as healthcare, entertainment and haircuts? What a particular economy should produce is one of the basic questions an economic system should answer. An economy based on tradition may answer 'produce what has always been produced: food for survival'. A centrally planned economy may choose to produce whatever the government decides is most crucial to meeting society's needs, while a market economy leaves the answer up to the interactions between the supply and the demand of self-interested consumers and producers.
- **How should it be produced?** Should production be labour intensive or capital intensive? Should robots replace workers whenever possible or should workers make up the majority of inputs into the production of goods and services? To what extent will technological innovation affect the way things are produced? Economic systems must address the question of how society's output will be produced.
- **For whom should it be produced?** The allocation and use of resources for the production of goods and services is only part of the objective of economic systems. The allocation of the output of an economy is the final issue the system must address. Who will receive the output of the economy, and how much will each person receive? Should levels of consumption be based on social standing? Gender or age? Race or religion? Or should output be allocated fairly across all sections of society? Perhaps levels of consumption should be based on merit or worth or individuals' willingness and ability to pay for the things they want to consume. The question of the allocation of output is the final issue all economic systems must address.

The basic economic questions arise from the basic economic problem of scarcity. Once we recognize that scarcity exists, we must confront these questions in order to determine how to deal with the problem of scarcity in our allocation of resources and the goods and services they are used to produce.

W To learn more about the basic economic questions, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.3.

The Bushmen of Africa and other tribal societies answer the basic economic questions through traditions passed down from generation to generation. The feudal societies that dominated mediaeval Europe and Asia and the centrally planned, totalitarian states of the 19th and 20th centuries turned to strong leaders and the power of the state to decide on the allocation of resources, goods and services.



▶ Mao Zedong (left), Joseph Stalin (centre) and Fidel Castro (right): 20th-century rulers who executed nearly total control over the economic activities of their respective countries (China, Soviet Union and Cuba).

There are very few command economies left. China began embracing market reforms soon after Mao Zedong's death in 1976. The Soviet Union dissolved in 1991 and now consists of over a dozen separate countries, mostly with market-based economies. Even Castro's Cuba has embarked on market reforms since Fidel Castro stepped down as its leader in 2007. Only North Korea remains as a vivid example of totalitarian economic control.

The thoroughly controlled command economy of North Korea is mainly newsworthy for want and famine. In the early 1990s, from a total population of 22 million, between 900 000 and 3 million people died of starvation. Stunted by lack of food, the average North Korean is now two inches shorter than the average South Korean.

To learn more about command economies, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.4.

To learn more about incentives, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.5.

Command economies

The economic system implemented in Mao's China, Stalin's Soviet Union and Castro's Cuba is known as socialism. In each case, these leaders sought to move the economy of their country from an agricultural base to an industrial and manufacturing base. The mechanism used to pursue this goal involved total control of the nation's resources by the government. Answers to the basic economic questions were based on government priorities.

Typically, a command economy requires state ownership of the factors of production and is guided by the principles of socialism. These principles place the objective of equality above that of efficiency. Socialist economies aim to achieve fairness within society by allocating resources and output based on the common needs of humans rather than the individual pursuit of self-interest that underlies market economies. Private ownership of factors of production is therefore abolished. All agricultural and industrial output is appropriated by the central government and is re-allocated among the nation's people in what is intended to be a fair and equitable manner.

Because of the lack of individual property rights and the incentive to achieve maximum efficiency in the use of resources (which characterize private ownership), the command economies of the 20th century eventually became highly inefficient. Ultimately, they were unable to provide their nations' people with the basic necessities for a healthy and happy existence. Both Russia (the core of the former Soviet Union) and China eventually abandoned the command system of economic management. Even Cuba, under its current ruler Raul Castro, who succeeded his brother Fidel in 2007, has recently embarked on market-based economic reforms.

The failure of command economies to achieve sustainable and meaningful improvements in the well-being of their people can be tied to the lack of an effective mechanism for determining the most efficient allocation of society's scarce resources. Central planners, it turned out, were too prone to making mistakes in their determination of what was best for society. Massive inefficiencies and high levels of corruption emerged as producers in the economy focused less on producing quality products that society truly demanded, and more on meeting the strict production targets passed down from the central government.

An economic system that does not appropriately harness incentives towards achieving efficiency in production will eventually collapse under the mounting inefficiencies that emerge while attempting to manage the activities of millions of individuals across the nation. This helps explain why the command economies of the 20th century failed to thrive and why most of them eventually adopted market-based economic reforms granting individual ownership of property and encouraging the pursuit of self-interest.

So how does a modern economy answer the basic economic questions? Humans' economic exchanges today are not guided by the tradition and custom of the tribal societies nor by totalitarian commands from above. Traditional economies and command economies have largely declined in the modern era as the market system has emerged as the dominant mechanism for answering the basic economic questions. Today, most of the world's economies are guided by a system that Adam Smith described as 'the invisible hand of the market'.

The market system

Adam Smith's revolutionary observation was that society's needs and wants would be best satisfied by letting individuals pursue their own selfish objectives in an entirely free

market. Smith believed that the 'market' (a place where buyers and sellers meet to engage in exchanges with one another) was the most efficient means for allocating scarce resources and therefore led to the greatest amount of gain for the largest number of people when it was left entirely free of government control.

Smith advocated a *laissez-faire* approach to the government's management of the nation's economic activity. *Laissez-faire* is a French term that translates as 'let it be'. A government, said Smith, should let an economy be free, since individual agents in a free market will interact in a manner that results in outcomes beneficial for both the individual and society.

Smith believed that freedom and the pursuit of self-gain would not lead to chaos and anarchy, but to a socially beneficial outcome whereby society's wants and needs are satisfied by an invisible hand rather than an iron fist.

Whoever offers to another a bargain of any kind, proposes to do this. Give me that which I want, and you shall have this which you want, is the meaning of every such offer; and it is in this manner that we obtain from one another the far greater part of those good offices which we stand in need of.

It is not from the benevolence of the butcher, the brewer, or the baker that we expect our dinner, but from their regard to their own self-interest. We address ourselves, not to their humanity but to their self-love, and never talk to them of our own necessities but of their advantages.

Adam Smith, *The Wealth of Nations*, 1776

The idea that individuals pursuing their self-interest could end up contributing to the well-being of others was rooted in Smith's moral philosophy that humans' personal happiness is based to some extent on the well-being of those around them. Smith believed that in a complex society made up of thousands or millions of individuals whose interests do not always overlap, an economy governed by tradition or command could not possibly achieve a more beneficial outcome for the greatest number of people than a system in which individuals are able to pursue their own self-interest.

Freedom of choice was a fundamental basis for Smith's economic and social philosophy and, to this day, freedom remains a key characteristic of the economics we study and of the policies that economic theory helps shape in both national and international economies.

Most economies combine elements of the free market with some degree of government intervention – these are mixed economies. The degree to which government is involved varies greatly between countries, and is a central point of argument in each country's politics.

The circular flow of a market economy

Fundamental to the market economic system is the idea that the exchanges between individuals are voluntary and that anyone engaging in such exchanges benefits from them. This implies that when one person voluntarily gives another something that the second person wants, the first person must be getting something he or she wants in return. Thus, both parties are better off following the exchange. In other words, market economics is not a zero-sum game. When one person wins, it does not necessarily mean that someone else loses. There are winners and winners in a market economy.

All exchanges in a market economy take place in either the 'product market' or the 'resource market'. In our study of market economies, the demand for resources by firms, and for goods and services by households, is met in one of these two markets. Households are the 'owners' of productive resources, which are the inputs firms need in order to produce goods and services. To acquire the inputs for production, firms must pay households for their resources in the *resource market*. Households earn their income in the



A market is a place where buyers and sellers come together to engage in exchanges with one another.



Are economic theories independent of culture? Can a culture remain unique while adopting an economic system shared by other cultures?



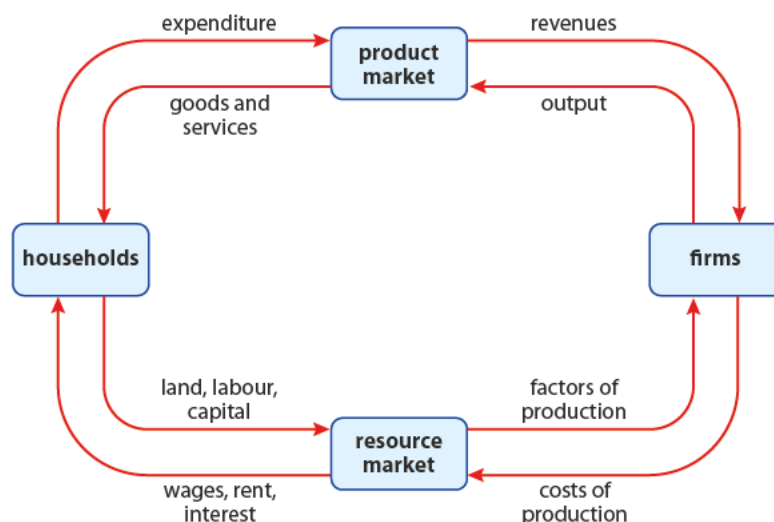
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To learn more about the circular flow model, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.7.



Figure 1.1

The circular flow model of the market economy.



In Figure 1.1, money payments flow clockwise in the outer loop while resources, goods and services flow counter-clockwise in the inner loop. In the resource market, households provide firms with the factors of production (land, labour and capital) they demand in order to produce their output. But these inputs are not free; firms face costs in acquiring them. These costs translate into money incomes that households receive for the resources they provide; wages for labour, rent for land, and interest for capital.

Once firms have acquired all the inputs necessary to produce their finished products, they sell their products to households in the product market. The money households earn in the resource market goes to pay for the goods and services they demand in the product market. Household expenditures on goods and services translate into revenue for the firms. Thus the money earned by households in the resource market is ultimately earned by firms in the product market, and the circular flow is complete. Inputs turn into outputs, income turns into revenue.

Thus Figure 1.1 illustrates at a basic level how market economies function. The exchanges between households and firms in each market are mutually beneficial, because in the absence of oppression, coercion, or forced exchange, it must be assumed that in each of the transactions between household and firm, Adam Smith's words are guiding the individuals: 'Give me that which I want, and you shall have this which you want.'

CASE STUDY

Cuba plans to lay off 500 000 workers

Cuba announced Monday it will cast off at least half a million state employees by mid-2011 and reduce restrictions on private enterprise to help them find new jobs – the most dramatic step yet in President Raul Castro's push to radically remake employment on the communist-run island.

Castro suggested during a nationally televised address on Easter Sunday that as many 1 million Cuban workers – about one in five – may be redundant. But the government had not previously laid out specific plans to reduce the work force.

The layoffs will start immediately and continue through the first half of next year, according to the nearly 3 million-strong Cuban Workers Confederation – the only labour union allowed by the government.

To access Worksheet 1.1 on the economics of zookeeping, please visit www.pearsonbacconline.com and follow the onscreen instructions.



To access Worksheet 1.2 on the hidden costs of war, please visit www.pearsonbacconline.com and follow the onscreen instructions.



To soften the blow, it said the government would increase private-sector job opportunities, including allowing more Cubans to become self-employed, forming cooperatives run by employees rather than government administrators and increasing private control of state land, businesses and infrastructure through long-term leases.

It did not say which parts of the economy would be retooled to allow for more private enterprise. The union said that the state would only continue to employ people in 'indispensable' areas where the labour force is historically insufficient, such as in farming, construction, industry, law enforcement and education.

The announcement added that Cuba would overhaul its labour structure and salary systems since it will 'no longer be possible to apply a formula of protecting and subsidizing salaries on an unlimited basis to workers.'

Instead, Cubans will soon be 'paid according to results,' it said, though few details were provided. Castro has said repeatedly he sought to reform the pay system to hold workers accountable for their production, but the changes have been slow in coming.

Currently, the state employs 95 per cent of the official work force. Unemployment last year was 1.7 per cent and hasn't risen above 3 per cent in eight years – but that ignores thousands of Cubans who aren't looking for jobs that pay monthly salaries worth only \$20 a month on average.

In exchange for the low salaries, the state provides free education and healthcare and heavily subsidizes housing, transportation and basic food.

Castro's government has moved to embrace some small free-market reforms. Earlier this year, it handed some barbershops over to employees, allowing them to set their own prices but making them pay rent and buy their own supplies. Authorities have also approved more licenses for private taxis while getting tough on unlicensed ones.

Associated Press /NPR News, 13 September 2010



To learn more about economic systems, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.8.

EXERCISES

- 1 How is the basic economic problem of scarcity dealt with in a centrally planned economy such as Cuba's?
- 2 How are wages determined in a centrally planned economy? How will they be determined as more and more workers in Cuba begin working in the private sector?
- 3 How will increased private ownership of land, capital and labour lead to more efficient use of resources in Cuba?
- 4 The article says, 'the state would only continue to employ people in "indispensable" areas where the labour force is historically insufficient'. How does a free market system assure that 'indispensable' jobs in the economy get done? Is a central planner needed to make sure there are enough farmers, teachers and law enforcement agents?

1.3

Choice and opportunity cost

Learning outcomes

- Explain that as a result of scarcity, choices have to be made.
- Explain that when an economic choice is made, an alternative is always foregone.

The existence of scarcity means that in humans' pursuit of material well-being, not every want and need of mankind can be simultaneously satisfied. As Heilbroner says, 'the

To learn more about opportunity cost, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.9.



To learn more about tradeoffs, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.10.



The opportunity cost is what must be given up in order to undertake any activity or economic exchange. Opportunity costs are not necessarily monetary; rather, when you buy something, the opportunity cost is what you could have done with the money you spent on that thing. Even non-monetary exchanges involve opportunity costs, as you might have chosen to do something different with your time.



continued existence of want and misery' is evidence that the economic problem has not been overcome, even in the richest of countries. So, why can't all of humans' wants and needs be satisfied? Why can't global poverty be eliminated, which would surely put an end to many of the violent social, political and economic conflicts that plague our planet?

The problem of scarcity gives rise to another fundamental reality faced by individuals everywhere: the reality that nothing is free. Every economic decision involves costs. A cost is defined as what must be given up in order to have something else. In answering the basic economic questions, choices must be made and those choices inevitably involve costs, since resources are scarce.

For example, think about your decision to sign up for this economics class. You could have studied several other subjects: geography, history, psychology, perhaps business. Your decision to study economics was your choice of how to use the scarce resource of time during your last two years in school. The cost of your decision is the foregone opportunity to study one of the other subjects, and all the skills and knowledge you would have learned had you chosen another subject.

You may be saying to yourself: 'No, the cost of me taking economics is the tuition fees or taxes my parents are paying to support my education at this school.' That is also true. But in economics, we define costs as more than just the monetary expenses involved in an economic transaction. The opportunity cost is the opportunity lost when making a decision of how to use our scarce resources, whether it's time, money, labour, land or capital.

We face trade-offs every day of our lives. On a Friday night, you may face several trade-offs: you can go to a movie with friends, have dinner at home with your parents, play video games with your brother or study for next week's exams. Trade-offs are the various opportunities you could choose to pursue in any given situation. The opportunity cost of a decision is the next best alternative to the choice you make. If you decide to play video games on Friday night, but the next best alternative was to study, then the opportunity cost of playing video games is the benefit you would have gained from studying instead.

1.4

The use of models in economics

Learning outcomes

- Explain the process of model building in economics.
- Explain that economists must use the *ceteris paribus* assumption when developing economic models.
- Distinguish between positive and normative economics.
- Explain that a production possibilities curve (production possibilities frontier) model may be used to show the concepts of scarcity, choice, opportunity cost and a situation of unemployed resources and inefficiency.

Model building in economics

A model can be used to represent a concept from the real world. Economists use models to demonstrate economic principles. An economic model is not unlike any other model you may already be familiar with. Models represent an object or situation from the real world, but do not perfectly re-create the characteristics of the real thing. For example, a model car looks similar to a real car, but you cannot use it to get to work. Likewise, a model



of the solar system represents the relationship between the sun and the planets, but the relationships are not to scale nor are they realistic in the scientific sense.



A model represents reality, but not perfectly. In this model of the solar system, some truths are ignored – for example, the relative sizes of the planets and the relative distances between them.

Economics models are not dissimilar to model cars and models of the solar system. Economists will simplify reality in order to analyse human interactions in a model (also referred to as diagrams or graphs in economics).

Ceteris paribus – all else equal

When using models to represent reality, economists usually hold all variables other than those illustrated in the model constant. This allows for a simple analysis of particular economic variables.

The demand diagram is a model used by economists to show the relationship between the price of a particular good and the quantity of that good demanded by consumers. To analyse how consumers respond to a change in the price of a product, economists assume that no other variables (e.g. income of consumers, price of other related products, etc.) are changing. In reality, other variables are constantly changing but economists ignore this in order to focus on how one variable (e.g. consumer demand) responds to a change in another (e.g. price of the product).

The Latin phrase *ceteris paribus* translates as 'other things being equal'. The *ceteris paribus* assumption (the assumption that all other things are unchanging) is an important requirement when examining economic models. Throughout your economics course, economic models will always assume *ceteris paribus* – that no variable other than that under investigation in a particular model is changing.



Ceteris paribus is a Latin phrase meaning 'other things being equal'. Economists assume *ceteris paribus* when examining certain variables in an economic model. This allows us to easily examine the relationship between one variable and another without complicating our analysis with all the other things that could cause the variable in question to change.



What are the implications of the assumption of *ceteris paribus*? Do other areas of knowledge make a similar assumption? How do we test knowledge claims in economics? Should all knowledge claims in economics be testable? If a claim is not testable, is it meaningless?

Positive and normative economics

Economists may not always agree on everything. Whether or not an economic statement is purely an expression of factual information or whether it is an expression of values or opinions based on facts determines whether the economic statement is a positive one or a normative one.

Positive economics deals with what is. It focuses on observations and expressions based purely on factual evidence. For instance, it is a fact that when the price of doughnuts rises, the number of doughnuts that consumers demand falls. This is not an issue that economists would find it necessary to debate. In fact, the relationship between the price of a good and the quantity demanded by consumers is so widely agreed upon that it has become an economic law (the law of demand).

Another example of a positive economic statement is that when a country's currency appreciates (gets stronger relative to other countries' currencies), its exports become more expensive to foreign consumers and tend to fall. This is a fact that can be supported using evidence, therefore its statement is an expression of positive economics. All economists agree that this statement is true and there is no room to debate the issue.

However, not every economic statement is irrefutable. Some are more an expression of a particular economist's opinion or the values which that economist holds dear. Consider the statement, 'Doughnuts should be taxed because at their current price they are over-consumed and contribute to obesity in the nation.' This may be true in that doughnuts can cause health problems, but the view that they 'should be taxed' is debatable. Therefore, this statement is normative. Normative economics deals with what *should be* rather than what is.

Positive economic analysis examines human interactions through the lens of quantifiable, irrefutable, evidence-based observations. There is no role for values or ethics in the realm of positive economics. Normative economics, on the other hand, allows for the expression of the economist's values or personal views based on the quantifiable evidence observed in a particular market or realm of social interaction.

Examples of positive economic statements

- Unemployment rose by 0.8% last quarter as 250 000 Americans lost their jobs in the public and private sectors.
- Rising pork prices have led to a surge in demand for chicken across China.
- Increased use of public transport reduces congestion on city streets and lowers traffic fatality rates.

These are all statements of fact and each can be supported by evidence based on quantifiable observations of the world.

Examples of normative economic statements

- Unemployment rates are higher among less educated workers, therefore government should include education and job-training programmes in benefits for the nation's unemployed.
- Rising pork prices harm low-income households whose incomes go primarily towards food. Therefore, to slow the rise in food prices, the Chinese government should enforce a maximum price scheme on the nation's pork industry.
- It is the government's obligation to provide public transport options to the nation's people to relieve the negative environmental and health effects of traffic congestion.

These are all statements based on observable, quantifiable variables but each includes an element of opinion or an expression of the economist's values. Each statement expresses what the economist believes should happen based on his or her observations of what is.

The production possibilities curve

The existence of scarcity and the reality that every economic decision involves trade-offs and costs can be illustrated in what will be the first of many economics models you will learn about in this course. The production possibilities curve (PPC) is a model economists employ to demonstrate the fundamental economic concepts you have been reading about so far (Figure 1.2).

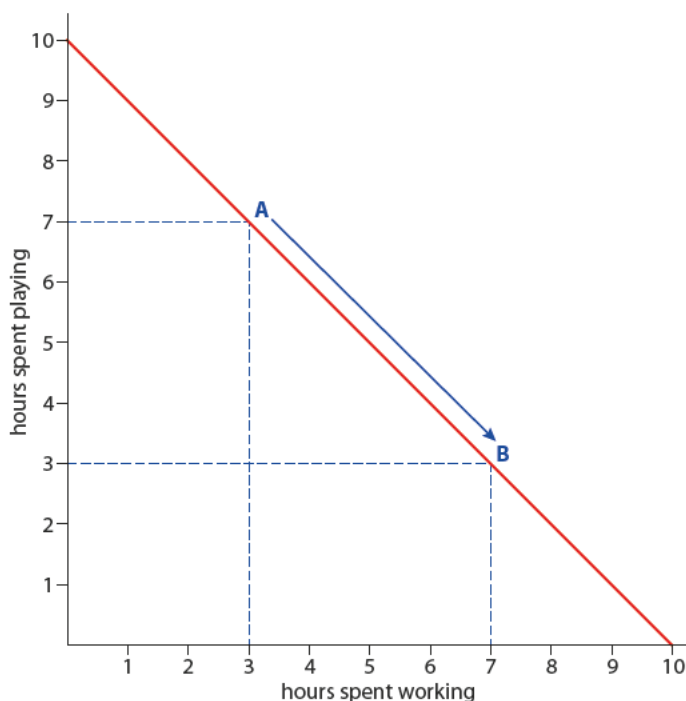


Figure 1.2
Sarah's production possibilities curve.

The PPC in Figure 1.2 illustrates the trade-off Sarah faces in deciding how to use her 10 hours of free time each week. She can spend her free time doing one of two things, playing or working.

Assume that point A represents Sarah's decision in week 1, when she allocates seven hours to playing and three hours to working. Her decision to allocate her limited time in this manner involves an opportunity cost, which is the benefit she would have gained from spending more time working and less time playing.

Assume that point B represents Sarah's decision in week 2, when she has decided to spend seven hours working and only three hours playing. The opportunity cost of working four additional hours is the four fewer hours she gets to spend playing and all the enjoyment she foregoes as a result of her decision.

This simple production possibilities curve demonstrates several concepts fundamental to economics.

- **Scarcity.** Because resources are scarce, there is a limit to the amount of production or consumption an individual (or a nation) can undertake. Time is the scarce resource in Figure 1.2. With only 10 hours of free time, Sarah must decide how to allocate her time among competing activities.
- **Trade-offs and choices.** The two axes in a PPC represent two trade-offs faced by an individual, firm, government or society. The axes may represent any economic activity that can be undertaken by an individual, firm or nation in the employment of its scarce resources. Because we face trade-offs, we must make choices, which involve costs.
- **Opportunity cost.** Nothing is free. More time playing comes at the expense of the benefits from time spent working. Likewise, a nation that chooses to produce a certain good faces costs in the form of the other goods that could have been produced with the same resources.

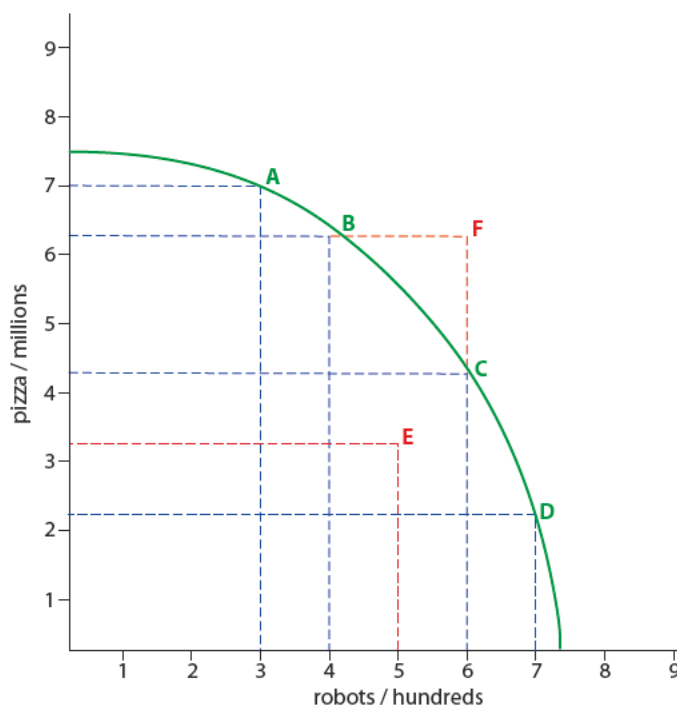
What is a model in economics? What does it do? Does it matter that many of the models we use in economics do not correspond well to reality? What are the limitations of the use of diagrams and charts in economics? How important is it that as students of economics we respect the limitations of a model representing reality?

W To learn more about the production possibilities curve, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.11.

Other basic economic concepts illustrated by the PPC

The law of increasing opportunity cost

The PPC can be used to illustrate a nation faced with a decision regarding what types of goods to use its scarce resources to produce. The PPC in Figure 1.3 assumes that Country I can produce two goods – pizzas and robots.



Country I's PPC in Figure 1.3 has a convex shape (it bows out from the origin). The reason for this lies in differences in the production of pizzas and robots. Pizzas and robots require very different resources in their production. Pizzas are land intensive (large amounts of land are needed to grow the ingredients). Pizzas also require a particular type of labour and capital: farmers and cooks need not have advanced degrees and extensive expertise in engineering to grow ingredients and make pizzas. The land and labour resources required to make robots are very different than those for pizza. The type of labour needed is highly skilled and educated. Because Country I's land, capital and labour resources are not equally suitable to making either robots or pizzas, the opportunity cost of increasing production of robots increases in terms of pizzas the more robots are produced.

Notice, for instance, that when robot production increases from 300 to 400 units, the cost of the additional 100 robots is just under one million pizzas (since pizza production falls from 7 million to a little over 6 million). As robot production increases, however, from 600 to 700 units, the additional 100 robots costs Country I around two million pizzas (since pizza output falls from around 4 million to 2 million pizzas).

Why did Country I have to give up twice as many pizzas to increase robot production by one hundred units from 600 to 700 than it did to increase production by one hundred units from 300 to 400? The explanation lies in the fact that as Country I started making robots (between 100 and 400) only the resources best suited for robot design and production were employed. Electrical engineers and highly educated technicians who had been employed in the pizza industry quit making pizzas (which they were never any good at anyway)



and started making robots. The land, labour and capital that was best for making pizzas remained employed in the pizza industry, and at first Country I was able to increase its production of robots at a relatively low cost.

However, as robot production intensified, resources were increasingly moved out of pizza production and into the robot industry. To produce 700 robots, highly skilled pizza makers and land better suited for growing wheat and flour and tomatoes and dairy cows had to be shifted into robot production. The cost of robots in terms of pizzas increases the more robots Country I produces. The law of increasing opportunity cost explains why the PPC is bowed outwards from the origin. The law says that as the output of a particular product increases, the opportunity cost of producing additional units rises.

Not all PPCs are bowed outwards. If the two goods represented in a PPC are very similar in their production, requiring similar types of labour, capital and land resources to produce, then the PPC for the two products is a straight line, such as Country I's PPC for pizzas and calzones (Figure 1.4). A calzone is basically a pizza folded in half. Therefore, the opportunity cost of one calzone is always only one pizza, so the PPC is a constant sloping curve.

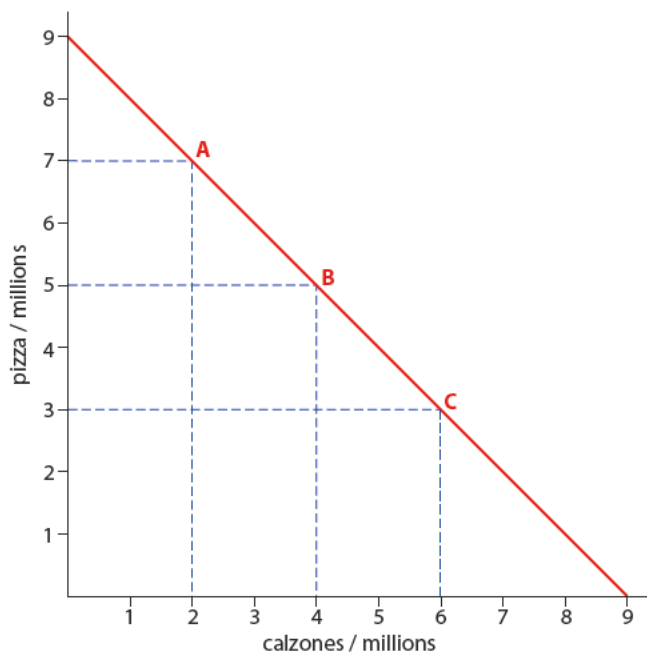


Figure 1.4

A PPC with constant opportunity cost.

Efficiency, inefficiency and economic growth

The PPC can also be used to illustrate the economic concepts of efficiency, inefficiency and economic growth. Look again at Figure 1.3. Points A, B, C and D are all on the curve; at each of these points Country I is producing some combination of goods and using its existing resources (land, labour and capital) efficiently. This means that nearly every person of working age who wants a job has a job, the land that can be used for production of pizza ingredients and robot components is being used and the nation's existing capital (factory equipment, ovens, and other tools) is operating at full capacity – no capital is sitting idle. At these points, an increase in *total* output is not possible without an increase in inputs first. A nation achieving its production possibilities is producing at its full-employment level of output.

A nation not achieving full employment of resources is producing at a point *inside* its PPC. If Country I is producing 500 robots and 3.2 million pizzas (point E), it is under-utilizing its land, labour and capital. A country is said to be inefficient if it is producing at a point inside of its PPC. This means that unemployment is likely to be high, land that could be put into



The production possibilities curve, the most basic of economic models, can also be used to show many of the economic concepts you will learn about in this course: unemployment, recession, economic growth, economic development, inflation and deflation.

To access Worksheet 1.3 on the production possibilities curve for energy, please visit www.pearsonbacconline.com and follow the onscreen instructions.

Economic growth is an increase in the output of goods and services in a nation over time. Growth can be illustrated as an outward shift of a nation's PPC.

Productivity is the output attributable to each unit of input. Increases in the productivity of land, labour or capital lead to an overall increase in the output of a nation.

cultivation of food or production of minerals is not being used, and existing capital is sitting idle. An economy producing inside its PPC may be in a recession – this means that the level of output has fallen below the full employment level achieved when producing on its PPC.

Clearly the production possibilities curve can also illustrate the possibility of economic growth. A point *outside* the PPC is unattainable given the existing quantity and quality of resources, but it is clearly desirable. At point F in Figure 1.3, Country I would produce and consume 600 robots and over six million pizzas. This is clearly beyond the current production possibilities, but it may be attainable in the future if the economy grows.

Economic growth is defined as an increase in the total output of a nation over time, which is possible if a nation experiences an increase in the quality or the quantity of productive resources. In order to achieve a level of production and consumption corresponding with point F, Country I must increase the amount of land, labour or capital in the country or improve the productivity of these resources.

Productivity is defined as the output attributable per unit of input. If Country I's workers became better at producing pizzas and robots, either through better training and education or through an increase in the quality of the technologies used to produce these goods, then the national output of Country I would grow and the country would move towards point F. Investments in public education by the government or investments in better technology and more capital by the country's businesses could lead to economic growth. Economic growth is an objective that plays a significant role in macroeconomics.

1.5

Central themes in economics

Learning outcomes

- Explain that the economics course will focus on several themes, which include:
 - the extent to which governments should intervene in the allocation of resources
 - the threat to sustainability as a result of the current patterns of resource allocation
 - the extent to which the goal of economic efficiency may conflict with the goal of equity
 - the distinction between economic growth and economic development.
- Examine the assumption of rational economic decision-making.

So far, you have ventured into the field of economics, identified scarcity as the basic problem which economists attempt to address, and looked at the basic questions that economic systems strive to answer. You have also learned a little about the history of economic thought through the words of Adam Smith and learned about the basic model in economics, the production possibilities curve, which illustrates several fundamental economic concepts including scarcity, choice and opportunity cost. You are now going to examine four central themes of economics.

The extent to which governments should intervene in the allocation of resources

Throughout your economics course, you will visit and revisit the debate over the appropriate role of the government in the economy. You know that Adam Smith believed



that the government which serves society best is the one that interferes least in the free market interactions of individuals. The *laissez-faire* view of economics believes that competitive markets, composed of individual buyers and sellers with perfect information about the goods, services and resources being bought and sold, will lead to the most efficient and desirable allocation of resources towards the types and amounts of output that benefit society most. Government, argues the *laissez-faire* school of economics, cannot possibly improve on the outcome achieved by the unfettered free market.

The classical *laissez-faire* view of the economy has come under criticism at many points throughout history by those who argue that the free market, left unchecked, results in inefficiencies in the allocation of resources, whereby certain goods are over-produced while others are under-produced. Other criticisms of *laissez-faire* include the perpetuation of poverty, inequality in the distribution of income within and across nations, and involuntary unemployment during the economic slumps that free market economies frequently experience. The critics of *laissez-faire* argue that government intervention in the free market is sometimes necessary to correct the various market failures and to offset the negative effects of macroeconomic slumps caused by falling demand for a nation's output.

One of the most influential economic theorists of the 20th century was Cambridge economist John Maynard Keynes. At the time of the Great Depression (roughly throughout the 1930s), he argued for an active government role in managing the overall level of economic activity in the nation to help achieve certain macroeconomic objectives such as full employment and economic growth. While he believed that competitive markets were necessary and beneficial, he also argued that uncertainty among economic agents would lead to major swings in the overall level of demand in an economy. He believed that, if left unchecked by the government, this would result in economic shocks that contributed to suffering and misery. Keynes therefore believed that government needed to regulate the activities of private firms and individuals and thereby minimize the level of uncertainty in the economy. This would promote an atmosphere of stability in which individuals could participate in the relatively free exchange of goods, services and resources in pursuit of Smith's ideals of freedom and the pursuit of self-gain.

Keynes's theories have an important role in our study of macroeconomics, in which the role of government is a fiercely debated topic, particularly in the aftermath of the Great Recession, as the worldwide economic slump of 2008 and 2009 has come to be known.

i During the second half of the 20th century, two schools of economic thought dominated macroeconomics: the *Keynesian* school and the *Neo-classical* school. At the heart of the debate is the issue of freedom vs control. Neo-classical economics argues that markets are always more efficient than governments, while the Keynesian school argues for an active government providing a system of regulation and control over the free market.

The threat to sustainability as a result of the current patterns of resource allocation

Another theme central to our study of economics is the issue of sustainability in current patterns of resource allocation. Sustainability can be defined as the capacity to endure. The dominant system of economic organization in the world today is a market system that emphasizes the pursuit of self-interest. One assumption underlying this system is that all individuals are rational, self-interested agents whose ultimate objective is to improve their level of material well-being through increased incomes and consumption. The problem of scarcity, however, leads to an obvious conflict between the objective of increased output and consumption of goods and services and the continuously diminishing quantity of the natural resources needed to produce those goods and services.

Some argue that 'sustainable economic growth' is a contradiction in terms since growth, which in economics means an increase in the output of goods and services over time, necessitates continued exploitation of the natural environment and the resources it provides us. Growth, argue the sceptics, is fundamentally unsustainable.

w To learn more about rational behaviour, visit www.pearsonhotlinks.com, enter the title or ISBN of this book and select weblink 1.12.

The 21st century will be characterized by growing concern regarding the effects on the earth's ecosystems, on human and social health and on the biosphere of:

- global economic growth
- the emergence of billions of the world's poor from poverty
- expansion in agricultural and industrial output.

From global warming to deforestation to over-fishing and the loss of biodiversity, the capacity of our economic system to endure must be called into question and the challenges of sustainability addressed directly by today's economics students, who will influence the economic policies of tomorrow. The issue of sustainability and the conflict that arises when the growing economies of the world encounter head-on the worsening problem of scarcity is therefore a major theme of this textbook.

The extent to which the goal of economic efficiency may conflict with the goal of equity

Fundamental to the debate over the role of government in the allocation of resources and output is the extent to which the goal of economic efficiency and the goal of equity can be achieved simultaneously.

Efficiency in economics is defined as a state in which no one can be made better off without making someone else worse off and in which more output cannot be achieved without first increasing the quantity or the quality of inputs. Increased efficiency in the allocation and use of resources ensures that total economic output can be maximized at any given time, presumably resulting in the greatest possible level of material consumption among an economy's people. Efficiency is a worthy goal in this regard, but it may conflict with the goal of equity. In economics, equity is defined as fairness in the distribution of output in a nation. An economic system that strives to maximize efficiency may result in inequality in the distribution of output, a situation deemed by many to be fundamentally inequitable. What's best for society as a whole (efficiency) may appear extremely unfair for certain groups within society (inequitable).

What are the implications of economics being based, ultimately, on human psychology? To what extent should ideas of fairness and justice inform economic thinking?



One objective of economic policy is to increase equality in the distribution of income of a nation. But to achieve this, certain individuals in society will be made worse off because redistribution requires taxing the activities or incomes of those in an economy whose ability to pay is greater. The goal of equity therefore conflicts with the goal of efficiency. This conflict will be revisited throughout this book as we evaluate the effects of various economic policies on individuals and society as a whole.

The distinction between economic growth and economic development

In the final section of this book, attention will turn away from issues relating to the behaviour of individual businesses and households, to the total output, employment and price levels of the economy as a whole. You will look at issues relating to economic development. The distinction between economic growth and economic development is another important theme in your economic studies.

Growth refers to an increase in the total output of goods and services in a nation over time. Economic growth as an objective of economics is justified by the fundamental assumption that more is always better, that increasing the output of stuff results in improvements in the



well-being of people in a nation. The idea of economic growth as an end in itself can and should be challenged on many grounds.

You will investigate the concept of economic development and distinguish it from the concept of growth. Development, defined as an improvement in the well-being of a nation's people, accounts for levels of output and consumption of goods and services, and also considers matters relating to quality of life beyond the material realm. Indicators such as life expectancy, literacy rate, child mortality rate, gender and racial equality, and religious and political freedom are all aspects of economic development. In recent years, several areas of economic study have emerged which have shifted focus away from unending increases in production and consumption and instead emphasized the importance of broadening the goal of economic policies to include development indicators. It is no longer universally agreed among economists that more is always better.

Keynes, whose theories will play a major role in this book, believed that economic growth was not an end in itself, but rather a necessary means for achieving a level of material well-being at which society could begin to turn its attention towards other ends such as social harmony. This, Keynes believed, required not only a high income and full employment but, more importantly, a society in which the cultivation of environmental, cultural, religious and ethical values was the main objective, not unending growth. In a speech in Dublin in April 1933, Keynes reflected on economics' traditional focus on economic growth as an end in itself.

We destroy the beauty of the countryside because the unappropriated splendours of nature have no economic value. We are capable of shutting off the sun and the stars because they do not pay a dividend ... Today we suffer disillusion, not because we are poorer ... but because other values seem to have been sacrificed ... unnecessarily. For our economic system is not, in fact, enabling us to exploit to the utmost the possibilities for economic wealth afforded by the progress of our technique ... leading us to feel we might as well have used up the margin in more satisfying ways.

John Maynard Keynes, June 1933

Keynes attempted to focus the study of economics on issues relating to human welfare and economic development, and many contemporary economists have begun to do the same. The distinction between growth and development as means and ends in the economic sphere of human society will therefore form a framework for the evaluation of economic theories and policies throughout this book.

1.6 Theory of knowledge and economics

Economics is a part of group 3 in the International Baccalaureate diploma programme, which means the subject's focus is on individuals and societies. This means you will explore the interactions between humans and their environment in time and place. As a social science, economics explores the interactions between humans in the commercial realm, focusing on the behaviours of households, business firms, and governments in the pursuit of various individual and societal goals.

As with other subject areas in the IB programme, there are a variety of ways in which one can gain knowledge in economics. For example, historical evidence, data collection, experimentation, observation, and inductive and deductive reasoning can all be used to help explain economic behaviours and lead to knowledge claims.

Economics students are required to evaluate these knowledge claims by exploring knowledge issues such as validity, reliability, credibility, certainty, and the individual as well as cultural perspectives.



To access Worksheet 1.4 on rational behaviour, opportunity cost and marginal analysis, please visit www.pearsonbacconline.com and follow the onscreen instructions.

The relationship between economics and theory of knowledge (TOK) is of great importance and fundamental to the diploma programme. Throughout the curriculum for both higher and standard level economics, you should be able to reflect critically on the various ways of knowing, and on the scientific and other methods used in economics. In so doing, you will become one of the 'inquiring, knowledgeable and caring young people' of the IB mission statement.

During the economics course a number of issues will arise that highlight the relationships between TOK and economics. Possible theory of knowledge discussion questions are suggested in most chapters, offering you a starting point for analyzing the knowledge claims made in economics. You and your fellow students are encouraged to explore further questions of your own.



What are the roles played by abstract reasoning and concrete evidence in constructing economic theory?

What is the role of emotion and creativity in economics?

Is there a different method of justifying qualitative rather than quantitative knowledge claims? If so, does this lead to one or other being inherently more reliable?

What is meant by 'rationality' in economics? Are there different types of 'economic rationality'?

If economics studies actual human behaviour, should it also study irrational human behaviour?

To access Quiz 1, an interactive, multiple-choice quiz on this chapter, please visit www.pearsonbacconline.com and follow the onscreen instructions.



PRACTICE QUESTIONS

- 1
 - a 'Economics is primarily concerned with the allocation of scarce resources which have alternative uses.' Use a production possibility curve to explain this statement. (10 marks) [AO2]
 - b Discuss the view that government is more effective in the allocation of scarce resources than the free market. (15 marks) [AO3]
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- 2
 - a The choice between military products and the provision of healthcare illustrates the problem of 'opportunity cost'. Explain the nature of this problem, using a production possibility curve to help you. (10 marks) [AO2]
 - b To what extent does the production possibilities curve model accurately represent the scarcity faced by less developed countries in the world today? (15 marks) [AO3]
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