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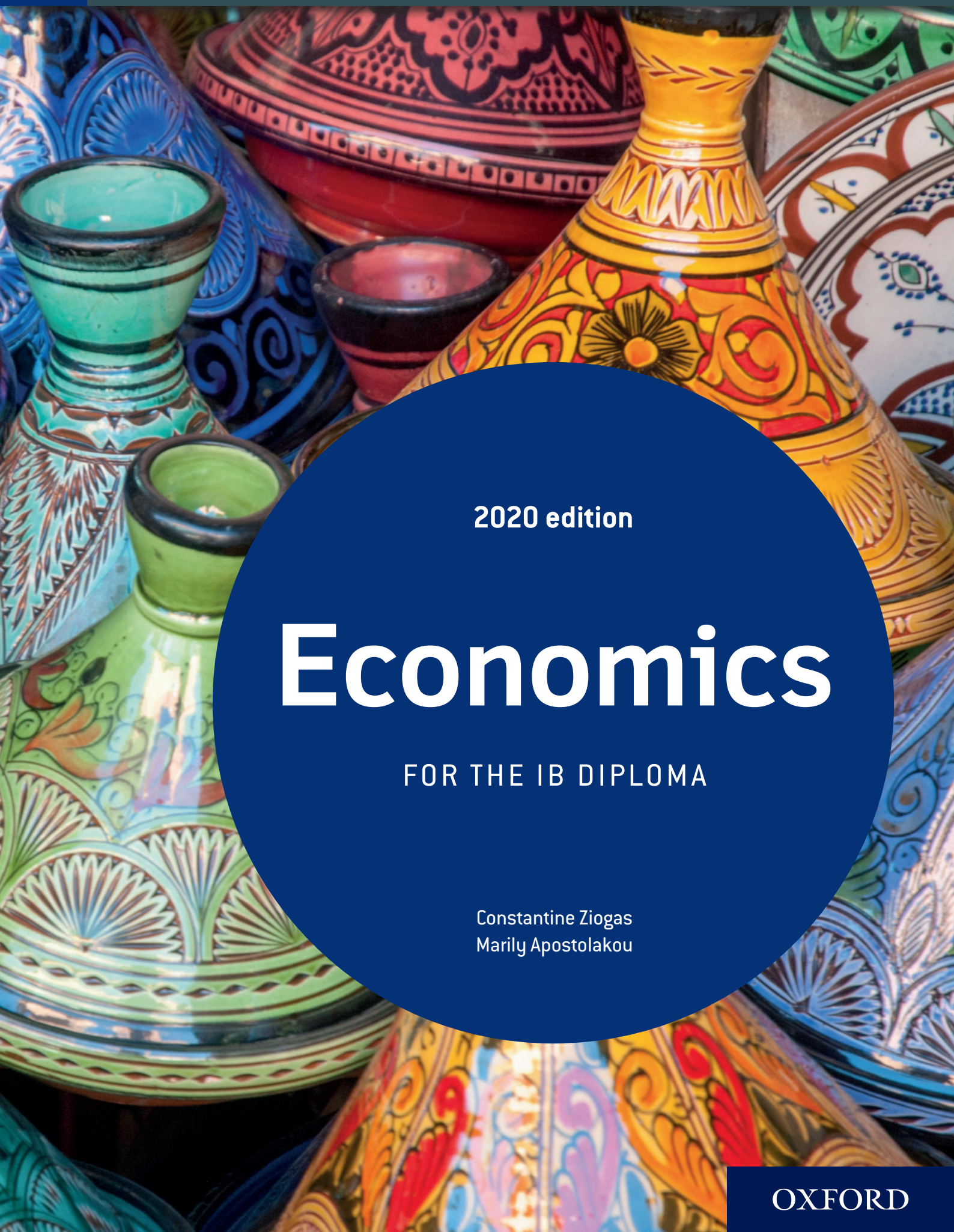

2020 edition

Economics

FOR THE IB DIPLOMA

Constantine Ziogas
Marily Apostolakou

OXFORD

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1.1 What is economics?

Economics as a social science

The social nature of economics

Social sciences are academic disciplines that systematically study human behaviour from different perspectives and include psychology, anthropology, political science and others. Economics is one of the social sciences as it is concerned with human actions and social relationships while deploying the social scientific method, which refers to the collection and analysis of data and the formulation of testable and falsifiable hypotheses about social phenomena.

Microeconomics and macroeconomics

Economics is divided into two main branches microeconomics and macroeconomics —"micro" and "macro" are Greek words meaning small and large respectively.

- **Microeconomics** is concerned with the individual parts of the economy; it deals with individual units within the economy such as firms, consumers or markets.
- **Macroeconomics** is concerned with the economy as a whole; it deals with aggregates such as the overall level of unemployment, total output of an economy and its growth through time and the average price level.

The nine central concepts

The nine key concepts that are central to economics and that we will be discussing throughout this book are as follows.

Scarcity

Scarcity is fundamental to economics, as it is the problem all societies face. It refers to the excess of human wants over what can actually be produced to fulfill these wants. Human wants are unlimited. In contrast, the resources available to fulfill these wants are limited.

Choice

Since resources are scarce, not all wants can be satisfied. Choices must therefore be made. Societies have to choose between which goods or services to produce and how much of each they want. Economics is thus also concerned with choices over competing alternatives together with their current and future consequences.

Efficiency

Scarce resources must be used in the best possible way to produce the combinations of goods and services that are optimum for society. This is known as allocative efficiency. At the same time, it is important to use resources in a way that ensures minimum waste. This is known as technical efficiency.

Equity

Equity refers to the idea of fairness. Fairness is an elusive concept, as it means different things to different people. In economics, inequity is often interpreted to refer to inequality, which may apply to how income or wealth is distributed in a society. Promoting equity is a significant issue for societies. The extent to which markets or governments should, or are able to, create greater equity or less inequality in an economy is an area of much debate.

Economic well-being

Economic well-being relates to the living standards enjoyed by the members of an economy and includes the dimensions:

- security in terms of income, wealth, employment and shelter
- the ability to meet basic needs (food, housing, health care, transportation, education, childcare, clothing)
- the ability to make economic choices and feel a sense of security and personal fulfillment with personal finances and employment
- the ability to maintain all the above over time.

Sustainability

Sustainability refers to the ability of the present generation to meet its needs without compromising the ability of future generations to meet their own needs. It relates to the idea that current generations should be good stewards of the environment.

Change

The economic world is not static; it continuously changes. In terms of economic theory, economics focuses not on the level of a certain economic variable but on the change in that variable from one situation to another. With respect to the study of real-world phenomena, it is always subject to continuous change at institutional, structural, technological, economic and social levels.

Interdependence

Economic agents such as consumers, producers, governments and nations interact with each other. Any action of any economic agent will impact other agents, indicating that all economic agents are interdependent. The intended and unintended consequences of these interdependencies must therefore be considered.

Intervention

Intervention refers to government involvement in the workings of markets despite markets being considered as the best mechanism to organize economic activity. Markets often do fail, creating room for government intervention. Note that not only is the extent of government intervention a contentious subject of debate but also there is no guarantee that the outcome of any intervention will improve market outcomes.

The problem of scarcity and choice

Scarcity

Scarcity is the fundamental problem that all societies face. It refers to the excess of human wants over what can actually be produced to fulfill these wants. Human wants are unlimited, as individuals typically prefer to have more and better goods and more services. Yet, it is not possible to produce all of the goods and services to satisfy all wants. This is due to the fact that resources are limited.

Resources (factors of production)

Resources refer to whatever is used to produce goods and services and are also known as factors of production. There are four factors of production, as defined below.

- **Land and raw materials** are inputs into production provided by nature, for example agricultural and non-agricultural land, forests, pastures, mineral deposits, oil, natural gas, lakes and rivers. The world's land area and raw materials are limited. Some resources, such as oil and coal deposits, are non-renewable: if they are used now, they will not be available in the future. Other resources, for example forests (timber) and the stock of fish, are renewable.
- **Labour** is the human input, both physical and mental, into production. The labour force is, at any point in time, limited both in number and in skills. The total number of people available for work is referred to as the labour force or working population.
- **Capital** includes manufactured resources; in other words, produced means of production. The world has a limited stock of capital (a limited supply of factories, machines, tools and other equipment). Note that the meaning of capital in economics is different from that used in ordinary speech where people refer to capital as money.
- **Entrepreneurship** is the willingness and ability that some individuals have to take risks and to manage the other three factors of production. Entrepreneurship is related but not identical to management. When a new venture is being considered, risks exist. They involve the unknown future. Someone must assess these risks and make judgments about whether or not to undertake them. The people who do so are called entrepreneurs.

Choice

Scarcity has an important consequence. Scarcity necessitates choice. Societies must choose between which goods or services to produce and how much of each they want given the available resources. For example, society cannot enjoy all the books and all the tables it wants because the number of trees required to produce these two goods is limited. It somehow has to decide how many books and how many tables it wants to produce. If there were no scarcity, no choices would have to be made.

The problem of scarcity has a second important consequence. Since resources are scarce, it is important to produce the combination of goods and services that society values the most and also to avoid wasting any scarce resources.

Scarcity and sustainability

The concept of sustainability is closely related to the environmental effects of current patterns of production and resource allocation. The fact that virgin forests are disappearing (being cut down for timber or firewood) or that fish stocks in many parts of the world are severely depleted or that the atmosphere is becoming so polluted demonstrates the current impact of human activities on the environment. Such activities pose a threat to sustainability, as resources will not be available for others to use in the future. Given that resources are also scarce it is of great importance to use them in a sustainable manner. The goal should be preserving and even increasing or improving the available stock of natural resources.

Opportunity cost

The cost of choice

Every choice involves sacrifice. For example, choosing to produce corn using the available land implies that some other agricultural product, for example wheat, has been sacrificed. This alternative foregone is the opportunity cost of that choice. The opportunity cost of choosing any activity is thus the value of the next best alternative sacrificed. If resources were unlimited, no sacrifices would be necessary, and the opportunity cost of producing any good or service would be zero.

Economic goods versus free goods

Economic goods are goods and services that require scarce resources to be sacrificed in order for them to be produced. In contrast to economic goods, free goods have a zero opportunity cost of production, as there were no scarce resources sacrificed in their production. There are very few real-world examples, perhaps seawater and air. Note that goods available at a zero price are not free in the economist's sense if scarce resources have been used up to produce them.

The basic economic questions

Scarcity forces every economy to answer three fundamental questions, independently of their level of economic development or the economic system adopted.

1. **What to produce?** Choices must be made in all economies about which goods will be produced and in what quantities.
2. **How to produce?** All economies must make choices on how to use their resources in order to produce goods and services. Should a good be produced using more labour and less capital (machines) or perhaps rely more on capital and less on labour?
3. **For whom?** All economies must make choices about how the goods and services produced are to be distributed among the population. Should all enjoy education and health services? Should all enjoy the same amount of all goods?

Means of answering the economic questions

Markets versus government intervention

A market should be thought of as a mechanism that can provide answers to the three fundamental questions. For example, the market can determine:

- whether this good or that good will be produced and in what quantities

- which production technology a firm should use to produce a good or a service
- how much income the owner of each factor of production will earn.

Yet, there is no guarantee that the market outcome is the best outcome from society's point of view. Sometimes the market as a mechanism succeeds and results in the best possible answers for society to these questions. Many other times, the market as a mechanism fails. For example, markets may lead to too much pollution, or not enough libraries; they may lead to unacceptably high rates of unemployment, or to inadequate health care for lower income households; they may lead to excessively risky lending practices by financial institutions, or to not enough basic scientific research. When the market fails it automatically creates a role for the government to step in and attempt to correct the market failure. The purpose of government intervention is thus to help markets function better. However, there is no *a priori* guarantee that the answers governments provide are necessarily better, as government failure is also possible.

Economic systems: free market economy, command economy, mixed economy

The market mechanism and government intervention explained above are two ways through which the basic economic questions can be answered. We can in turn distinguish between the types of organization of each economy. There are two extreme cases: the free-market economy and the command economy.

In the **free-market economy**, markets through the interaction of households and firms answer the three fundamental questions. Households decide what goods to consume. Firms decide what goods to produce and what resources to use. Then markets ensure that these decisions are coordinated.

In the **command economy**, the state owns all capital and land. This means that the state answers the three fundamental questions.

Between these extremes are mixed economies. In a mixed economy the answers to the three fundamental questions are given partly by the market and partly by the state. In practice all economies are mixed; yet, the roles and importance of the state and of markets can differ substantially.

The production possibilities curve (PPC) model

The production possibilities curve (PPC), also referred to as the production possibilities frontier (PPF), is the first economic model we will study.

Assumptions of the model

The production possibilities curve (PPC) provides a visual account of an economy at a point in time. It refers to a country with a fixed amount of resources and some level of technology producing only two goods or services. It is unrealistic but still, as you will see, powerful enough to illustrate a number of key concepts.

Figure 1.1.1 will help you to visualize a PPC. Assume that an economy devotes all of its resources to the production of two goods: X and Y (X and Y can be any goods or services such as wheat and cotton, or health care and national defence).

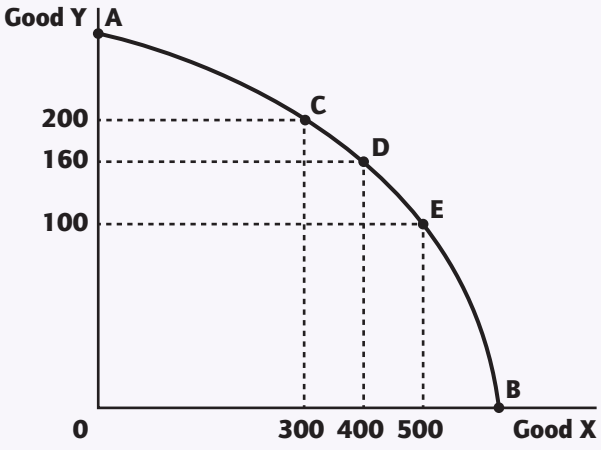

Figure 1.1.1 The PPC

The PPC shows for each amount of one good produced, the maximum amount of the other good that can be produced given its resources and its technology. For instance, if 300 units of good X are produced then this economy can produce at the most 200 units of good X if it fully uses all of its resources with its technology.

Choice, opportunity cost and scarcity

The PPC also illustrates choice and opportunity cost. As Figure 1.1.1 shows, if the economy chooses to produce more of good X it will have to sacrifice the production of some of good Y. This is shown by *moving along* the PPC from point C to point D. This sacrifice of good Y is the opportunity cost of producing the additional amount of X. Specifically, we realize that the opportunity cost of producing an additional 100 units of good X (400 units instead of 300 units) is the 40 units of good Y (160 instead of 200) that must be foregone.

It is because of scarcity that the PPC is negatively sloped: to produce more of X, less of Y can be produced as scarce resources will need to be diverted from the production of Y to the production of X. If scarcity were not the case, then the idea of a PPC would make no sense as any combination of the two goods could be produced.

Increasing opportunity costs

The PPC also illustrates the phenomenon of increasing opportunity costs. The opportunity cost of producing more and more units of good X is ever-increasing quantities of good Y sacrificed. As already mentioned, when moving from point C to point D the opportunity cost of producing an additional 100 units of good X is the 40 units of good Y that must be foregone. Now consider moving from point D to point E. The opportunity cost of producing an additional 100 units of good X (500 units instead of 400 units) is the 60 units of good Y (100 instead of 160) that are sacrificed. Producing these additional 100 units of good X is now costlier as 60 units instead of 40 units of good Y have been sacrificed. This means that an economy producing more and more of one good is forced to sacrifice *increasing* amounts of the other good.

The reason for this is that resources tend to be specialized. As the economy concentrates more and more of its production on

one good, it must start using resources that are less and less suitable for its production (that is, resources that would have been more appropriate to produce the other good). The PPC is concave (bowed-in towards the origin) rather than being a negatively sloped straight line exactly because opportunity cost increases as more and more of X is produced.

Actual growth

What if the economy is operating inside the PPC producing a combination like point A shown in Figure 1.1.2? Then the available resources are not being fully utilized; for example there is unemployment. Point A is therefore an inefficient production combination. Lower unemployment in the country and, more generally, more efficient use of existing resources will allow the economy to move to another combination towards the northeast, closer to the curve itself.

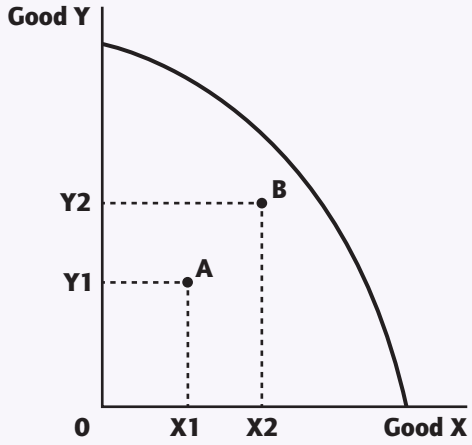

Figure 1.1.2 Actual growth

The movement from point A to point B depicts economic growth as this movement illustrates an increase in the economy's actual output. Point B reflects production of more of good X and more of good Y compared to point A (as X2 > X1 and Y2 > Y1). This increase in actual output represents economic growth.

Potential growth

Economic growth can also be illustrated through an outward shift of the PPC, as shown in Figure 1.1.3.

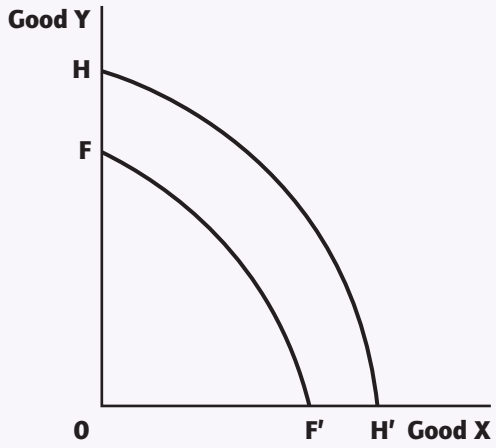

Figure 1.1.3 Potential growth

The production possibilities of this economy have expanded and the PPC has shifted from FF′ to HH′. Given that each point represents a specific combination of output, it should be clear that this economy is now in a position to produce and enjoy combinations of good X and of good Y that were previously unattainable. Such a shift is possible if the quantity or quality of available resources increases or improves and/or if the available technology advances.

Modelling the economy

The circular flow of income model

The circular flow model is a simplified representation of how the basic decision-making units of an economy (households, firms, the government and, in an open economy, the foreign sector) interact.

At first, consider an economy with only households and firms. Households own all factors of production, which they offer to firms. In exchange for the factors of production, firms make payments to households in the form of rents (for land), wages (for labour), interest (for capital) and profits (for entrepreneurship). The sum of these payments makes up national income. Firms use the factors of production to produce goods and services, which they offer to households, and so households make expenditures on the goods and services produced by firms.

In this basic view of the economy there are transactions that take place by two kinds of flows: real flows of factors of production and goods or services in one direction, and monetary flows of factor payments (income) and spending on goods or services in the opposite direction. The real flows are shown in grey and the monetary flows in blue in Figure 1.1.4.

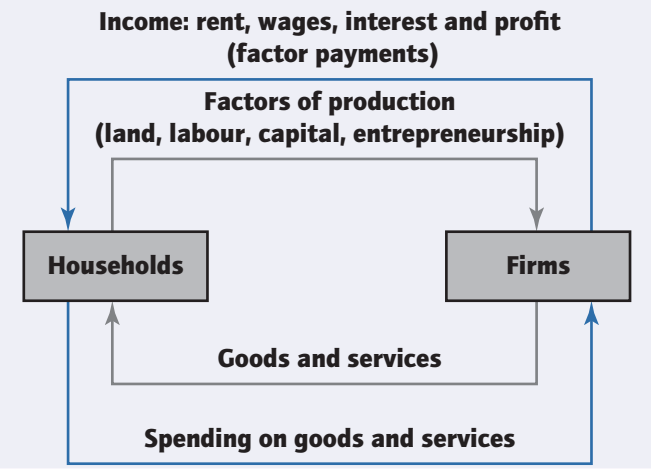

Figure 1.1.4 Transactions: real flows and monetary flows

The monetary flows described above must be equal as it is initially assumed that there is no "tomorrow" so all income generated must be spent. The income that flows from firms to households, as payments made for the use of the factors of production, must be equal to the spending by households that flows back to firms as payment for the goods and services produced. This is the circular flow of income.

If there is a "next period" then part of the income generated may be saved—a leakage from this circular flow—while it is not only households that spend on domestic output but also firms that spend on capital goods (that is, investment spending occurs). This latter expenditure is an injection to the circular flow. Where did this injection come from? The answer is that banks or financial intermediaries attract savings and then lend firms the funds they need to finance their investments.

It follows that the flow in this system will neither increase nor decrease if injections are equal to leakages. In this simplified version of an economy, without government and without a foreign sector, the equilibrium condition for national income (Y) is:

$$I = S$$

If a government is added then part of the income generated in this economy may not be spent because it leaks out of the circular flow of income in the form of taxes (T). On the other hand, injections into the circular flow will also include government expenditures (G) on domestically produced output. Domestic output in this model can be bought by households and firms as well as the government. The equilibrium condition therefore becomes:

$$(I + G) = (S + T)$$

Lastly, if we make this model more realistic and add a foreign sector then we have one more source of expenditures on domestic output, namely the expenditures foreigners make on it. Now, not only do domestic households, firms and the government spend on domestic output but also foreigners. These expenditures foreigners make on domestic output constitute the export revenues (X) of the economy and they are an injection to its circular flow. On the other hand, part of the income generated in this economy may now be spent on foreign output. This spending represents our imports (M) and is a leakage to the circular flow. The equilibrium condition becomes:

$$(I + G + X) = (S + T + M)$$

Recap

Leakages and injections

- Leakages are defined as income not spent on domestic goods and services.
- Injections can be thought of as expenditures on domestic goods and services not originating from households.
- If injections into the circular flow are equal to leakages from the circular flow then the level of national income will not change.
- If injections are larger than leakages then national income will tend to increase.
- If injections are smaller than leakages national income will tend to decrease.

A simplified representation of the circular flow is shown in Figure 1.1.5.

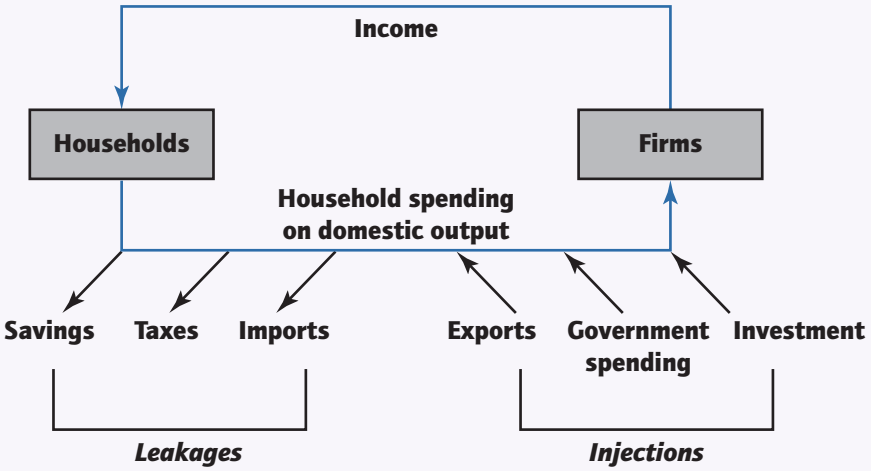

Figure 1.1.5 The circular flow of income

1.2 How do economists approach the world?

Economic methodology

Economists frequently distinguish between "positive" and "normative" economics.

The role of positive economics

Positive economics is concerned with the development and testing of positive statements about the world that are objective and verifiable. A positive statement is a statement of fact. It can be proven right or wrong. "Unemployment is rising" and "Inflation will be over 6% by next year" are examples of positive statements.

- **The use of logic:** positive economic thinking relies on the use of logic. Economists use careful reasoning in order to draw out potential implications for economic behaviour. Very often, economic reasoning is expressed through mathematical models.
- **The use of hypotheses:** economists make general hypotheses about the causes of economic phenomena—for example, that consumer demand will rise when consumer incomes rise. These hypotheses are typically based on observations.
- **Empirical evidence:** once a hypothesis has been formulated it can then be tested against empirical evidence. Empirical evidence refers to the collection of real-world observations and numerical data.

Consider the following example of how the above can be applied to an economic issue.

- We have the following information about the world: supermarkets are selling more organic apples than before—and we want to know why this is the case.
- Next we state a hypothesis: the volume of organic apples that a supermarket will sell rises if the price at which they are sold is reduced.
- Then we test our hypothesis by looking for evidence to support the link between volume of sales at different prices in different countries and for different time periods.
- If the evidence supports the hypothesis we accept it, and move on to more refined hypotheses, such as those relating to how big the response by consumers is to price changes.
- If the evidence does not support the hypothesis, we reject it and then modify it.

This process of trial and error gradually leads to a theory that fits well with experience.

- **The use of theories:** economists formulate theories to explain how the economic world works. A theory is a well-substantiated explanation of an aspect of the economic world that can incorporate hypotheses and evidence. It should be noted that a theory can never be as complex and rich as the reality it seeks to explain, so theory is about simplification.
- **The use of models:** theories give rise to models, which are analytical tools used to illustrate theories and to show simplified relationships between various economic variables. Most models can be described, but they can also be represented with diagrams and with simple or advanced mathematics. The aim is to draw conclusions from the constructed models.
- **The ceteris paribus assumption:** an important part of many models is the assumption of ceteris paribus, a Latin phrase that means "other things equal" or "all else constant". In order to focus on the possible relationship between two economic variables, in economics it is often assumed that no other variables change. Of course, in the real world, many things are usually changing at the same time.
- **Refutation:** theories and models can be judged according to how successful they are in explaining and predicting. If the data and the empirical evidence do not support a hypothesis then it must be rejected or modified. This process is referred to as refutation.

The role of normative economics

Normative economics relate to opinions or points of view. A normative statement is a value judgment: a statement about what ought to be, about whether something is good or bad, desirable or undesirable. "It is right to tax the rich more than the poor" and "The government ought to reduce inflation" are examples of normative statements. They cannot be accepted or rejected by a simple appeal to the facts as positive economic statements and theories can. If a statement or a theory cannot be tested and refuted or accepted then it is a normative statement or theory.

- **Value judgments in policy-making:** it is important to realize that economists practising positive economics do, however, make value judgments. Any analysis involves an element of subjectivity. First, even what to analyse and how to analyse it often depend upon the subjective views of the analyst regarding what is, and what is not, important. In addition, economists can contribute to questions of policy based on their value judgments; that is, they can advise policymakers of which policies to pursue depending on the issues faced. For example, economists may suggest that a policy of increasing government expenditure will reduce unemployment.
- **The meaning of equity and equality:** equitable does not mean equal. It means fair—but fairness means different things to different people. Equity is therefore a normative concept. The ideas of equality and equity often arise in relation to the distribution of income. Equality in the distribution of income is where each individual in the economy receives the same share of income. Equity is where income is distributed in a way that is considered to be fair or just. The problem with this, however, is that people have different notions of fairness. For example, a rich person may well favour a much higher degree of inequality than a poor person. As a result, both terms are often being used interchangeably, and equity in the distribution of income is often interpreted as less inequality in the share of income received by members of society.

Economic thought

Economic ideas have originated way back in time, and are known to have been important topics in ancient Greece and the Middle East. In fact, the word *economy* can be traced back to the Greek word *oikonomia* (= οικονομία), which in turn is composed of two words: *oikos*, which is usually translated as *household*; and *nemein*, which is best translated as *management and dispensation*. Thus, the cursory story usually goes, the term *oikonomia* referred to *household management* and while this was in some loose way linked to the idea of budgeting, it has little or no relevance to contemporary economics.

Still, scholars in the Antiquity and the Middle Ages thought a great deal about trade, money, prices and interest rates, but an autonomous discipline only developed toward the late 17th to early 18th centuries. Despite the interest of the early literature, a detailed account of it would be beyond the scope of this section. Instead the review of economic thought will start from the late 18th century. Focus will be on **Adam Smith (1723–1790)**, who is widely regarded as one founder of the discipline; the remainder of this section will outline the development of economic thought in the 19th, 20th and into the 21st centuries.

18th century

In his 1776 *Wealth of Nations*, Adam Smith laid the foundations of what would become basic principles of economists' understanding of individual behaviour, the market mechanism and the role of markets in relation to governments.

Smith was the first to characterize individual economic behaviour explicitly as self-interested behaviour, admitting that it is people's desire for a gain that explains work, production and ultimately the existence of an economic system: "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 interest".

His work also contributed to shaping economists' view of the market as a mechanism that ensures that individual decisions are consistent with one another and lead to an orderly result. Adam Smith's "invisible hand" has often been recognized as an effective representation of this mechanism. This is also known as the laissez-faire approach that relates to the idea that markets should be allowed to operate freely. While acknowledging the merits of the market, Smith did not deny the need for a solid government. In particular, he insisted that governments should ensure the basic conditions that allow markets to function properly.

19th century

Adam Smith's work stimulated much reflection that shaped economic thinking of the 19th century. Economists of this time period are often referred to as "classical" economists.

Early 19th century classical economists were mainly interested in production and supply as well as in the relationship between wages and profits, while they placed relatively less emphasis on consumption and demand. From the second half of the 19th century onwards, however, increased emphasis was put on consumption rather than production only, with the introduction of the concept of utility as a measure of individual satisfaction from the consumption of goods or services. Below is an outline of a few of the main contributors of the Classical school.

Alfred Marshall (1842–1924) is renowned for developing the framework of demand and supply. Marshall focused on the study of a competitive market and illustrated with the help of price-quantity diagrams that the intersection of supply and demand identifies equilibrium where the market clears. The equilibrium approach is known as the "scissors" analysis where demand and supply resemble the two blades of a pair of scissors.

William Stanley Jevons (1835–1882) advanced the so-called marginal revolution. He distinguished between total utility and marginal utility—namely, the change in the level of utility that results from a given increase in the quantity of the good. Marginal utility was thought to diminish with the quantity consumed. The importance of thinking in terms of marginal changes rather than total proved so useful to account for utility and demand that it was subsequently extended to supply with the concepts of marginal productivity and marginal cost of production.

Jean-Baptiste Say (1767–1832) is best known for Say's Law that in its simplest formulation states that supply creates its own demand. There are several interpretations of this law. Nevertheless, Say wrote: "it is production which opens a demand for products ... . Thus the mere circumstance of the creation of one product immediately opens a vent for other products". In other words, Say claimed that production is the source of demand. One's ability to demand goods and services derives from the income generated by one's own acts of production. Wealth is created by production not by consumption.

The Marxist critique was influenced by classical authors but at the same time critical of them, **Karl Marx (1818–1883)** highlighted the conflict between labour and capital, and the historical tendencies that brought about the modern economic system but that would also generate tensions that eventually would bring about its collapse. His work was the most widely adhered-to critique of market economics during much of the 19th and 20th centuries. Marx's *Das Kapital* (also known as *Capital*), published in 1867, attracted many followers in economics and also inspired political action directed at radical social, economic and political change.

20th century

In the aftermath of the Great Depression, macroeconomics also entered the scene bringing along the Keynesian "revolution". **John Maynard Keynes (1883–1946)** is perhaps the most influential economist of the 20th century. He changed the relationship between government and the economy and stressed the need for government intervention and stabilization policies. Keynes "General Theory" was published in 1936. In the Keynesian framework no endogenous forces exist that restore full employment. Instead of believing in "supply creating its

own demand" (Say's law), Keynes turned things inside out, postulating that it is effective demand that determines the equilibrium level of real output in an economy. If, for whatever reason, aggregate demand proves insufficient to establish full employment then a market economy will suffer a system-wide failure, as it will be unable on its own to restore full employment conditions. As such, there is an active role for the government. Through fiscal policy the government can stabilize the economy and achieve full employment. Keynesian interventionist ideas reigned until the mid 1970s but for many they have been resurrected in the 2008–09 global financial crisis and again in 2020 in the Covid-19 crisis.

In the 1970s, monetarism and the monetarist counter-revolution emerged at the University of Chicago with Nobel Prize Laureate **Milton Friedman (1912–2006)** being the most widely known advocate of monetarist ideas. Friedman strongly opposed many of the policy proposals by the Keynesian economists. He argued for deregulation in most areas of the economy, calling for a return to the free market. The idea behind this view is that the government creates more problems than it solves. Monetarism spread widely in the early 1980s and had a strong influence on policy-making. Keynesian ideas did not completely vacate the scene, though: many became convinced that government policies can still have a temporary effect and that the Keynesian framework of analysis applies in the short run, while the monetarist framework applies in the long run.

21st century

One branch of economics that has seen considerable growth in recent years is **behavioural economics**. Behavioural economists have challenged the conventional rational decision-making approach and have studied the effects of psychological, cognitive, emotional, cultural and social factors on the economic decisions of individuals and businesses. Behavioural economic analysis extends the traditional model in an attempt to provide a better, more realistic explanation of human decision-making. Some researchers, for example, have focused on how happiness and individual satisfaction, as well as prosocial and cooperative attitudes, may be important determinants of individual behaviour that were not fully accounted for in the standard economic model.

In addition, over recent years sustainability has emerged as an important concept due to the growing awareness regarding the interdependencies that exist between the economy, society and the environment. In fact, sustainable development requires a balance between the economic, social and environmental dimensions. For this reason the idea of moving towards a **circular economy** has emerged. In a circular economy goods and services are designed in a way that allows them to be reused, either in the biological or technical cycles. Products are manufactured in a way so they can be disassembled and materials can either be broken down by nature or returned to production. The goal is to throw nothing away and to reduce the need for purchasing new commodities, while production and transportation should be best achieved with renewable energy.

2.1 Markets–demand

The interaction of consumers and producers determines the market price of each product. Markets are institutions that permit the interaction between buyers and sellers. They determine which goods and services will be produced in an economy and so how scarce resources will be allocated. Changes in market conditions therefore result in changes in market prices. These changes set off a chain of events leading to more or less of the good being produced and consequently to a new allocation of scarce resources. To analyse how product markets function we need to examine first the behaviour of consumers and then the behaviour of producers.

Definition of demand

The demand for a good is an analytical way of summarizing the behaviour of buyers in a market. Specifically, demand can be defined as the relationship between various possible prices of a good and the corresponding quantities that consumers are willing and able to purchase per time period, ceteris paribus.

The law of demand

The relationship between price and quantity per period of time is inverse (negative), meaning that if the price increases then quantity demanded will decrease as consumers will be willing and able to buy less per period. This inverse relationship between price and quantity demanded is referred to as the law of demand. The law of demand states that if the price of a good rises then quantity demanded per period will fall, ceteris paribus.

HL

Behind the law of demand

The substitution and income effects

The law of demand holds because of the substitution and income effect.

- **The substitution effect:** if the price of a good rises, the good will now cost more than alternative or substitute goods. That is to say, all other goods automatically become relatively cheaper and so people will tend to switch to these substitutes. This explains why following an increase in price, quantity demanded decreases.
- **The income effect:** if the price of a good rises, consumers feel poorer; they will not be able to afford to buy so much of the good with their income. That is to say, the purchasing power of their income (their "real income") falls and so people will tend to buy less of that good. Again, this explains why following an increase in price, quantity demanded decreases.

The law of diminishing marginal utility

Another explanation behind the law of demand rests on the law of diminishing marginal utility.

Utility refers to the satisfaction one gains by consuming a good or a service. The typical consumer has a fixed amount of income and he or she faces a fixed set of prices. We assume that consumers allocate their expenditures among all the goods and services that they might buy so as to gain the greatest possible utility. This means that the goal of typical consumers is to maximize their utility subject to their budget constraint (that is, income).

We will now examine the relationship between utility and the quantity consumed for an individual consumer. Marginal utility is defined as the additional satisfaction derived from consuming an additional unit of a good. The idea is simple. As one consumes additional units of a good per period (that is, per hour, per day, per week and so on), the *additional* satisfaction enjoyed decreases. If this is the case, then individuals will be willing to pay less and less to buy more and more units of a good per period of time.

The demand curve

The demand curve illustrates the relationship between the price of a good and the quantity of the good demanded over a time period. Price is measured on the vertical axis; quantity demanded is measured on the horizontal axis. Given that the relationship between price and quantity demanded is inverse (law of demand) the demand curve is downward sloping from left to right: it has a negative slope.

A demand curve can be for an individual consumer or more usually for the whole market. The market demand derives from adding up at each price the quantities demanded by all consumers in a market. For example, at the price of $2.00, consumer A is willing and able to buy three cappuccinos per week while consumer B is willing and able to buy five cappuccinos per week. If the market consists of these two consumers then at the price of $2.00, market demand is eight cappuccinos per week. Diagrammatically the market demand curve is derived by the horizontal summation of the individual demand curves.

In Figure 2.1.1, if the price per unit is P1 then consumers will be willing and able to buy Q1 units per period, ceteris paribus. If the price increases to P2 then consumers will be willing and able to buy Q2 units per period, ceteris paribus.

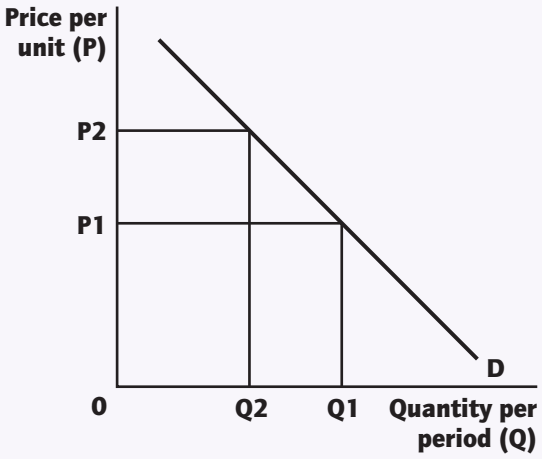

Figure 2.1.1 A typical market demand curve

Non-price determinants of demand ("shift" factors)

The non-price determinants of demand are the factors other than the good's own price that can affect demand. They are the factors that are assumed to be constant under the ceteris paribus assumption. If any of the non-price determinants of demand changes, the demand curve shifts. Particularly, if a change in one of the determinants of demand causes demand to increase then the demand curve shifts to the right. This means that at each price more quantity of the good (or service) is demanded. Or, if a change in one of the determinants of demand causes demand to decrease then the demand curve shifts to the left. This implies that at each price less quantity of the good (or service) is demanded.

The non-price determinants of demand include the following.

Income

Changes in consumers' income may affect demand.

As income rises, demand for most goods will rise. Such goods are called normal goods. Therefore, an increase in income will lead to an increase in the demand for a normal good and the demand curve will shift to the right from D1 to D2 as shown in Figure 2.1.2a.

For some goods, typically lower quality goods, an increase in income will lead to a decrease in demand and a shift of the demand curve to the left as consumers may switch to other, higher quality products. This is the case of inferior goods. The demand for inferior goods decreases when incomes increase and the demand curve shifts to the left from D1 to D2, as shown in Figure 2.1.2b.

The same good may behave as a normal good in one society or market and as an inferior good in another. For example, in a country with a generally low-income population, an increase in income may lead to an increase in the demand for used cars, whereas in another country where people have higher incomes, a further increase in income levels may lead to a decrease in the demand for used cars.

Price of related goods

Substitute goods: two goods are considered substitutes if they are in competitive consumption and consumers typically buy one or the other as the goods satisfy the same need or want. Examples include Pepsi and Coca-Cola, coffee and tea, pizza and burgers. For instance, the demand for Coca-Cola is

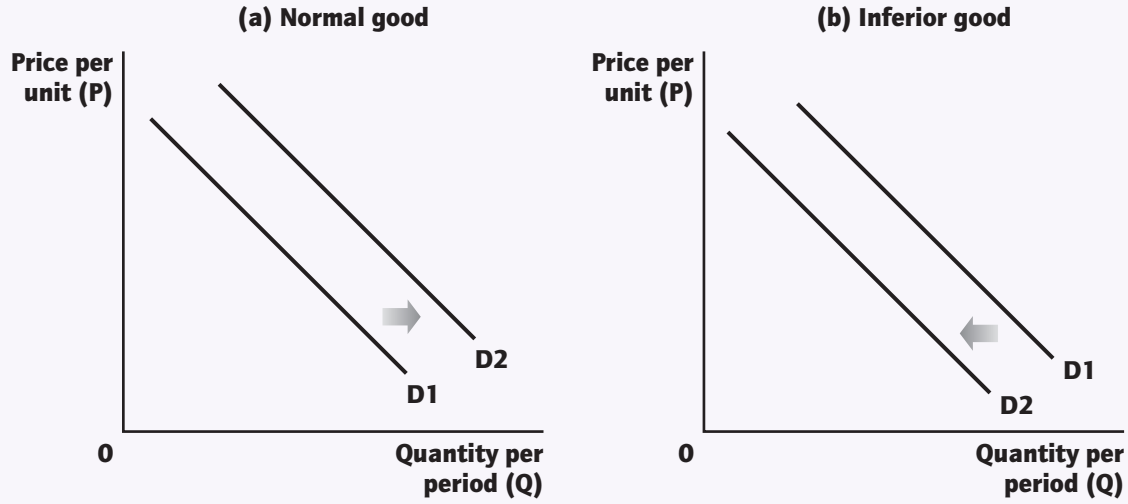

Figure 2.1.2 The effect of an increase in income on the demand for a normal and an inferior good

expected to increase if a supermarket increases the price of Pepsi. More generally, if good X and good Y are considered as substitutes then an increase in the price of good Y will lead to an increase in the demand for X. Demand for X will shift to the right from D1 to D2, as shown in Figure 2.1.3.

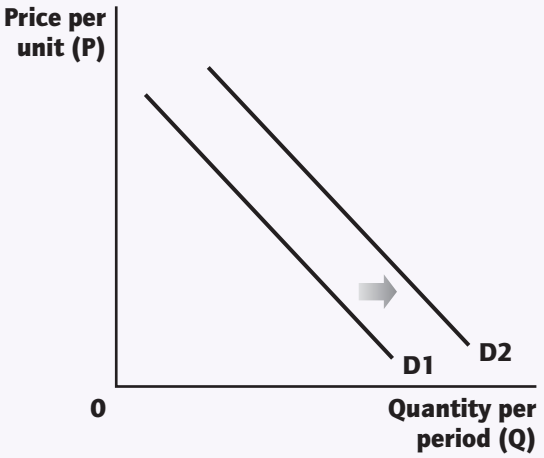

Figure 2.1.3 The effect of an increase in the price of a substitute

Complement goods: two goods are considered complements if they are consumed together ("jointly consumed"), such as peanut butter and jelly or coffee and sugar. For instance, if the price of coffee increases then the demand for sugar may decrease. More generally, if goods X and Y are considered as complements then an increase in the price of good Y will lead to a decrease in the demand for good X. Demand for X will shift to the left from D1 to D2, as shown in Figure 2.1.4.

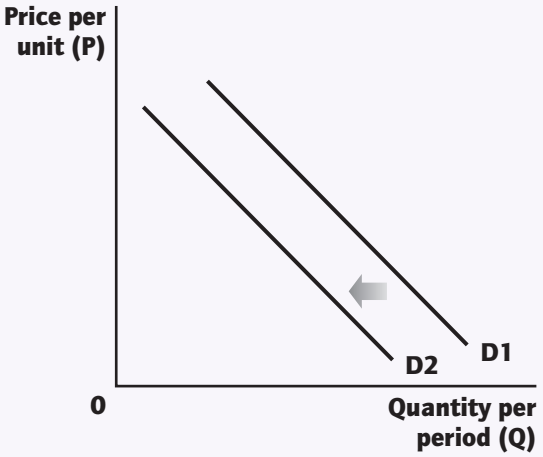

Figure 2.1.4 The effect of an increase in the price of a complement

Tastes and preferences

The more desirable people find a good, the more they will demand it. Tastes are affected by advertising, by fashion, by observing other consumers, or by considerations of health.

For example, the heavy promotion of adopting a healthy eating behaviour has increased the popularity of certain products such as kale and quinoa that are deemed to be of high nutritional value. The demand for such products will increase and the demand curve will shift to the right.

Expectations of future price changes

If people expect that the price of a good is going to rise in the future, they are likely to buy more now before its price goes up. This will lead to an increase in demand and a rightward shift of the demand curve. In the same way, if consumers anticipate that the price of a product will fall in the future, they are likely to withhold their purchases now to take advantage of the lower future price. Thus, the demand for the product will now decrease and the demand curve will shift to the left.

Number of consumers

As the number of consumers in a market (or the size of a market) increases, demand for most products will tend to rise and vice versa.

Recap

Non-price determinants of demand (shift factors)	
Income	• An increase in consumers' income will lead to an increase in demand for a **normal good** and to a rightward shift of the demand curve. However, an increase in consumers' income will lead to a decrease in demand for an **inferior good** and to a leftward shift of the demand curve.
Prices of related goods	• If goods X and Y are substitutes, an increase in the price of good Y will lead to an increase in demand for X and the demand curve will shift to the right. • If goods X and Y are complements, an increase in the price of Y will lead to a decrease in demand for X and the demand curve will shift to the left.
Tastes and preferences	• If a good appears more attractive to consumers as a result of advertising, fashion, trends or health considerations, then demand for that good will increase and the demand curve will shift to the right.
Expectations of future price changes	• If the price of a product is expected to rise in the future, then its demand will now increase and the demand curve will shift to the right. Or, if the price is expected to fall in the future, then its demand will now decrease and the demand curve will shift to the left.
Number of consumers	• If the number of consumers in a market increases, demand will increase and the demand curve will shift to the right, and vice versa.

Movements along and shifts of the demand curve

A shift in the demand curve occurs when a determinant other than the price of the good changes; we then say that a change in demand has occurred. A movement along the demand curve occurs when there is a change in the price of the good; we then say there is a change in quantity demanded. Given an increase in price, the decrease in quantity demanded is also known as a "contraction" in demand whereas the rise in quantity demanded that follows a price decrease is also known as an "extension" of demand.

Movement along the demand curve: when the price of the good changes

Shift of the demand curve: when any of the non-price determinants of demand changes

2.2 Markets–supply

Definition of supply

The concept of supply is merely a way to summarize analytically the behaviour of firms. It is defined as the relationship between various possible prices and the corresponding quantities that firms are willing to offer per time period, ceteris paribus.

The law of supply

The relationship between price and quantity supplied per period is direct (positive), meaning that if the price increases then quantity supplied will also increase, as producers will be willing to offer more per period. This positive relationship between price and quantity supplied is referred to as the law of supply. The law of supply states that if the price rises then the quantity of a good supplied per period will increase, ceteris paribus.

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Behind the law of supply

The producer is assumed to seek to maximize profits. Assuming that a firm has fixed productive capacity, producing ever-increasing quantities of a good becomes more and more difficult (that is, more and more costly). This is the result of the law of diminishing marginal returns and increasing marginal costs.

More specifically, the law of diminishing marginal returns states that as more and more units of a variable factor (usually labour) are used with a fixed factor (usually capital), there is a point beyond which total product will continue to rise, but at a decreasing rate, or equivalently, that marginal product will start to decline. Marginal cost is the extra (additional) cost resulting from an increase in output; it is thus the change in costs because of a change in output. Due to diminishing returns, the marginal cost may fall initially as there are increasing marginal returns but eventually, when diminishing returns set in, the costs will start to rise. If an additional unit of labour leads to less and less additional output, then to achieve equal additional units of output, more and more units of labour will be required. It follows that the additional cost (the marginal cost) of additional units will be increasing.

It should now be clear that if the additional cost of producing more and more units is increasing, then a firm will be willing to offer more and more units only at a higher and higher price. Thus more units will be offered per period only at a higher price, which reflects the direct relationship of the law of supply.

The supply curve

The supply curve is a graph that shows the relationship between the price of a good and the quantity of the good supplied over a given period of time. The price is measured on the vertical axis; quantity supplied is measured on the horizontal axis. Given the direct relationship between price and quantity supplied (the law of supply), the supply curve is upward sloping: it has a positive slope and can be drawn as shown in Figure 2.2.1.

A supply curve may be an individual firm's supply curve or a market supply curve (that is, the supply curve of the whole industry). As with the market demand, the market supply derives from adding up the quantities supplied at each price by all producers. So, if a market consists of 100 identical firms and each is willing to offer 200 units per month at the price of $5.00, then the market supply will be 20,000 units per month priced at $5.00 per unit.

In Figure 2.2.1, if the price is P1 then producers will be willing to offer Q1 units per period, whereas if the price increased to P2 per unit then producers will be willing to offer Q2 units per period.

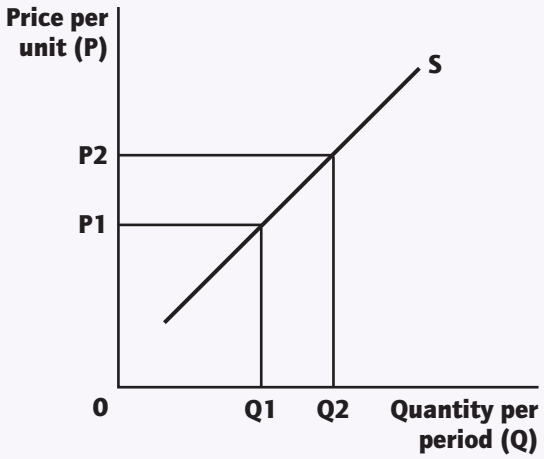

Figure 2.2.1 A typical market supply curve

Non-price determinants of supply ("shift" factors)

The non-price determinants of supply are the factors other than the good's own price that can affect supply. They are the factors that are assumed to be constant under the ceteris paribus assumption. If any of the non-price determinants of supply changes, the supply curve shifts. Particularly, if a change in one of the determinants of supply causes supply to increase then the supply curve shifts to the right. This means that at each price more quantity of the good (or service) is supplied. Or, if a change in one of the determinants of supply causes supply to decrease then the supply curve shifts to the left. This implies that at each price less quantity of the good (or service) is supplied.

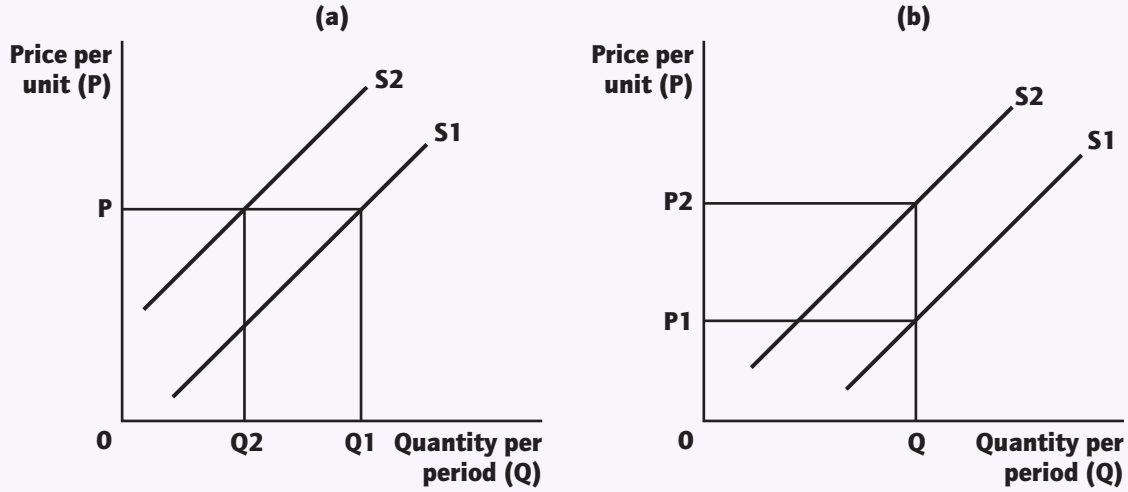

Figure 2.2.2 The effect on supply of an increase in wages paid

The non-price determinants of supply include the following.

Changes in costs of factors of production

If input prices increase (for example, if the wages paid to labour increase or the price of a raw material used in the production of the good increases) then, ceteris paribus, supply is expected to decrease. So, the supply curve is expected to shift to the left. At each price, firms will be willing to offer less, or they will be willing to offer each unit at a higher price than before.

Figure 2.2.2 shows the effect of an increase in the wages paid. Assume that the original supply curve is S1. Look at Figure 2.2.2a—before an increase in wages paid, firms were willing to offer Q1 units per period at price P. If wages paid increase then production costs will rise, so firms will be willing to offer only Q2 units per period at price P. The same holds at each price so supply decreases, shifting to the left to S2. Now refer to Figure 2.2.2b—before an increase in wages, firms were willing to offer Q units at price P1. After wages increase, firms will be willing to offer Q units only at the higher price P2. The same holds for all units so supply decreases, shifting left to S2.

Prices of related goods

Goods in joint supply: sometimes when one good is produced, another good is also produced at the same time. These are said to be goods in joint supply. A farm that is producing lambs is also producing wool. If the price of lamb meat increases in the market, lamb farmers will have an incentive to increase the quantity supplied of lambs, but at the same time the supply of wool will increase and its supply curve will shift to the right from S1 to S2, as shown in Figure 2.2.3.

Figure 2.2.3 The effect of an increase in the price of a jointly supplied good

Goods in competitive supply: a change in the price of a good in competitive supply will also have an effect. Other goods are likely to become more profitable if their prices rise. For example, consider a farmer with a fixed amount of land using it to produce carrots and potatoes. If the price of carrots goes up, farmers may decide to reduce potato production in order to produce more carrots. The supply of potatoes will decrease and the supply curve will shift to the left from S1 to S2, as shown in Figure 2.2.4.

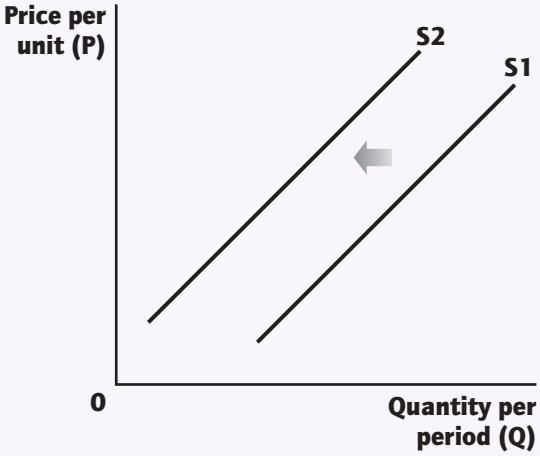

Figure 2.2.4 The effect of an increase in the price of a good in competitive supply

Indirect taxes and subsidies

Changes in government policy, such as indirect taxes and subsidies, affect costs of production. Indirect taxes and subsidies affect the cost of producing an extra unit of a good. An indirect tax is a payment to the government by firms per unit of output produced, whereas a subsidy is a payment to firms by the government per unit of output produced. An indirect tax will increase production costs and lead to a decrease in supply and a shift of the supply curve to the left, whereas a subsidy will decrease production costs and lead to an increase in supply and a shift of the supply curve to the right.

Expectations of future price changes

If the price of the product is expected to rise, producers may temporarily reduce supply now. They are likely to build up their stocks and only release them on to the market when the price rises in the future. At the same time they may install new machines or take on more labour, so that they can be ready to supply more when the price has risen.

Changes in technology

Improved technology allows firms to offer more units of the good at the same price, increasing supply and shifting the supply curve to the right. Improved technology decreases the cost of producing each additional unit of the good.

Number of firms

Changes in the size of the market (the number of firms) affect supply. As more firms join a market, for example, supply will tend to increase, shifting the supply curve to the right, since at each price more units will be offered.

Recap

Non-price determinants of supply (shift factors)	
Changes in costs of factors of production	• An increase in the costs of factors of production (such as wages, raw material prices) will lead to a decrease in supply and to leftward shift of the supply curve.
Prices of related goods	• If goods X and Y are in joint supply, an increase in the price of good Y will lead to an increase in the supply of good X and to a rightward shift of the supply curve. • If goods X and Y are in competitive supply, an increase in the price of good Y will lead to a decrease in the supply of good X and to a leftward shift of the supply curve.
Indirect taxes and subsidies	• An indirect tax will increase costs of production, leading to a decrease in supply and to a leftward shift of the supply curve. • A subsidy will decrease costs of production, leading to an increase in supply and to rightward shift of the supply curve.
Expectations of future price changes	• If the price of the product is expected to rise, producers may reduce supply now and the supply curve will shift to the left.
Changes in technology	• Improved technology will lead to an increase in supply, shifting the supply curve to the right.
Number of firms	• If more firms enter a market, supply will increase, shifting the supply curve to the right.

Movements along and shifts of the supply curve

The principle here is the same with demand curves. The effect of a change in price is illustrated by a movement along the supply curve. If any other determinant of supply changes (such as costs of production, number of producers) the whole supply curve will shift. A rightward shift illustrates an increase in supply. A leftward shift illustrates a decrease in supply.

Movement along the supply curve: when the price of the good changes

Shift of the supply curve: when any of the non-price determinants of supply changes