

Lesson 1: Scarcity, choice and opportunity cost; Factors of production and Production possibility curves**The Economic Problem of Scarcity**

The fundamental problem of Economics is that there are unlimited wants, but limited resources to satisfy these wants. When wants exceed the resources available we have *scarcity*. Scarcity occurs because human wants exceed the limits of available resources. Economics deals with the basic fact that scarcity exists in our everyday lives and in our economy. Resources such as raw materials are in finite supply and must be allocated to their best use. Virtually all resources are scarce, meaning that more of them are desired than is available. Economics is concerned with the way people have to make *choices* in order to overcome the problems of scarcity.

Choice

Given the presence of scarcity, choices must be made as to how resources are allocated. Our lives are filled with a wide range of choices regarding the use of limited personal funds. Advertisers constantly inform consumers of their consumption possibilities and the choices available. The same principle applies for the economy as a whole. We elect politicians who work with policy makers to allocate government expenditures. Together they make difficult choices concerning how taxes will be spent.

Opportunity Cost

The relevant cost of any decision is its opportunity cost - the value of the next-best alternative that is given up. This will mean that if we choose more of one thing, we will have to have less of something else. Economists use the term *opportunity cost* to explain this behaviour. The opportunity cost of any action is the value of the next best alternative forgone. By making choices in how we use our time and spend our money we give something up. Instead of following the economics class, what else could you be doing? Your best alternatives may involve sports, leisure, work, entertainment, and more. Thus, the concept of opportunity cost is your *best alternative to the choice that is made*.

Businesses and governments also deal with opportunity costs. Businesses must choose what type of goods to produce and the quantity. Given limited funds, the opportunity cost of producing one type of good will arise from not being able to produce another.

The Factors of Production

There are three major factors of production:

1. Land includes all natural resources, such as land, air, water, forests, wildlife, etc.,
2. Labour includes all mental and physical effort exerted by human beings,
3. Capital refers to the improvements made to natural resources. Capital includes items such as buildings and machinery. While the definition of land and labour is readily apparent, let us briefly discuss the economic meaning of capital. Capital is used to assist labour in the production process and increase our capacity to produce goods and services. Workers use tools and machinery to become more productive and increase their output. In an economic sense we consider capital as the actual purchases of plant and equipment used in production. Investment is the term used to describe the additions to capital. By investing, a firm purchases new machinery that adds to its capital stock.

This lesson is concerned primarily with the economic problem of scarcity and the concept of opportunity cost when choices involving scarce resources are made. A very useful model for exploring the problem of scarcity is the production possibilities curve. This curve shows the different combinations of two goods that an economy can produce, given its resources. To construct such a curve, four assumptions are necessary. *First, it is assumed that the economy produces just two goods, say, food and clothing. The second assumption is that the economy has a finite amount of resources available. The three major types of available resources are land, labour and capital. The third assumption is that resources are used efficiently. This means that resources are not unemployed. If a resource such as labour is willing to work, then it is able to find employment. The final assumption is that technology does not change. Technology refers to the methods of production that are used as well as the types of goods that are produced.*

Table 1.1: Production Possibilities

| <u>Alternative</u> | <u>Food (Mill. Tons)</u> | <u>Clothing (Mill. Yards)</u> |
|--------------------|------------------------------|-----------------------------------|
| A | 0 | 100 |
| B | 25 | 90 |
| C | 50 | 75 |
| D | 75 | 55 |
| E | 100 | 30 |
| F | 125 | 0 |

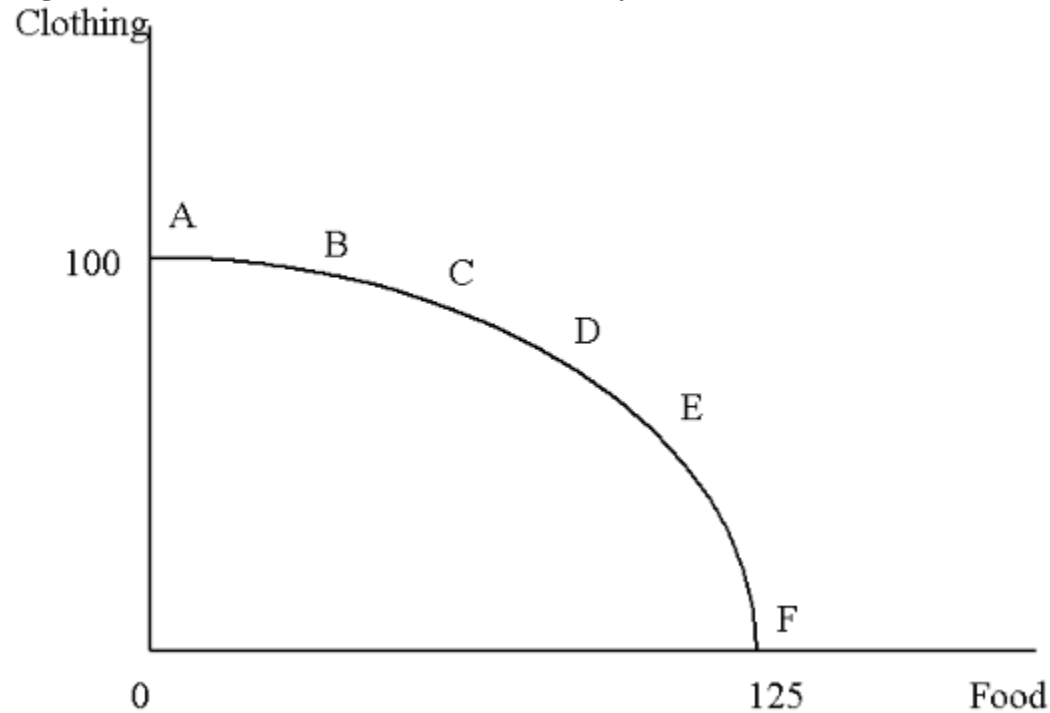
With food and clothing as the economy's two goods, consider the decision by society to produce only clothing. The production of clothing would be at its maximum level while that of food would be zero. Let the production of clothing be 100 million yards. This is one point on the production possibilities curve. It is listed as alternative A in Table 1.1. If society decided to increase the production of food from zero to, say, 25 million tons, then clearly, the level of production of clothing must decrease. This is due to the assumption of a fixed amount of resources. To increase food production, land, labour and capital will be needed. These resources must be taken from clothing production, causing its level to drop. If clothing production falls to 90 million yards, this gives alternative B where 25 million tons of food and 90 million yards of clothing are produced.

What is the opportunity cost of increasing food production from zero tons to 25 million tons? The opportunity cost is the loss of 10 million yards of clothing. This is the sacrifice that society must endure if it chooses to produce the first 25 million tons of food. If society chooses to increase food production by another 25 million tons, the opportunity cost will be 15 million yards of clothing which, of course, is higher than the opportunity cost of the first 25 million tons of food. In fact, the opportunity cost is increasing all the way to point F where clothing production is zero and food production is 125 million tons. The last 25 million tons of food costs society 30 million yards of clothing. Therefore, not only does society experience an opportunity cost as food production is increased, the opportunity cost increases as well.

The information in Table 1.1 can be used to draw the production possibilities curve in Figure 1.1. The various points in Table 1.1 are plotted first and then connected to get the curve in Figure 1.1. *Note that the curve has a negative slope.* The negative slope is a direct

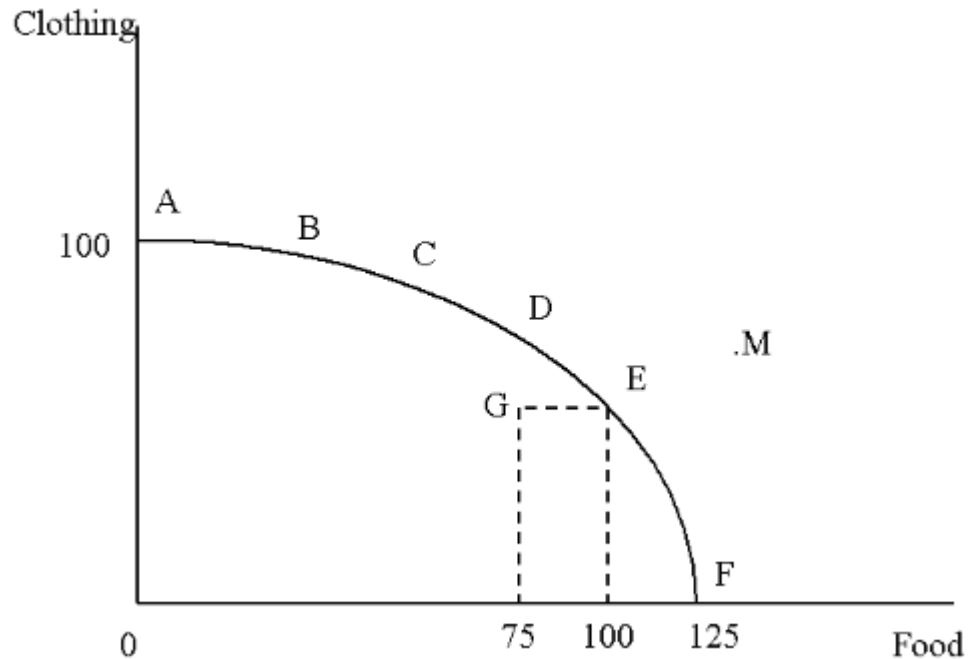
consequence of the scarcity of resources. If society chooses to increase the production of one of the goods, then the production of the other good must be decreased.

Figure 1.1: Production Possibilities Boundary



There are an infinite number of points on the production possibilities curve in Figure 1.1. Society must decide which of those points to choose. Suppose that the economy is currently at point C on the curve where food production is 50 million tons and clothing production is 75 million yards. Should society decide to move to point D where food production has increased to 75 million tons? What is the opportunity cost of making such a move? (20 million tons of clothing) Society will decide to move from point C to point D if it values the additional 25 million tons of food it will produce more than the 20 million tons of clothing that it will lose. To be more concrete, suppose that the value society places on each million tons of food is \$100 while the value it places on each million yards of clothing is \$120. Then the value of the additional food it receives by moving from C to D is \$2500 (25 times \$100), while the value of the clothing that it loses is \$2400 (20 times \$120). Therefore, society would choose to move from point C to point D.

Figure 1.2: Production Possibilities Curve with unemployment

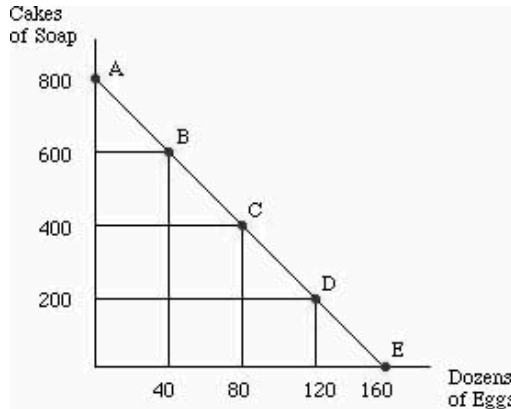


Consider next point G in Figure 1.2. Is a point inside the curve possible and what does it represent? Which assumption would have to be dropped if points inside the production possibilities curve are to become possible? If the assumption of full employment of resources is eliminated, then points such as G become possible. If the economy is at point G and the unemployment is eliminated such that the economy moves to point E, what is the opportunity cost of increasing food production from 75 million tons to 100 million tons? Clearly it is zero. When unemployed resources exist, the production of one good can be increased without decreasing the production of the other good. In fact, the production of both goods could be increased if unemployment is eliminated.

A second point in Figure 1.2 is M, which is outside of the production possibilities curve. Given the economy's resources and level of technology, a point such as M is not possible.

Lesson 2: Production possibility curves: Shapes and shifts

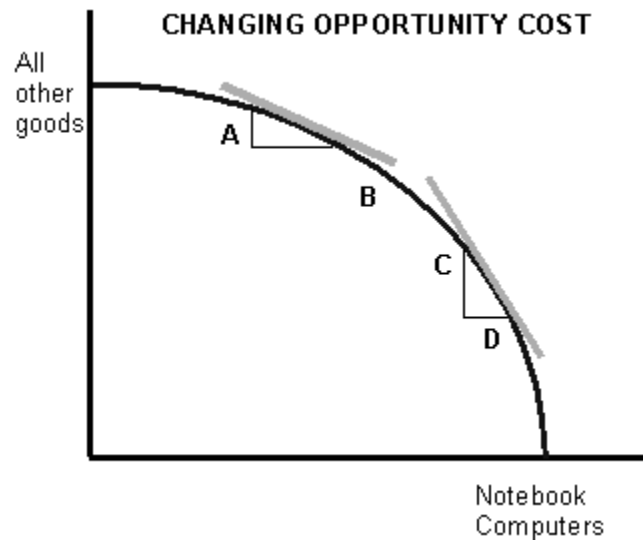
STRAIGHT LINE PPF AND CONSTANT OPPORTUNITY COST



As one can see, to move from point A to point B, society gains 40 dozen eggs at a "cost" of 200 cakes of soap, so the opportunity cost of a dozen eggs is 5 cakes of soap (200/40). If one considers moving from B to C, society must once again reduce production of cakes of soap by 200 to gain an additional 40 dozen eggs, so the opportunity cost of a dozen eggs is 5 cakes of soap. As can be seen, the production possibility curve is a straight line, so opportunity cost is constant and independent of the level of production of soap and eggs. Whenever the production possibility curve is a straight line, opportunity cost is constant.

A NON-LINEAR PPF AND CHANGING OPPORTUNITY COST

Because the curve is non-linear, the opportunity cost will change as we move along the production possibility frontier. For example, as more resources are shifted into the notebook computer industry, the extra output declines. **Therefore the opportunity cost measured by the lost output of vehicles is increasing.** See the change in the tangents between A-B and between C-D in the diagram above. The PPF is thus concave when viewed from below. A **linear** PPF will exhibit **constant** opportunity cost whereas a **convex** PPF will display **falling** opportunity cost.



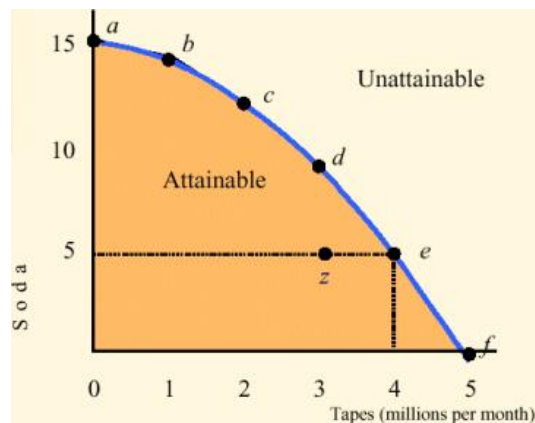
Inefficient Use of Resources

If the resources of a country are not fully and efficiently utilized it entails that economic production fails to reach the boundary of the production possibilities frontier. Instead the country ends up inside the frontier.

Points inside the PPF are attainable given the country's current resources and technology, but represent an inefficient use of resources. If our country is producing at a point inside its PPF we are violating the assumption that resources are used fully and efficiently. Perhaps there is high unemployment and/or we are using outdated capital.

Production Efficiency

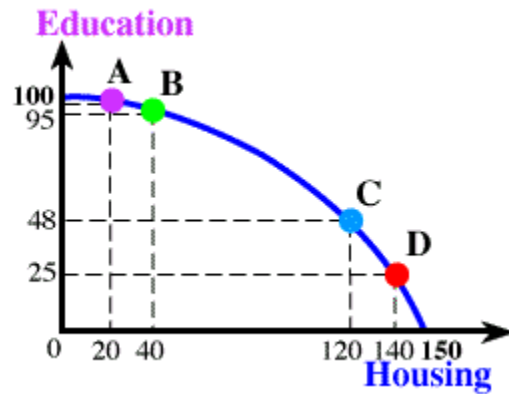
- Production efficiency is achieved if we cannot produce more of one good without producing less of some other good.
- When production is efficient, we are at a point on the PPF.
- If we are at a point inside the PPF, such as point z, production is inefficient.
- Production can be inefficient if we have some unused resources or we have some misallocated resources, or both.



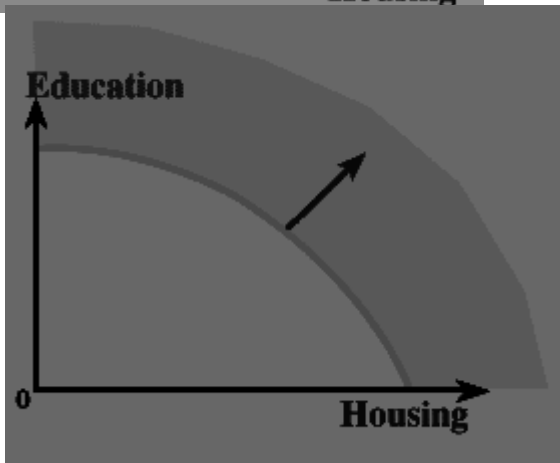
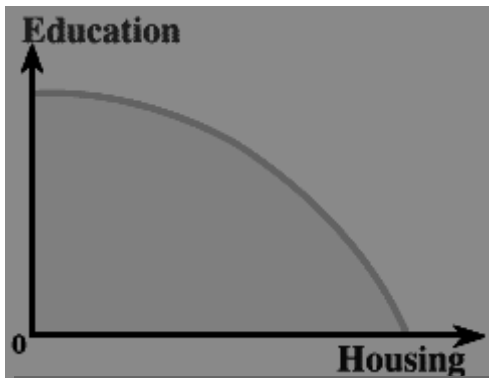
- Resources are unused when they are idle (unemployed) but could be working. This happens when there is a depression.

Consider the graph below, showing choices that face a society. This society can spend its resources on two things, **education** and **housing**. It seems reasonable to suppose that this **PPF** also has the same bowed out shape, indicating that the **opportunity cost** of

education in terms of **housing** varies. This is because some resources are better used for **education**, and others for **housing**. For example, some people are better carpenters than teachers, and vice versa.



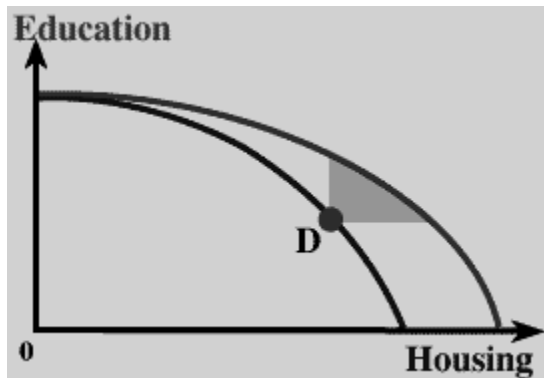
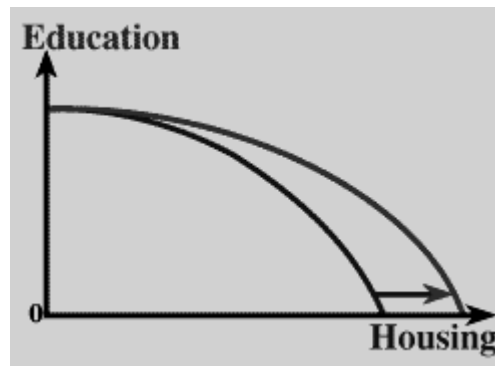
At **A**, where almost all resources are being used to produce **education**, an added 20 units of **housing** can be produced by giving up fewer than 5 units of **education**. At **C**, to produce another 20 units of **housing** 23 units of **education** must be given up. The **opportunity cost** of **housing** in terms of **education** is about 5 times greater at **C** than at **A**. At **A** almost everyone is teaching, even skilled carpenters. If we want more **housing** it makes sense to take carpenters out of **education** first, however moving from **C** to **D** probably means using skilled teachers as builders.



The dark **PPF** and the shaded area underneath together make up what is often called the **Production Possibilities Set**, or all feasible combinations of **education** and **housing**. The points that lie below the **PPF** are considered "inefficient," meaning, that not all resources are being fully utilized.

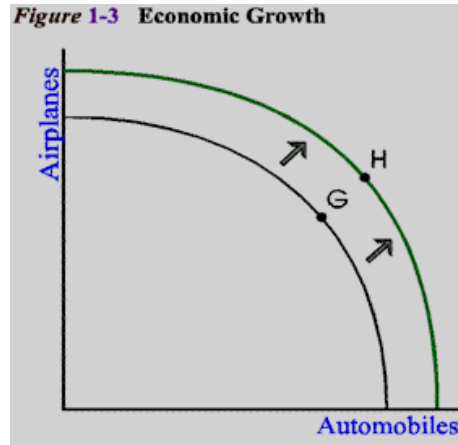
The light shaded region, on the graph to the right, indicates **education/housing** combinations that are unattainable for this society, with its current technology and resources.

Suppose a technological advance enables this society to produce more **housing** with existing resources. This would be shown by a shift out in the **PPF** as illustrated below. When all resources are being used to produce **housing**, the maximum feasible amount has increased. However, when all resources are being used to produce **education**, there is no change in feasible production.



It turns out that, though this represents an improvement only in the technology used to produce **housing**, it can have an impact on the amount of available **education**, as illustrated below.

Suppose society is at a point like **D** when this improvement in technology occurs. Even though it is only a direct improvement in **housing** production, points in the shaded area are combinations with more **housing and education**. Thus, even though the production improvement occurs in one area, it can free up resources that enable more output in all areas.



Expansion of the Economy's Productive Capacity

There are two factors that will allow our production possibilities frontier to shift outward over time. The first is an increase in our resources. The second is due to improvements in technology.

The diagram shows an outward expansion of the country's PPF and a movement of production from point G on the original PPF to point H on the new PPF. The PPF can expand due to an increase in resources or an improvement in technology. Note that what is shown here is a parallel shift in the PPF and this indicates that more of both goods can be produced. In contrast, if the PPF had rotated outward only along one of the axis, remaining fixed at the other, then the technological improvement would only have been directly applicable to the production of one of the goods.

Figure 1-3 shows what happens over time as more people immigrate into a country. The country's resource base grows and so does its ability to produce goods and services. As long as the three assumptions are satisfied, including full employment, the nation's production possibilities frontier shifts outward (to the right). Eventually, output expands from the original point G to point H. Notice that at point H output, and thus consumption, is greater than at point G.

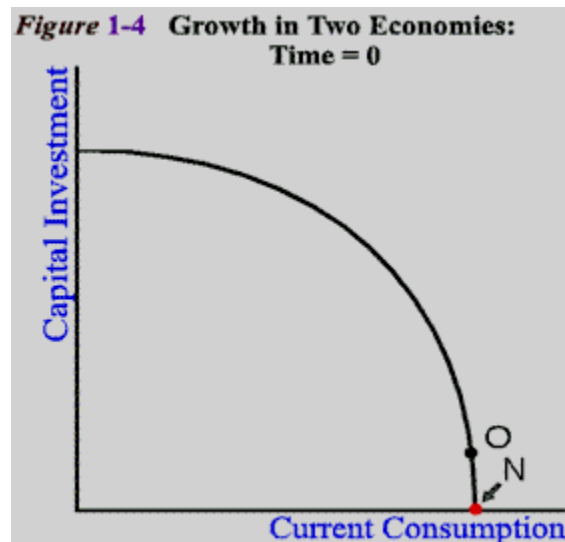
An alternative scenario would be to keep population constant but allow technology to improve (or even a combination of the two). Allowing for technological improvement, such as the development of the computer and robotics industries, improves workers' productivity and thus the country's economic capacity to create goods and services.

A CONTRACTION OF THE PRODUCTION POSSIBILITIES FRONTIER

A country's production possibilities frontier may shift inward due to a depletion of resources. The death and destruction caused by war is one way resources used in production may be reduced, leading to a contraction of the production possibilities frontier.

THE TRADEOFF BETWEEN CURRENT CONSUMPTION AND CAPITAL INVESTMENT

One of the most important choices a society makes deals with the opportunity cost of enjoying consumption today or having a greater level of consumption tomorrow. We may ask how fast an economy should grow in conditions where economic growth allows for greater consumption of goods and services in the future.



The vertical axis represents capital investment in machinery and other physical capital, research and development, and improved technology that makes out existing workers more productive, increasing output per worker. As we move up along this axis our level of investment increases. In order fund this higher level of investment, there needs to be a decrease in current consumption.

Note the label of the x-axis. This axis is labeled as current consumption and as we move outward from the origin, the country's level of present consumption of goods and services increases. For any level of output and thus income generated from production, as we increase our consumption we decrease our savings. Given the country's PPF, point N implies that all of the nation's income is used for current consumption and savings (and thus investment is zero). When we compare point N to point O we can see that at point N all resources, production and income is dedicated to producing goods for current consumption, and by assumption, consumers are buying the goods and services produced. This economy is efficient since it is producing at a point along its PPF. Country O is also efficient since it produces along its PPF as well. However, some of Country O's inputs are being used for capital investment rather than the full range of consumer goods. As we move Northwest along this PPF, more of a country's income is saved (and used for investment) and less is used for immediate consumption.

The catalyst for a country's growth is saving, and thus investment. The amount of investment a country undertakes has a positive relationship to economic growth. In general, countries that have higher levels of investment in new capital will also grow more rapidly than those countries that dedicate less of their resources to capital investment.

What causes the PPC to shift?

1. The quantity of land may be increased through land reclamation and discovery of new natural resources. The quality of the land can be improved by making better use of fertilisers.
2. The quantity of the labour force can also rise if:
 - (i) there is a rise in the size of the population,
 - (ii) the retirement age is raised,
 - (iii) the school leaving age is reduced,
 - (iv) the size of the working age group is increased,
 - (v) the proportion of males to females in the working age group is increased,
 - (vi) there is an increase in the number of hours worked and
 - (vii) there is a reduction in the number of holidays.

The quality of the labour force is also an important determinant of economic growth. This can be improved through education and training. Education and training are described as “investment in people” there is no doubt that education and training help to improve the productivity of labour. Equally important is the quality of capital equipment used by the workers.

3. Investment is another major factor that can bring economic growth.

Investment is the act of creating capital goods and represents additions to a country's stock of capital. With an accumulation of capital goods it is possible to produce a greater output.

4. The quality of capital can be increased through research and development that brings technical progress. Innovation and invention of new methods of production, development of new materials and improvement in the design and performance of machinery fosters growth.

Lesson 3: Resource allocation in different economic systems and issues of transition**Economic Choices and Economic Systems**

The basic economic problem confronting all societies is how to allocate resources between alternative uses. Resources are scarce because the collective desires of society for consumption at any moment in time exceed the ability to satisfy those desires. Because there are insufficient resources to produce all that is required, society is forced to make choices. These choices are:

1. What output will be produced?

It is obvious that if society cannot produce all it desires, it must choose which goods and services to produce from the available resources. Any decision about what items to produce also implies a decision about how much of these items to produce. However, because resources are scarce, more of one thing implies less of something else (opportunity cost).

2. How shall the output be produced?

Society must decide not only what output is to be produced, but also how the output is to be produced. There are various ways of producing any given output. In many of the world's poorer nations, production is often labour intensive (i.e uses large amounts of labour relative to other factors of production) while production of the same goods in the richer countries is often capital-intensive (i.e uses large amounts of capital relative to other factors).

3. For whom shall the output be produced?

Clearly of an output is produced there must be some means of allocating to the consumers and of deciding who receives what. In other words, society must decide how its output is to be distributed.

An economic system is the organisational and institutional pattern through which choices are made about which wants to satisfy, and how to allocate resources to do this. An economic system is the set of rules and institutions that define and constrain the production and consumption of goods and services. Institutions include households and the family, government policies and instruments, enterprises (or firms), labour organizations, NGOs, and markets. Rules include the legal framework and the extent of enforcement, organizational rules, procedures, customs, culture, and tradition.

“An economy is a group of people who are located within a political entity that has particular geographic characteristics and who are producing and consuming goods and services.”

Basically, there are only three systems. At one extreme we have the free market economy, where there is a very limited role for the government. At the other end we have the command economy, where the government takes virtually total control.

Characteristics of a free market economy

Ownership: Nearly all of the country's factors of production are owned privately. Although it might make sense to argue that firms own some of the resources, it is private individuals, or groups of individuals, who own the resources. They then rent them out to the firms so that they can produce the goods and services.

Objectives: Everyone in this system is motivated by pure self-interest. Consumers maximise welfare, firms maximise profits and the private individuals, who own the factors of production, aim to maximise rents (on land), wages (on labour), interest and profit (on capital).

Free enterprise: Basically, firms can sell anything they want. They effectively respond to the consumers, who are allowed to buy anything that is sold by the producers. Workers can take on any job they want.

The level of competition: Very high. Basically, it is assumed that nearly every market is a perfectly competitive one, with numerous buyers and sellers and no barriers to entry or exit. Firms are competing desperately for customers and the consumers are competing with each other for the goods on offer.

The pricing system: Nearly all markets are perfectly competitive. You may remember that in these circumstances, the price mechanism allocates the economy's resources. The reason why it is called the 'price' mechanism is because the price acts as a signal and an incentive for producers to act in the required way so as to maximise their gain, which, in turn, optimises the allocation of resources in the whole economy.

What will be produced?

In a free market economy, it is the consumers who have all the power. Consumer sovereignty exists. In a free market, a firm will only produce a good if the consumer is prepared to buy it. Through their purchases (or money 'votes') consumers effectively dictate to the firms what should be produced. If consumers, on mass, stop buying bitter (perhaps they prefer drinking lager in pubs) then the producers (the brewers) would stop making it. So the answer to the question is, "whatever the consumers want."

How will it be produced?

The simple answer is, “the firms.” But there is more to this question than that. “How” also means “how well.” Due to the highly competitive environment that exists, there will be pressure on firms to produce the goods as efficiently as possible and keep their prices as low as possible.

For whom will it be produced?

In other words, who actually ends up consuming the goods that are produced? Well, we said earlier that consumers’ money votes determines what is actually produced. But it will also determine what consumers can actually buy. Those with more money will be able to consume more of the goods produced.

A command economy**Characteristics of a command economy**

Ownership: Nearly all of the country’s factors of production are owned publicly by the government (or the state). The only factor over which the government does not have total control is labour.

Objectives: The complete opposite of the pure self-interest of the free market system. No one (in theory) thinks of himself (or herself). Consumers, workers and the government are all assumed to be working for the ‘common good’.

Free enterprise: There is none. All enterprises are owned and controlled by the government.

The level of competition: Very little.

The pricing system: There is no competition, so there is no price mechanism. The authorities set the prices. It is because they set prices at low levels to make sure that everyone can afford the goods that excess demand occurs causing long queues for goods outside shops. Another inevitable consequence is the creation of black markets.

The planning system: This is an extra characteristic of the command economy. The other five has tried to follow the five given in the ‘free market economy’ section. As the government runs the system, they have the job of planning how all the resources should be

used. They have to decide what should be produced and in what quantities. They must decide how the goods are to be made. What labour should be used and where? What techniques of production shall we use? How will the completed goods be divided between the workers (or consumers)? The key point is that they directly set the output levels and price levels.

What will be produced?

The consumer no longer has any control. The planners (or the government) decide what will be produced. The question is, how do the planners know what the consumers want and need better than the consumers themselves?

How will it be produced?

There are no such things as ‘firms’ in a planned economy. The planners direct the resources into producing ‘units’. They are not really firms. They have no autonomy. So, as we said above, the planners decide on the quantities of output and methods of production.

For whom will it be produced?

In the free market, the richer you were, the more you could buy. Of course, very poor people could end up with very little. The planner tries to be fair in distributing the output of the economy. Wages are determined by the planners, as are the prices of the goods produced. So the government is, effectively, determining how much each consumer can consume.

Mixed Economy An Economic Mixture

In a mixed type economy, both the private ownership as well as the state takes part in the means of production, distribution and other types of economic activities.

The mixed economy allows private participation in the field of production in an environment of competition with an objective of attaining profit. On the contrary following to the socialism features it includes public ownership in production for maximizing social welfare. Simply in such type of economy there is the presence of private economic freedom with centralized planning with a common goal of avoiding the problems associated with both capitalism as well as socialism.

In this system the freedom in the economic activities are influenced by the Government's regulation and licensing policies.

The advantages of a free market economy (and the disadvantages of command)

1. **Efficiency.** As mentioned previously, free market economies are very competitive. Most of their industries are assumed to be perfectly competitive and so allocative and productive efficiency will occur. It makes sense that free market economies allocate their resources more efficiently. Decisions about what to produce are made by the people who will actually consume the goods. Planners are less likely to make the correct decisions across the whole economy.

2. **Choice.** Firms will produce whatever consumers are prepared to buy. Remember that the consumer is sovereign. Due to the free enterprise factor, there are no restrictions on what the firms can produce. It is of no surprise, therefore, that there will be a much larger choice of goods and services in a free market economy compared with a command economy. The planner will be more concerned with making sure there are enough essential goods rather than allocating resources efficiently between all goods.

3. **Innovation.** Firms will always be looking to produce something new to get ahead of their competitors. As noted earlier that, even though the government's role is limited, one of its jobs is to protect property rights. This will include intellectual property rights through patents. Hence, there are incentives in the free market system for firms to be innovative and produce better quality products. Obviously there is no incentive for the planner to be innovative. As long as they produce the essentials the planners will be happy.

4. **Higher economic growth rates.** Countries whose economic system has been nearer to the free market model have grown much faster than those with a command economy since the Second World War. The most successful economy in the world (in terms of size) has been the USA, and they have been one of the freest economies in the world. Given the three factors above, it is not surprising that this is the case. It should be noted that many mixed economies have grown quite well, but certainly the post-war command economies had the worst record.

The disadvantages of a free market economy (and the advantages of a command)

1. **Public, merit and demerit goods.** Public goods cannot be provided privately because of their two characteristics, non-rivalry and non-excludability. These goods have to be provided publicly. Even in a very free market, one of the government's few roles will be to provide defence, for example. But there may be a problem with merit goods and demerit goods. Merit goods, like health and education, tend to be under provided in a free market. Certainly in the USA the public health system is a 'last resort' system. People are advised to buy health insurance. Of course, the poor might not be able to afford this, and some people might simply decide not to bother if they feel particularly healthy. Demerit goods are bad for you. Government should ban drugs, and tax cigarettes and alcohol heavily. A government with a limited role might not take enough action in this area, causing health problems for the economy.

Of course, the advantage of a command economy is that the strong government will make sure that public and merit goods are consumed at the right levels and that demerit goods are banned or taxed heavily.

2. Unequal distribution of income. For many, this is the big disadvantage of a free market economy. In a free market with very limited government, benefits will be low; the health service is poor and schools under funded. If you start life with very little, and do not even get a good education, then there will be very little protection from misery/hardship. A command economy might not have the efficiency and enterprise for the successful to make millions, but at least the strong government will try to make sure that nobody falls through the safety net. It will be a fairer economy, even though it is likely to be less successful overall.

3. The environment. Free market economies are likely to produce more pollution, which is bad for the environment. Command economies can make sure that the production processes that they chose are as environmentally friendly as possible. They should be able to make sure that the level of output is the socially optimal level of output ($MSC=MSB$). Governments can try to force firms into producing the socially optimal level of output through the use of taxes, but governments with a limited role will not be keen to use taxes. Although the tax on petrol is high in the UK, it still doesn't cover the problems caused by the exhaust emissions (in health as well as the environment). Petrol prices have risen, but in real terms, the rise has not been as high as for bus and rail fares. In the USA, petrol is ridiculously cheap. The minimal tax on the good does not begin to cover the environmental damage.

In summary, the advantages and disadvantages of market economies are the following:

Advantages:

- What is produced is dictated by the demands of consumers
- Producers have an incentive (the profit motive) to respond quickly to changes in consumer demands
- Competition encourages firms to use the least cost method of production
- Resources are allocated to their 'optimum', or most efficient use.

Disadvantages

- Prices reflect private costs rather than social costs. Therefore there might not be an optimum allocation of resources
- Production is for profit, therefore there will be non-production of public goods and under-production of merit goods
- The economy might be unstable
- There is inequality in the distribution of income and wealth. Yet it is only those with the ability to pay who are able to influence what is produced

The advantages of CENTRALLY PLANNED ECONOMIES

1. Production is not undertaken for profit

It is argued therefore that there is a greater likelihood that both public goods and merit goods will be provided; the government simply has to issue directives to ensure production.

2. Production and consumption of demerit goods can be limited or prevented altogether.

This might be done by using taxes (or subsidies) to bring prices more fully into line with social costs, or by direct restrictions on production and consumption.

3. Greater equality in the distribution of income and wealth

This is because the factors of production, with the exception of labour, are owned by the state, so that for anyone to derive incomes from hiring out land and capital. Similarly, there are no private entrepreneurs who derive profit by combining the factors of production.

4. Greater stability

Economic management is in the hands of the government, and consumers have far less power to influence production. Thus, if consumer demand for a particular good falls, it will not necessarily lead to unemployment in the industry.

The Disadvantages of CENTRALLY PLANNED ECONOMIES

1. Loss of consumer sovereignty

In a centrally planned economy, the state decides what is to be produced and consumers have much less influence over production than in market economies. Because of this there are likely to be shortages of certain commodities and surpluses of others, with no automatic mechanism for their removal.

2. Bureaucratic structure

There may be a tendency towards larger bureaucratic structures; government planning departments, rather than decentralised markets, govern resource allocation in such economies. The opportunity cost of employing people to gather information, process it and formulate plans, etc., is the alternative output these people could otherwise have produced.

3. Absence of efficiency

Production is not undertaken for profit in centrally planned economies. Thus, there is less incentive to increase efficiency. Indeed, it is sometimes suggested that because of any increase in efficiency will lead the planners to raise the target levels of output assigned to an industry, industries in such economies have an incentive not to increase efficiency. Whatever the truth of this, there is no doubt that a great deal of industry in centrally planned economies is considerably less efficient than industry in the west, where the profit motive guide producers.

4. It is also suggested that the absence of competition in centrally planned economies is a disincentive to efficiency.

There is less competition among firms in such economies, since each firm simply responds to the instructions it receives from the planners. So long as planners issues instructions for the continued production of any good or service this will be provided, even if firms make a loss (i.e., cost of production exceed sales revenue) in undertaking the production. Any loss that does arise will be underwritten by the state. The absence of competition might therefore discourage moves towards greater efficiency which, in a competitive market economy, would be necessary for the firm to survive. The ultimate sanction against inefficient firms in a market economy is that if they do not earn profits they will eventually be forced into liquidation.

5. Price controls are frequently used

In centrally planned economies price controls are used in order to achieve greater equality. However, relatively low prices encourage over-consumption and this is one of the main reasons of shortages, for example of foodstuffs in many eastern-located countries. Here again the result is inefficiency in the allocation of resources.

Lesson 4: Money; Positive and normative statements and Classification of goods and services

Specialisation and Division of labour

Specialisation happens when one individual, region or country concentrates in making one good.

If workers produce more goods than they need they have a surplus, which can be traded. It makes sense for people, regions and countries to specialise in the production of goods and services in which they have a comparative advantage, that is, they are relatively efficient.

Specialisation leads to integration, globalisation and interdependence

Division of Labour

The division of labour is a particular type of specialisation where the production of a good is broken up into many separate tasks each performed by one person.

Advantages of the Division of Labour

The division of labour raises output, thereby reducing costs per unit, for the following reasons:

- Workers become more practised at the task
- Workers are able to be trained more precisely for the task
- Specialisation enables more efficient organisation of production with a series of distinct tasks

Disadvantages of the Division of Labour

Eventually the division of labour may reduce productivity and increase unit costs for the following reasons:

- Continually repeating a task may become boring.
- Workers begin to take less pride in their work.
- If one machine breaks down then the entire factory stops.
- Some workers receive a very narrow training and may not be able to find alternative jobs.

- Mass-produced goods lack variety.

Limits to the Division of Labour

- Mass production requires mass demand.
- The transport system must be good enough to reach a large number of consumers (mass market)
- Barter is the direct exchange of goods for other goods. Each worker creates only part of the finished goods, therefore the division of labour cannot be used in a barter society.

A consequence of specialization is the need for trade. Specialization results in a person being able to provide more than he or she needs or wants of a particular good or service. There is a surplus beyond the personal or household need. The surplus is then available to trade in order to acquire the goods and services produced by others.

In those early economic days, exchange took place by trading one or more items directly for another, that is, through **barter**. An economy based on this method of exchange is referred to as a barter system.

As long as the output of the economy is made up of relatively few goods and services, this type of system can function successfully. However, as a society advances, and a much greater volume and diversity of output is produced, bartering becomes very complicated and cumbersome. Calculating the value or cost of each item in terms of every other item becomes difficult. Making the trades becomes difficult.

To avoid these problems, an alternative system of exchange evolved. It was apparent that exchange would be much simpler if everyone was willing to accept some common item in a trade. Each person could trade whatever he or she produced for one, common thing.

WHAT IS MONEY?

Money is something that people generally accept in exchange for a good or a service or in settlement of debts.

Economists also talk about near money. This is a term that is used to denote non-cash assets that can be quickly and easily turned into cash. Such assets include foreign currencies, savings accounts, bonds and certificates of deposits. As assets, they contribute to the liquidity of banks by providing a supply of cash if this is needed to meet their liabilities to depositors.

Money performs four specific functions, each of which overcomes the difficulties of **barter**. The functions of money are to serve as:

1. *Unit of value,*
2. *Medium of exchange,*
3. *Standard of deferred payments and*
4. *Store of value.*

The first function of money is to be a **unit of value or a unit of account**. The monetary unit is the unit in terms of which the value of all goods and services is measured and expressed. The value of each good or service is expressed as a price, which is the number of monetary units for which the good or service can be exchanged.

If the price of a pen is Rs. 10 then a pen can be had in exchange for ten monetary units (where the monetary unit in this case is the rupee). Measuring values in monetary units helps in measuring the exchange values of commodities. If a pen is worth Rs. 10 and a notebook is worth Rs.20 then a notebook is worth two pens.

Money also acts as a **medium of exchange or as a medium of payments**. This function of money is served by anything that is generally accepted by people in exchange for goods and services. 'Anything' has been quite a variety of things across places and times. Money will then reduce the time and energy spent in barter. By acting as an intermediary, money increases the ease of trade.

If money performs the previous two functions then it may also **perform the function of being the unit in terms of which deferred or future payments are stated**. Examples of situations where future payments are to be made are pensions, principal and interest on debt, salaries etc. As long as money maintains a constant value through time, it will overcome the problems associated with making future payments with specific commodities.

If money becomes a **unit of value** and a means of payment then it may also perform the function of serving as a store of value. The holders of money are holders of generalised purchasing power that can be spent through time. They know that it will be accepted at any time for any good or service and is thus a store of value. This function will be performed well as long as money retains a constant purchasing power.

PROPERTIES OR CHARACTERISTICS OF MONEY

Any item which is going to serve as money must be:

- acceptable to people as payment;
- scarce and in controlled supply
- stable and able to keep its value
- divisible without any loss of value
- portable and not too heavy to carry.

Public, merit and demerit goods

Public goods

Public goods are goods that would not be provided in a free market system, because firms would not be able to adequately charge for them. This situation arises because public goods have two particular characteristics. All public goods have two important characteristics: **Non-excludability and Non-diminishability** (also known as **non-rivalry**)

1. **Non-excludable** - once the goods are provided, it is not possible to exclude people from using them even if they haven't paid. A public good is one where it is impossible to **exclude** anyone from consuming it. I suppose this is why they are called public goods – they are open to the public! This allows 'free-riders' to consume the good without paying.
2. **Non-rival** - this means that consumption of the goods by one person does not diminish the amount available for the next person.

The key point about public goods is that they are 'good' things, so they need to be provided, but because of these two characteristics, they **have to** be provided centrally, by the government.

Imagine that the government did **not** provide an army, navy, air force, etc. A private company might have the idea of forming a national army and to raise the required money, they decide to ask everyone for £10. If you were that person and you did not want to be defended, then you would not pay. There may be a lot of people who refuse to pay for this reason. Also, there may be some people who **do** quite want to be defended, but take the risk of not paying on the assumption that there will be some people in the UK that will care enough to pay the inevitable increased price. This is the **free-rider problem**. The people who do not pay, for whatever reason, are having a free ride.

The government can provide these goods because they can **force** people to pay through taxation and raise enough money to do the job properly.

Merit goods

Merit goods are goods or services that the government believes are beneficial to society but they may not be produced in adequate quantities because the market is too small and there is *little to no incentive for private production*.

Firstly, unlike a *private good*, the net private benefit to the consumer is not fully recognised at the time of consumption. Net private benefit is the utility from gained from consumption less any private cost incurred, and equates to net consumer surplus. In the case education, which is widely considered to be a merit good, pupils and students cannot possibly know the specific private benefit to them of getting good grades at school, college or university. They will be well aware of the sacrifice required to study, but will not know the benefits to them in terms of a future job, salary, status and skills. Therefore, with education, as with other merit goods, there is a significant information failure in terms of expected benefits.

Secondly, while consumption of a merit good also generates an external benefit to others, from which society gains, this is unlikely to be known or recognised at the point of consumption. Given that decisions to consume are driven by self-interest, it is unlikely that this external benefit will be taken into account when the consumer of a merit good evaluates its worth. For example, an individual student is generally not motivated to study hard in order to benefit others later in life, although everyone associated with them will benefit from their education in some way. Beneficiaries include future employers and all those who consume the products supplied their employer, their family, and friends. The better job they obtain, the more tax they will pay, and the greater the benefit to those who receive welfare benefits and transfers. However, putting a value on these external benefits is impossible, especially at the point of learning.

Merit goods are goods that would be provided in a free market system, but would almost certainly be under-provided. Take the case of education. If there were no state education provided at all, there would still be private schools for those who could afford them, and indeed many new private schools might open. However, there would not be nearly enough education provided for everyone to benefit. This happens because the market only takes account of the *private costs and benefits*. It does not take account of the *external benefits* that may arise to society from everyone being educated. For this reason, merit goods will be under-provided by the market.

If the private sector won't provide these goods in sufficient quantity, then the only way more will be provided is either if the government encourages firms to produce more or if provides them itself. A significant proportion of government expenditure arises from the government providing merit goods. The main examples are:

- Education
- Health
- Fire service

Demerit goods

Merit goods are 'good' for you. Demerit goods are thought to be 'bad' for you. Examples are alcohol, cigarettes and various drugs.

In this case the market fails because these goods are **over-consumed** if left to the free market. Again, the government must step in to stop this over-consumption. In the case of alcohol and cigarettes, the government imposes quite heavy taxes and duties. Some demerit goods are seen as so destructive that the government bans them altogether, illegal drugs being the obvious example.

It is important to note that, just as merit goods provided **positive** externalities that the government wanted to encourage, demerit goods cause large **negative** externalities that the government are keen to avoid. The additional costs of demerit goods are there for all to see: an increased burden on the free health services, increased crime and the fact that **labour productivity** is affected in a negative way, which is bad for the economy as a whole.

Marginal analysis

Many personal and business decisions are made by comparing *marginal* benefits with *marginal* costs. Marginal means "extra," or "additional" so businesses or individuals compare the extra benefits with the extra costs in making decisions.

The Concept of Maximization Using Marginal Analysis

One of the keys to understanding maximization is the idea of marginal changes. It is easy to explain that as long as incremental gain exceeds the incremental cost, increasing the activity will result in an increase in net benefits. When incremental costs exceeds incremental benefits, net benefits can be increased by reducing the activity. Only when the incremental benefit equals the incremental cost would there be no net gain or loss from changing the activity, i.e., the maximum net benefits would be realized. It should be emphasized that the technique of marginal analysis underlies the economist's approach to maximizing behaviour. The **marginal benefit** from an activity is the additional benefit associated with a one-unit increase in the level of an activity. **Marginal cost** is defined as the additional cost associated with a one-unit increase in the level of the activity. Economists assume that individuals attempt to maximize the net benefit associated with each activity.

If marginal benefit exceeds marginal cost, net benefit will increase if the level of the activity rises. Therefore, rational individuals will increase the level of any activity when marginal benefit exceeds marginal costs. On the other hand, if marginal cost exceeds marginal benefit, net benefit rises when the level of the activity is decreased. There is no reason to change the level of an activity (and net benefit is maximized) at the level of an activity at which marginal benefit equals marginal cost.

POSITIVE AND NORMATIVE ECONOMICS

You will often hear statements about economic issues on the television and written in newspapers and magazines. These statements can be divided into two main groups - **positive** and **normative**.

POSITIVE STATEMENTS

Positive statements are **objective statements** dealing with matters of fact or they question about how things actually are. Positive statements are made without obvious **value-judgements** and emotions. They may suggest an economic relationship that can be tested by recourse to the available evidence.

Positive economics can be described as “what is, what was, and what probably will be” economics. Statements are based on economic theory rather than raw emotion. Often these statements will be expressed in the form of a **hypothesis** that can be analysed and evaluated.

Examples:

- A rise in interest rates will cause a rise in the exchange rate and an increase in the demand for imported products
- Lower taxes may stimulate an increase in the active labour supply
- A national minimum wage is likely to cause a contraction in the demand for low-skilled labour
- The UK economy now has lower unemployment than Germany
- The American stock market has boomed in recent years

NORMATIVE STATEMENTS

Normative statements are **subjective** - based on opinion only - often without a basis in fact or theory. They are based on **value-judgements**, emotional statements that focus on "what ought to be".

It is important to be able to distinguish between these types of statements - particularly when heated arguments and debates are taking place. Most economists tend to adopt a positive approach.

Examples:

- The decision to grant independence for the Bank of England is unwise and should be reversed
- A national minimum wage is totally undesirable as it does not help the poor and causes higher unemployment and inflation
- The national minimum wage should be increased to £5 as a method of reducing poverty

Ceteris paribus

This is a Latin phrase which means other things equal. It is especially important in building theories. We make a statement like an increase in car workers' wages will lead to higher car prices--*ceteris paribus*. In fact, car prices might not rise if car workers' wages rise, but that's because other things don't always remain equal. We analyze things one a time *ceteris paribus* and then learn how to reason about several things at a time.

Lesson 5: Market forces: Demand and supply curves**Demand**

In every market, there are both buyers and sellers. The buyers' willingness to buy a particular good (at various prices) is referred to as the buyers' demand for that good. The sellers' willingness to supply a particular good (at various prices) is referred to as the sellers' supply of that good.

The buyers' **individual demand** is represented by a **demand schedule**, which lists the quantities of a good that buyers are willing to purchase at different prices. An example of a demand schedule for a certain good X is given in Table . Note that as the price of good X *increases*, the quantity demanded of good X *decreases*.

TABLE 1 Demand Schedule for Good X

| Price of good X | Quantity demanded |
|-----------------|-------------------|
| \$0 | 5 |
| 2 | 4 |
| 4 | 3 |
| 6 | 2 |
| 8 | 1 |
| 10 | 0 |

This kind of behaviour on the part of buyers is in accordance with the **law of demand**. According to the law of demand, an **inverse relationship** exists between the price of a good and the quantity demanded of that good. As the price of a good goes up, buyers demand less of that good. This inverse relationship is more readily seen using the graphical device known as the **demand curve**,

which is nothing more than a graph of the demand schedule. A demand curve for the demand schedule given in Table is presented in Figure 1.

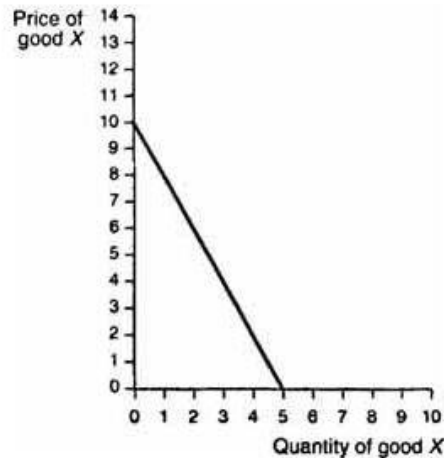


Figure 1 Demand curve for good X

The vertical axis in Figure depicts the price per unit of good X measured in dollars, while the horizontal axis depicts the quantity demanded of good X measured in units of good X. In addition to the demand schedule and the demand curve, the buyers' demand for a good can also be expressed a third way—algebraically, using a **demand equation**. The demand equation relates the price of the good, denoted by P , to the quantity of the good demanded, denoted by Q . For example, the demand equation for good X corresponding to the demand schedule in Table and the demand curve in Figure is

$$P = 10 - 2Q$$

From the demand equation, you can determine the **intercept** value where the quantity demanded is zero, as well as the **slope** of the demand curve. In the example above, the intercept value is 10 and the slope of the demand curve is -2 . In order to satisfy the law of

demand, the slope of the demand equation must be negative so that there is an inverse relationship between the price and quantity demanded.

Change in the quantity demanded. A change in the quantity demanded is a movement along the demand curve due to a change in the price of the good being demanded. As an example, suppose that in Figure the current market price charged for good X is \$4 so that the current quantity demanded of good X is 3 units. If the price of good X increases to \$6, the quantity demanded of good X moves along the demand curve to the left, resulting in new quantity demanded of 2 units of good X . The change in the quantity demanded due to the \$2 increase in the price of good X is 1 less unit of good X . Similarly, a decrease in the price of good X from \$4 to \$2 would induce a movement along the demand curve to the right, and the change in the quantity demanded would be 1 more unit of good X .

Change in demand. A change in demand is represented by a shift of the demand curve. As a result of this shift, the quantity demanded at all prices will have changed. Figures (a) and (b) present just two of the many possible ways in which the demand curve for good X might shift. In both figures, the original demand curve is the same as in Figure and is denoted by D_A . In Figure (a), demand curve D_A has shifted to the left to the new demand curve D_B . The leftward shift means that at all possible prices, the demand for good X will be less than before. For example, before the shift, a price of \$4 corresponded to a quantity demanded of 3 units of good X . After the shift left, at the same price of \$4, the quantity demanded is less, at 1 unit of good X . In Figure (b), demand curve D_A has shifted to the right to the new demand curve D_C . The rightward shift means that at all possible prices, the demand for good X will be greater than before. For example, before the shift, a price of \$6 implied a quantity demanded of 2 units of good X . After the shift, at the same price of \$6, the quantity demanded is greater, at 4 units of good X .

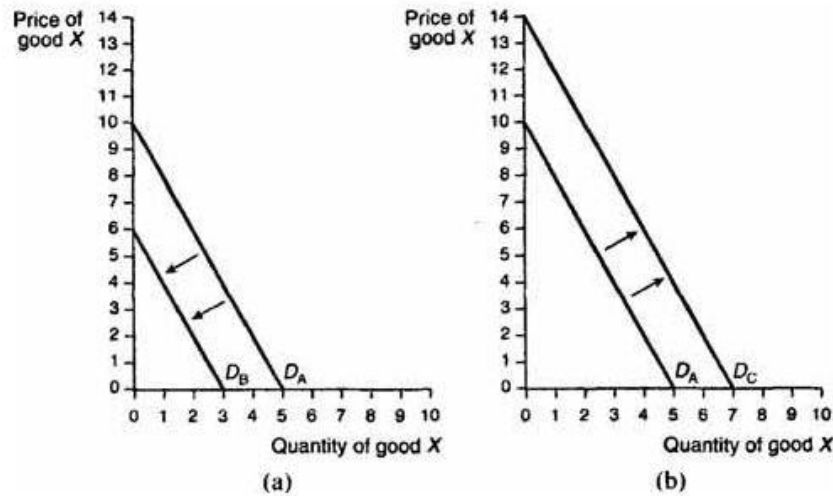


Figure 2 A change in demand: Leftward and rightward shifts of the demand curve for good X

Reasons for a change in demand. It is important to keep straight the difference between a change in quantity demanded, or a movement along the demand curve, and a change in demand, or *shift* in the demand curve. There is only *one* reason for a change in the quantity demanded of good X: a change in the price of good X; however, there are several reasons for a change in demand for good X, including:

Changes in the price of related goods: The demand for good X may be changed by increases or decreases in the prices of other, *related* goods. These related goods are usually divided into two categories called **substitutes** and **complements**. A *substitute* for good X is any good Y that satisfies most of the same needs as good X. For example, if good X is tea, a substitute good Y might be coffee. When two goods X and Y are substitutes, then as the price of the substitute good Y *rises*, the demand for good X *increases* and the demand curve for good X shifts to the *right*, as in Figure (b). Conversely, as the price of the substitute good Y *falls*, the demand for good X *decreases* and the demand curve for good X shifts to the *left*, as in Figure (a). A *complement* to good X is any good that is

consumed in some proportion to good X . For example, if good X is petrol, then a complement good Y might cars. When two goods X and Y are complements, then as the price of the complementary good Y rises, the demand for good X decreases and the demand curve for good X shifts to the *left*, as in Figure (a). Conversely, as the price of the complementary good Y falls, the demand for good X increases and the demand curve for good X shifts to the *right*, as in Figure (b).

Changes in income: The demand for good X may also be affected by changes in the **incomes** of buyers. Typically, as incomes *rise*, the demand for a good will usually *increase* at all prices and the demand curve will shift to the *right*, as in Figure (b). Similarly, when incomes *fall*, the demand for a good will *decrease* at all prices and the demand curve will shift to the *left*, as in Figure (a). Goods for which changes in demand vary directly with changes in income are called **normal** goods. There are some goods, however, for which an *increase* in income leads to a *decrease* in demand and a *decrease* in income leads to an *increase* in demand. Goods for which changes in demand vary inversely with changes in income are called **inferior** goods.

Changes in preferences: As peoples' preferences for goods and services change over time, the demand curve for these goods and services will also shift. Changes in preferences may result from the following: change in fashion, advertising and product quality.

Expectations of future prices. If you think that the price for CDs is likely to fall in the near future, perhaps because of reduced production costs, you may delay some purchases which will reduce demand in the current time period. Alternatively, you may feel that CD prices are likely to rise in the near future, perhaps due to the lack of competition in the retail market, so you may increase your demand in the current time period.

Market demand



The market demand consists of the total quantity demanded by each individual in the market. Conceptually, the market demand curve is formed by computing the horizontal summation of the individual demand curves for all consumers. The diagram above illustrates this process.

Supply

The buyers' demand for goods is not the only factor determining market prices and quantities. The sellers' **supply** of goods also plays a role in determining market prices and quantities. Like the buyers' demand, the seller's individual supply can be represented in three different ways: by a **supply schedule**, by a **supply curve**, and **algebraically**. An example of a supply schedule for a certain good X is given in Table , and the corresponding supply curve is drawn in Figure . Note that as the price of good X *increases*, the quantity supplied of good X *increases*. This kind of behavior on the part of sellers is in accordance with the **law of supply**.

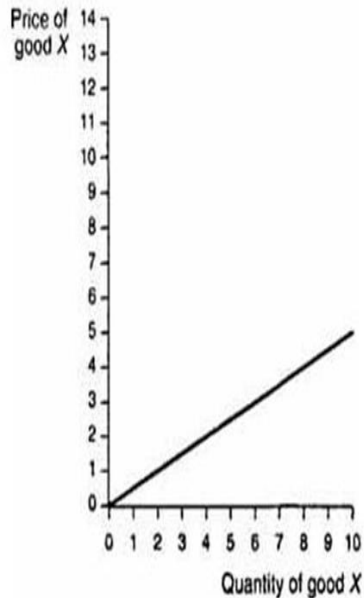


TABLE 1 Supply Schedule for Good X

| Price of good X | Quantity supplied |
|-----------------|-------------------|
| \$0 | 0 |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |
| 5 | 10 |

Figure 1
Supply curve for good X

According to the law of supply, a **direct relationship** exists between the price of a good and the quantity supplied of that good. As the

price of a good increases, sellers are willing to supply more of that good. The law of supply is also reflected in the upward-sloping supply curve of Figure and in the algebraic equation of the supply schedule data of Table :

$$P = \frac{1}{2}Q$$

Change in the quantity supplied. A **change in the quantity supplied** is a *movement along the supply curve* due to a change in the **price** of the good supplied. Suppose, in Figure , the price changes from \$4 to \$3. The change in the quantity supplied is found by moving along the supply curve, in this case to the left, from the old quantity of 8 units of good X to the new quantity of 6 units of good X.

Change in supply. A **change in supply**, like a change in demand, is represented by a *shift in the supply curve*. Figures (a) and (b) illustrate two possible ways in which the supply curve for good X might shift:

A *leftward shift* of the original supply curve, labelled S_A , to the new supply curve S_B , as depicted in Figure (a), results in a **reduced supply** of good X at all prices. A *rightward shift* of the original supply curve S_A to the new supply curve S_C , as depicted in Figure (b), results in an **increased supply** of good X at all prices.

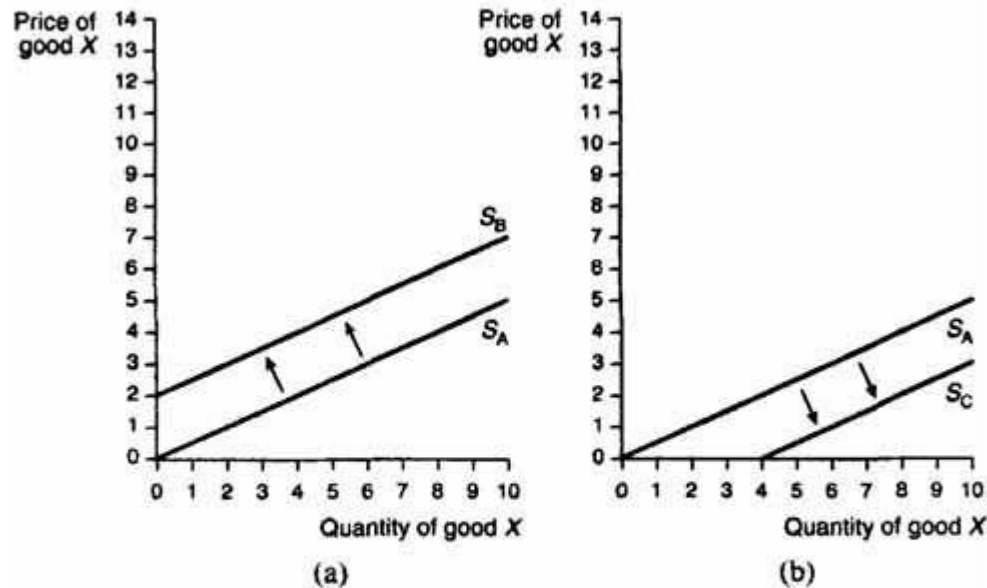


Figure 2 A change in supply: Leftward and rightward shifts of the supply curve for good X

Reasons for a change in supply. A change in supply or shift of the supply curve is not caused by a change in the price of the good being supplied; that would induce a change in the quantity demanded and a movement along the supply curve. A shift in the supply curve is caused by other factors, including:

Changes in the prices of other goods: Suppliers are frequently able to switch their production processes from one type of good to another. Farmers, for example, might decide to grow less wheat and more corn on the same land if the price of corn rises relative to

the price of wheat. In this case, the supply curve for wheat would shift to the *left*, as in Figure (a), as a consequence of the higher price for corn.

Changes in the prices of inputs: The prices of the raw materials or inputs used to produce a good also cause the supply curve to shift. An *increase* in the prices of a good's inputs will *raise* costs to suppliers and cause suppliers to supply *less* of that good at all prices. Therefore, an *increase* in the prices of a good's inputs leads to a *leftward shift* of the supply curve for that good, as in Figure (a). A *decrease* in the prices of a good's inputs *reduces* costs and allows suppliers to supply more of that good at all prices. Therefore, a *decrease* in the prices of a good's inputs leads to a *rightward shift* of the supply curve for that good, as in Figure (b).

Changes in technology: Advances in technology often have the effect of lowering the costs of production, allowing suppliers to supply more goods at all prices. For example, the development of pesticides has reduced the amount of damage done to certain crops and therefore has reduced the cost of farming. The result has been an increase in the supply of these crops at all prices, which can be represented by a shift to the right in the supply curves for these crops, as in Figure (b).

Indirect taxes and subsidies. When the chancellor announces an increase in petrol tax, it is the firm who actually pays the tax. Even if consumers end up paying the tax indirectly when the price of petrol goes up, but the actual tax bill goes to the firm. This again, therefore, represents an increase in the cost to the firm and the supply curve will shift to the left. The opposite is true for subsidies as they are grants by the government to firms. Now the firm can make more units of output at any given price, so the supply curve shifts to the right.

Market supply

The market supply curve is the horizontal summation of all individual supply curves. The derivation of this is equivalent to that illustrated above for demand curves.

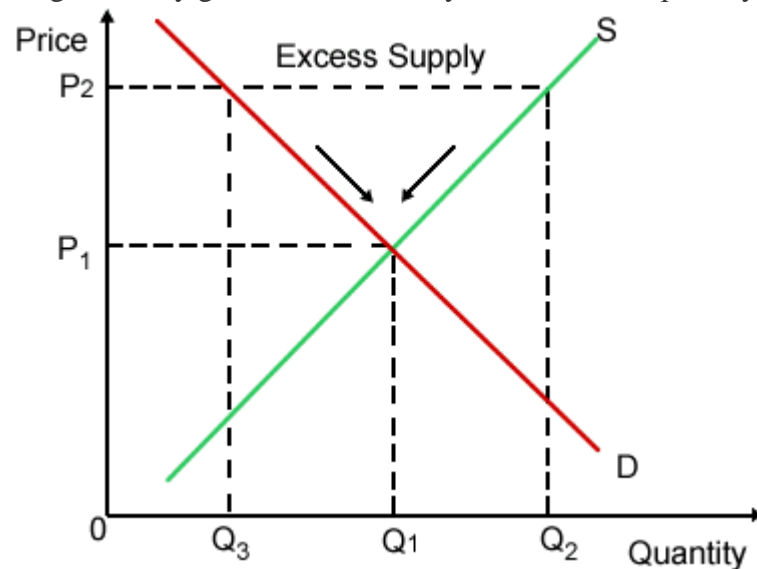
Lesson 6: Determination of equilibrium price and quantity (Market equilibrium and disequilibrium)

The equilibrium price

The demand curve represents the actions, at any price level, of the buyers (or consumers). The supply curve represents the actions, at any price level, of the sellers (or firms, or producers). To find out what the price level will **actually** be, we need to see what happens when we combine the demand and supply curves.

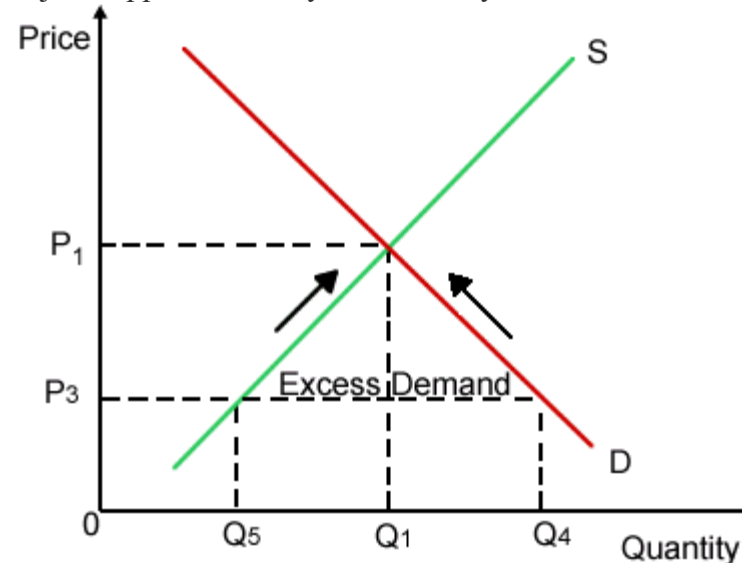
The price mechanism - is the mechanism through which the price is determined in a market system. Basically, the price will adjust until supply equals demand, at which point we have the equilibrium price.

The meaning of 'equilibrium' is 'a state of physical balance', or put more simply, 'a state of rest'. As will be seen in the following diagrams, any given market is only 'at rest' when quantity supplied equals quantity demanded, which is where the two curves cross.



Now we have a situation when the price is relatively low, demand for the product (Q_4) is much higher than the wish to supply (Q_5). We have **excess demand** equal to $Q_4 - Q_5$. Firms find that they sell their stock very easily and there queuing at the door wanting more! What would you do if you were one of those firms? I would be thinking that I

In the diagram above, let us assume that the price is P_2 temporarily. At this price, demand is quite low (Q_3) but firms wish to supply quite a lot (Q_2). We have **excess supply** equal to $Q_2 - Q_3$. Firms find that they have a glut of unsold goods. This is **not** a 'state of rest'. If you were one of those firms, what would you do? I would probably reduce the price a little (have a sale, maybe?) until I could sell off all my excess stock. Applying this to the diagram, the price would fall until firms reached a position where they no longer experienced excess supply. This occurs where supply equals demand, price P_1 , quantity Q_1 . You may have heard of the '**invisible hand**', Adam Smith's famous metaphor that tries to explain what is going on here. Nothing physically forces the price down; it just happens naturally, or 'invisibly'!

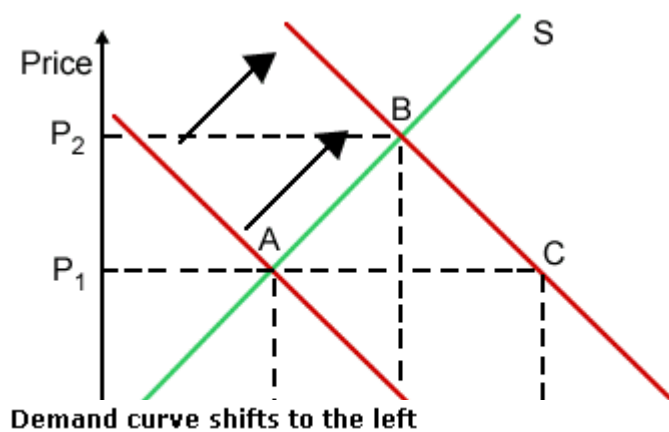


Now let us assume that the price is P_3 temporarily, so the amount firms - Q_5 . Now are customers this time if could get

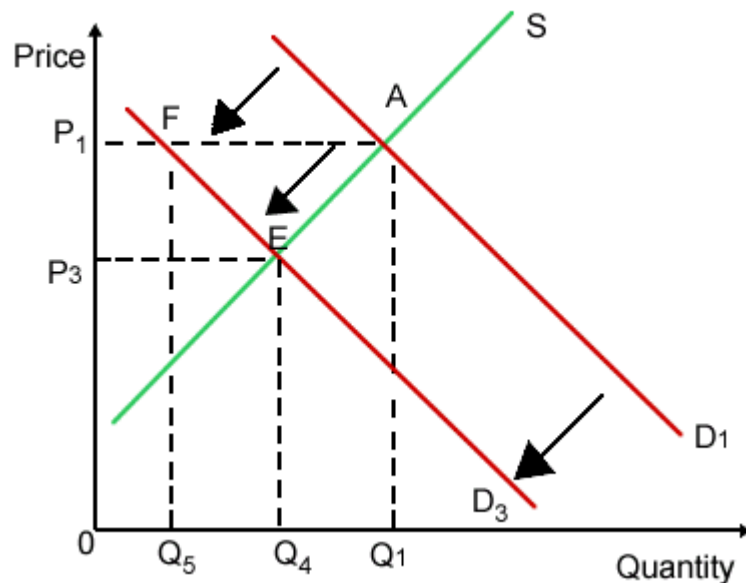
away with raising my price given the popularity of the good. I would keep doing this until there were no longer queues outside my door and the demand for my product matched the amount I supplied. Again, this will occur where supply equals demand, price P_1 , quantity Q_1 . The invisible hand is at work again!

SHIFTS IN SUPPLY AND DEMAND

Supply and demand curves might shift and these shifts can affect the equilibrium price.



The original equilibrium price is P_1 , quantity Q_1 . We are at a 'state of rest'. Now assume that one of the determinants of demand changes. For instance, there may have been an increase in advertising in the industry. This will shift the demand curve to the right, ceteris paribus (D_2). The price will not stay at P_1 for much longer. We have an **excess demand** situation (A to C). As stated above, this will cause the price to be bid up, and this will keep going until we reach the new equilibrium price where the new demand curve crosses the supply curve (at point B). Note that there has been a shift in the demand curve, but only a **movement along** the supply curve. None of the determinants of supply have changed.



Earlier, we called this process the 'price mechanism'. From the analysis above, we can see that the price itself has the most important role. The rising price has acted as a **signal** to possible new firms who might want to join this expanding industry. It acted as an **incentive**, encouraging existing firms to produce more (the movement along the supply curve). It also acted as a sort of **rationing device** in the sense that it put off some existing buyers and helped make sure that demand matched supply.

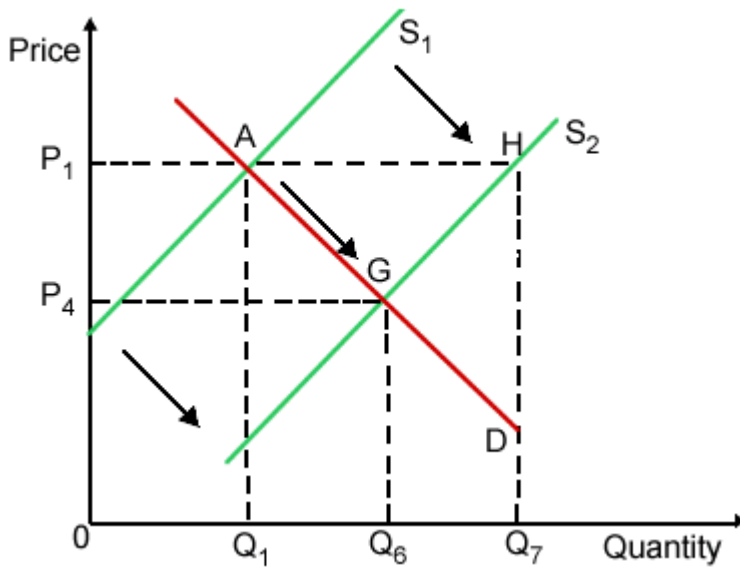
- Initial equilibrium: P_1, Q_1 (A)

-Surplus (AF) at price P1

- New equilibrium: P₃, Q₄ (E)
- Why might the demand curve shift to the left?
- Fall in real incomes
- Reduced preferences for the good
- Fall in the price of a substitute
- Rise in the price of a complement

- Initial equilibrium: P₁, Q₁ (A)

Supply curve shifts to the right



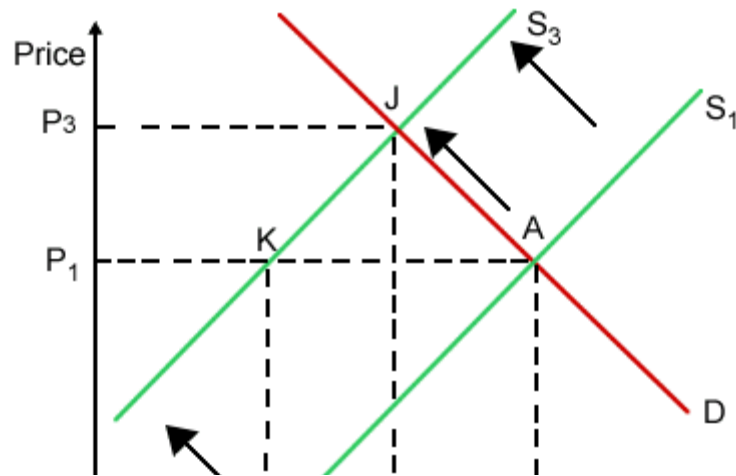
-Surplus (AH) at price P1

- New equilibrium: P₄, Q₆ (G)
- Why might the supply curve shift to the right?
- Fall in wage costs
- Fall in raw material costs
- Improved labour productivity
- Reduced indirect taxes/raised subsidies

- Initial equilibrium: P_1, Q_1 (A)

- Shortage (AK) at price P_1

Supply curve shifts to the left



- New equilibrium: P_3, Q_3 (J)

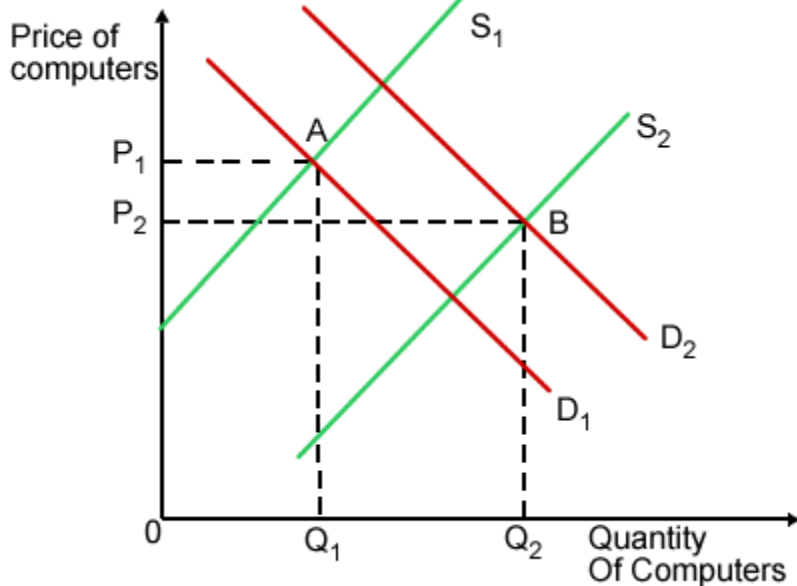
- Why might the supply curve shift to the left?

- Rise in wage costs
- Rise in raw material costs
- Reduced labour productivity
- An increase in indirect taxes
- Reduced, or elimination of, subsidies
- The exit of existing firms from the industry

When both curves shift

It is not unreasonable to think of a situation where both the demand and supply curves shift. Think of the market for computers over the last decade or so.

The demand curve for computers has definitely shifted to the right for several reasons. Real incomes have risen, there has been a rise in their preferences and the marketing of computers has increased, to name just three factors. But there has also been a huge shift to the right in the supply curve for



computers. There have been immense leaps in technology so that any given computer can be produced at a fraction of the cost compared with a decade ago. This can be seen in the diagram above. The equilibrium price has fallen from P_1 to P_2 , a fairly large relative drop, and the quantity supplied and demanded has also risen hugely, from Q_1 to Q_2 . What actually happens in the market for computers at the moment is that the price remains fairly constant, but for the same price, a given computer gets technically better and better as the months go by.

Complete the following table

Single Change

| Effect on the market | Market Disturbance | Effect on Price | Effect on Quantity |
|----------------------|--------------------|-----------------|--------------------|
| Rise in Demand | | | |
| Rise in Supply | | | |
| Fall in Demand | | | |
| Fall in Supply | | | |

Double Changes

| Effect on the market | Market Disturbance | Effect on Price | Effect on Quantity |
|-----------------------------------|--------------------|-----------------|--------------------|
| Rise in Demand and Rise in Supply | | | |
| Rise in Demand and Fall in supply | | | |

Lesson 7: Price elasticity of demand (measurement and interpretation)

The **price elasticity of demand** measures the responsiveness of the quantity demanded to the good's own price and is defined to be the percentage change in the quantity demanded that results per one percent change in price.

$$E_D = \frac{\text{percent change in the quantity demanded}}{\text{percent change in price}}$$

Examples:

1 . Suppose that a 10 percent increase in the price of cigarettes results in a 4 percent decrease in the quantity of cigarettes demanded.

$$E_D = \frac{4\%}{10\%} = 0.4$$

. In this case, the quantity of cigarettes demanded will go down by 0.4 percent for each 1.0 percent increase in price; the percentage change in the quantity demanded is only four-tenths or 0.4 as large as the percentage change in price.

2. Suppose a 10 percent increase in the price of cinema tickets results in a 25 percent reduction in the quantity demanded (i.e., number of tickets sold).

$$E_D = \frac{25\%}{10\%} = 2.5$$

. Here the quantity demanded will decrease 2.5 percent for each one percent increase in price. The percentage change in the quantity demanded is 2.5 times as big as the percent change in price.

Comparing the two examples, the demand for cinema tickets is more responsive to price than is the demand for cigarettes.

CALCULATING THE ELASTICITY

The price of a Crispy Chocolate Bar in the shop rises from 25p to 30p. As a result, the shopkeeper finds that the demand for this product falls from 80 bars a day to 40 bars a day. Find the price elasticity of demand.

A greengrocer decides to cut the price of his bananas from 40p per lb to 32p per lb. The price elasticity of demand for this product is 2. He currently sells 80lbs of bananas a day. How many will he sell after the price cut?

INTERPRETATION

In general, if the quantity demanded of a good is very responsive to a change in the good's price, the good is considered to be elastic. In simpler terms, this implies if we raise the price of an elastic good, there is a significant reduction in the consumption of that good, and vice versa for a price decrease. In contrast to a product where the quantity demanded of the good is very responsive to a change in the product's price, is an inelastic good. Goods that are inelastic, show little response in the quantity demanded to a change in price. Inelastic goods tend to be necessities and those that have few available substitutes in the short-run. An increase in the price of an inelastic good offers little opportunity for substitution in consumption, resulting in a minimal change in the quantity demanded. For price decreases, there is little additional consumption of inelastic goods.

So far we have discussed some general relationships between elasticity and the response in the quantity demand when there is a change in the price of a product. Now let us be more explicit:

* A good is considered to be relatively elastic when the price elasticity of demand exceeds an absolute value of 1. This indicates that if the price of the good changes by 1%, the response in the quantity demand is greater than 1%. The demand curves for elastic goods are relatively flat in slope.

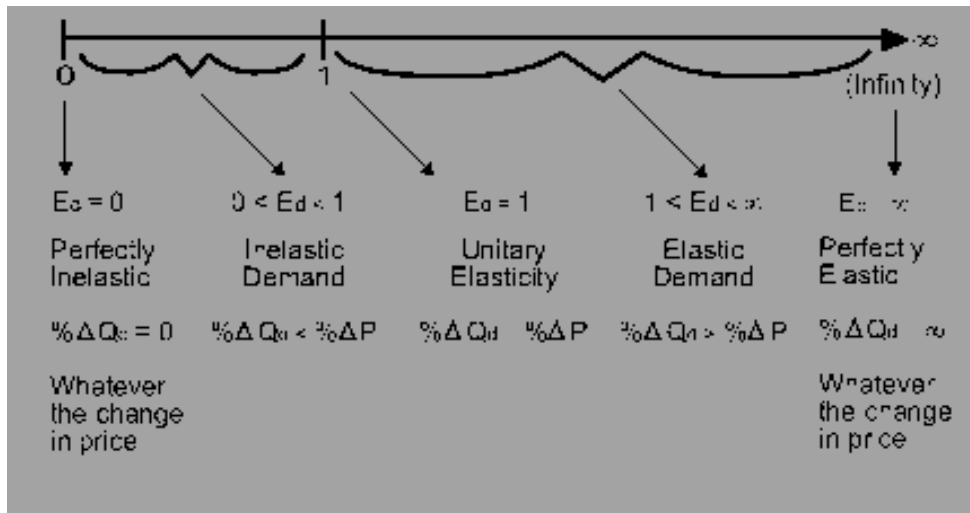
* A good is considered to be relatively inelastic when the price elasticity of demand is below an absolute value of 1. This indicates that if the price of the good changes by 1%, the response in the quantity demand is less than 1%. The demand curves for inelastic goods are relatively steep in slope.

* A good has unitary elasticity when the price elasticity of demand exactly equals 1.

There are two extremes:

1. A good is considered perfectly elastic when the price elasticity of demand approaches infinity. This implies that the demand for the product is unlimited at the market price - the demand curve is horizontal.
2. A good is considered perfectly inelastic when the price elasticity of demand equals zero. This implies that changes in price have no effect on the quantity demand of a good - the demand curve is vertical.

The number line below summarises the above:

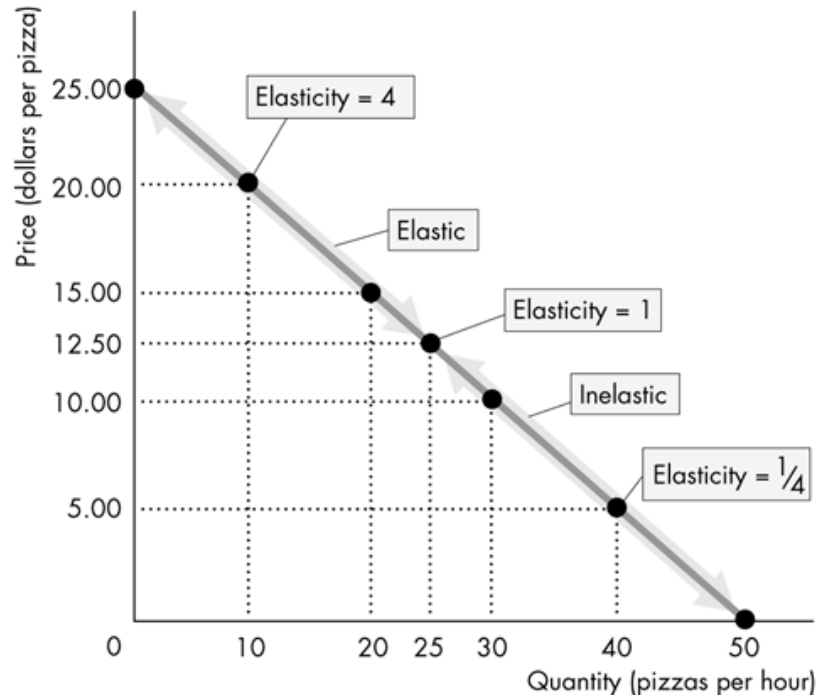


Elasticity Along a Straight-Line Downward Sloping Demand Curve

In order to measure PED at a specific point on a demand curve, the point elasticity formula is used.

This is given by: $\frac{\Delta qd}{\Delta p} \cdot \frac{p}{qd}$

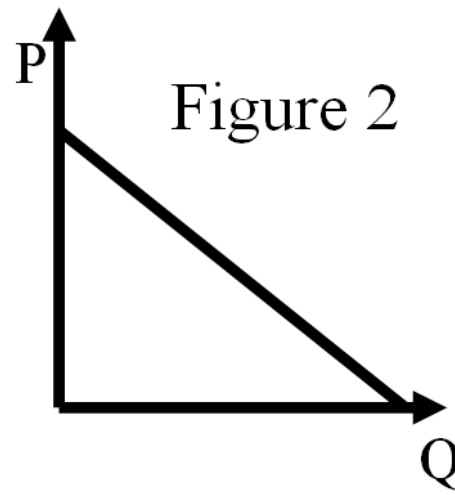
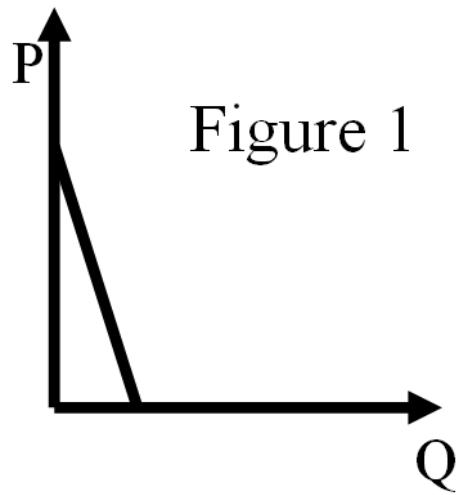
Consider the following diagram.



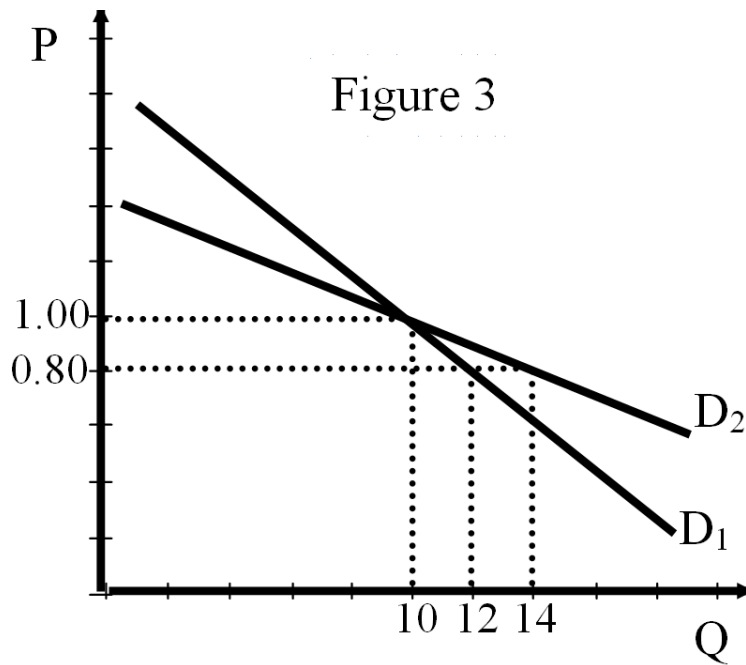
Demand is unit elastic at the mid-point of the demand curve. At any point above the midpoint, demand is elastic, whereas at any point below the midpoint, demand is inelastic.

The relative elasticities on the two demand curves depend upon where you are on the two curves.

Consider the following diagram.



If we apply the point elasticity formula to determine the PED value, it is wrong to say that demand is elastic in Figure 1 and inelastic in Figure 2. The proof is given in the diagram below.



If we measure the PED value at the point of intersection, the following values are obtained:

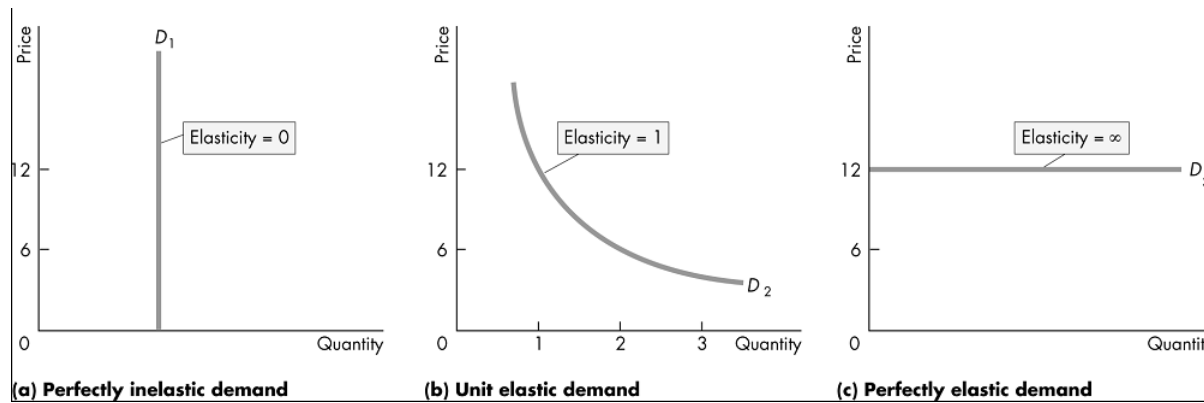
PED value for D_1 is:

PED value for D_2 is:

Conclusion: At the point at which the two demand curves intersect, the steeper demand curve is relatively less elastic (more inelastic)

– the flatter demand curve is relatively more elastic.

Exceptional demand curves



In the first diagram, any change in price (e.g P_1 to P_2) causes the quantity demanded to remain unchanged (stays at Q_1). The second diagram represents unitary elasticity. The parabola shape means that, wherever you are on the curve, a given percentage change in the price of the good will result in an identical percentage change in the quantity demanded. Note that this demand curve is downward sloping but not a straight line. In the third diagram, imagine that an infinitesimally small drop in price (so small that you can't see it on the diagram) has caused an infinite rise in demand (the horizontal demand curve goes on forever). Then you can just about see that the horizontal demand curve represents infinite (or perfect) elasticity.

Factors affecting Price Elasticity of Demand

The price elasticity of demand is not the same for all commodities. It may be or low depending upon number of factor. These *factors which influence price elasticity of demand*, in brief, are as under:

(i) Nature of Commodities. In developing countries of the world, the per capital income of the people is generally low. They spend a greater amount of their income on the purchase of necessities of life such as wheat, milk, course cloth etc. They have to purchase these commodities whatever be their price. The demand for goods of necessities is, therefore, less elastic or inelastic. The demand for luxury goods, on the other hand is greatly elastic.

(ii) Availability of Substitutes. If a good has greater number of close substitutes available in the market, the demand for the good will be greatly elastic.

For examples, if the price of Coca Cola rises in the market, people will switch over to the consumption of Pepsi Cola, which is its close substitute. So the demand for Coca Cola is elastic.

(iii) Proportion of the Income Spent on the Good. If the proportion of income spent on the purchase of a good is very small, the demand for such a good will be inelastic.

For example, if the price of a box of matches or salt rises by 50%, it will not affect the consumers demand for these goods. The demand for salt or match boxes is, therefore, inelastic. On the other hand, if the price of a car rises from \$6000 to \$9000 and it takes a greater portion of the income of the consumers, its demand would fall. The demand for car is, therefore, elastic.

(iv) Time. The period of time plays an important role in shaping the demand curve. In the short run, when the consumption of a good cannot be postponed, its demand will be less elastic. In the long run if the rise price persists, people will find out methods to reduce the consumption of goods. So the demand for a good in the, long run is elastic, other things remaining constant.

For example if the price of electricity goes up, it is very difficult to cut back its consumption in the short run. However, if the rise in price persists, people will plan substitution gas heater, fluorescent bulbs etc and so they use less electricity. So the electricity of demand will be greater ($E_d = > 1$) in the long run than in the short run.

(5) Number of Uses of a Good. If a good can be put to a number of uses, its demand is greater elastic ($E_d > 1$).

For example, if the price of coal falls, its quantity demanded will rise considerably because demand will be coming from households, industries railways etc.

(6) Addiction. If a product is habit forming say for example, cigarette, the rise in its price would not induce much change in demand. The demand for habit forming good is, therefore, less elastic.

Lesson 8: Price Elasticity of Demand and Total Revenue

Assume that you own a movie theatre where a large number of seats are typically empty. The manager proposes to lower price in order to increase revenues. (When all units of an output are sold at the same price, **total revenue** equals price multiplied by quantity.) Will a price reduction result in an increase in revenues?

Consider the effect on revenues in the following example.

| Examples of Revenue Change Resulting From a Price Change | | | |
|--|------------------|----------------------------------|-------------------------|
| | price per ticket | number of tickets sold per night | total revenue per night |
| Case A | \$5 | 50 | \$250 |
| | \$4 | 100 | \$400 |
| Case B | \$5 | 500 | \$2,500 |
| | \$4 | 550 | \$2,200 |

Together, the two cases show that even knowing that a reduction in price from \$5 to \$4 will result in the sale of 50 additional tickets per night is not sufficient to determine whether lowering price is a good policy. One needs to know whether the changes are relatively large or small. Note that the reduction in price represents a 20 percent change in both cases. In case A, there is a 100 percent increase in the quantity demanded. However, in case B, there is only a 10 percent increase in the quantity demanded. In case A, the 100 percent change in quantity is large relative to the 20 percent reduction in price, resulting in an increase in revenues. In case B, the 10 percent increase in quantity is relatively smaller compared to the 20 percent price reduction, with the result being that revenues fall when price is reduced.

In the case of movies, the price elasticity of demand has been estimated to be 0.87 in the short-run and 3.7 in the long-run. (In the above example, what if the manager proposes that you try the lower price for a couple of weeks and see what happens to revenues. To what extent would the short-run effect likely to correctly indicate the long-run effect?)

Rather than using information about price and quantity changes to calculate the price elasticity of demand, knowledge of the price elasticity can be used to infer how the quantity demanded would change for any given price change.

The formula $E_D = \frac{\% \Delta Q_d}{\% \Delta P}$ implies that $\% \Delta Q_d = E_D \cdot \% \Delta P$.

For example, if the price elasticity of demand is 2.5, a 5 percent increase in price would lead to a 12.5% (= 2.5 x 5%) reduction in the quantity demanded.

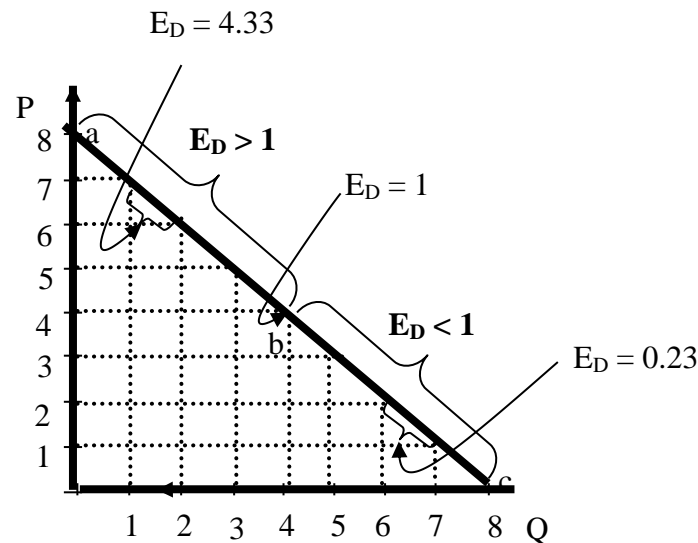
In a similar way, knowledge of the price elasticity of demand will allow inferences regarding how large a change in a good's price must be in order to bring about a given change in the quantity demanded. For example, suppose that the price elasticity of demand for cigarettes by teens is 0.7 and policymakers want to reduce teen smoking by 35%. What increase in price would be needed to bring this about?

$$E_D = 0.7 = \frac{\% \Delta Q_d}{\% \Delta P} = \frac{35\%}{?} \quad \text{or} \quad \% \Delta P = \frac{\% \Delta Q_d}{E_D} = \frac{35\%}{0.7} = 50\%$$

Thus, a 50 percent increase in price would bring about a 35% reduction in the quantity demanded.

Make sure that you can calculate the elasticities for the demand schedule and demand curve shown below. Check my numbers for mistakes! Be sure you understand what the numbers represent.

| Price | Quantity demanded (1000s) | Price elasticity | Revenues (\$1000s) TR = PQ |
|-------|---------------------------|------------------|-------------------------------|
| \$7 | 1 | 4.33 | \$7 |
| \$6 | 2 | 2.20 | \$12 |
| \$5 | 3 | | \$15 |



| | | | |
|-----|---|------|------|
| | | 1.29 | |
| \$4 | 4 | 0.78 | \$16 |
| \$3 | 5 | 0.45 | \$15 |
| \$2 | 6 | 0.23 | \$12 |
| \$1 | 7 | | \$7 |

Note that the price elasticity of demand at the midpoint on the demand curve (i.e., at point b) is 1.0. Here demand is unit elastic. Between points a and b, demand is elastic. Below point b on the demand curve demand is inelastic.

Price elasticity and the linkage between price and revenue changes.

Suppose that the above demand schedule reflects the demand for water in a desert community. You own land containing the only water source, a spring. What price would maximize your revenues from water sales?

The table shows the total revenue for each of several different prices. It is seen there that a price of \$4 and corresponding sales of 4,000 units result in the largest revenues.

Consider changes in price and the corresponding changes in revenues and how this relationship varies with the price elasticity of demand. Note that **a reduction in price increases revenues in those cases where the price elasticity of demand is greater than one**. However, **when the price elasticity of demand is less than one, a reduction in price results in a reduction in total revenue**.

To see why, reconsider the definition of total revenue. When all units of a good, Q, are sold at the same price, P, total revenue, TR, will be $TR = P \cdot Q$.

The law of demand implies that changes in P and Q will be in opposite directions. Without additional information, it is not possible to say whether such a change in price will cause total revenue to increase or decrease.

As an example, consider an increase in price and the resulting decrease in the quantity demanded. What happens to total revenue?

$$TR = P \cdot Q$$

? ↑ ↓

FACT: If the percentage reduction in Q is smaller than the percentage increase in P, total revenue will rise.

As an example, suppose that the price increases from \$2 to \$3, causing the quantity demanded to go down from 6 units to 5 units. With the percentage increase in price (50%) being larger than the percentage reduction in quantity (16.66 percent), total revenue increases (from \$2,000 to \$2,700).

The percentage reduction in the quantity demanded being smaller in magnitude compared to the percentage increase in price is reflected in demand being price inelastic. Again, $E_D = \frac{\% \Delta Q_d}{\% \Delta P} < 1$ implies that $\% \Delta Q_d < \% \Delta P$.

Now consider the case where demand is price elastic; $E_D = \frac{\% \Delta Q_d}{\% \Delta P} > 1$.

FACT: If the resulting percentage increase in the quantity demand exceeds the percentage reduction in price, total revenues will necessarily rise.

The following table summarizes these and the other possible cases.

| Summary Table | | | | |
|---------------------------------|---------------------------|------------------------------|---|---|
| price elasticity of demand | direction of price change | direction of quantity change | direction of total revenue change $TR = P \cdot Q$ | |
| $E_D > 1$ (elastic demand) | ↓P | ↑Q | ↑TR | Because the percentage increase in Q is larger than the percentage decrease in P, total revenues rise. |
| | ↑P | ↓Q | ↓TR | Because the percentage decrease in Q is larger than the percentage increase in P, total revenues fall. |
| $E_D < 1$ (inelastic demand) | ↓P | ↑Q | ↓TR | Because the percentage increase in Q is smaller than the percentage decrease in P, total revenues fall. |
| | ↑P | ↓Q | ↑TR | Because the percentage decrease in Q is smaller than the percentage increase in P, total revenues increase. |
| | | | | |

(The above table is intended to help you think about and understand the various cases. Focus on understanding, not memorization!)

These special cases imply the following general patterns.

When demand is price elastic (i.e., $E_D > 1$), there is inverse (negative) relationship between changes in price and total revenue. For example, a reduction in price will result in an increase in total revenue.

When demand is price inelastic (i.e., $E_D < 1$), there is a positive relationship between changes in price and total revenue. For example, a reduction in price will result in a decrease in total revenue.

If demand has unit elasticity (i.e., $E_D = 1$), a change in price will leave revenues unchanged.

The "total revenue test" along with the fact that the demand for many farm products is price inelastic is important in understanding why "good weather is often bad for farmers' incomes."

Reconsider the demand curve shown above. Note that the price elasticity of demand is not the same as the slope of the demand curve. For a linear demand the slope is constant, implying that a one-dollar reduction in price will result in a constant (here one unit) increase in quantity demanded, no matter when you are along the demand curve. However, the price elasticity of demand goes from perfectly elastic ($E_D = \infty$) at point a, where the linear demand intersects the price axis, to perfectly inelastic ($E_D = 0$) at point c where the demand curve intersects the horizontal axis. In general, **elasticity is not the same as slope.**

Elasticity and total revenue

The concept of price elasticity of demand is extensively used by firms that are investigating the effects of a change in the prices of their commodities. Total revenue is defined as:

total revenue = price x quantity

Suppose that a firm is facing a downward sloping demand curve for its product. How will its revenue change if it lowers its price?

The answer, it turns out, is somewhat ambiguous. When the price declines, quantity demanded by consumers rises. The lower price received for each unit of output lowers total revenue while the increase in the number of units sold raises total revenue. Total revenue will rise when the price falls if quantity rises by a large enough percentage to offset the reduction in price per unit. In particular, we can note that total revenue will increase if quantity demanded rises by more than one percent when the price falls by one percent. Alternatively, total revenue will decline if quantity demanded rises by less than one percent when the price declines by one percent. If the price falls by one percent and quantity demanded falls by one percent, total revenue will remain unchanged (since the changes will offset each other). A careful observer will note that this comes down to a question of the magnitude of the price elasticity of demand. As defined above, this equals:

$$\text{price elasticity of demand (Ed)} = \left| \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}} \right|$$

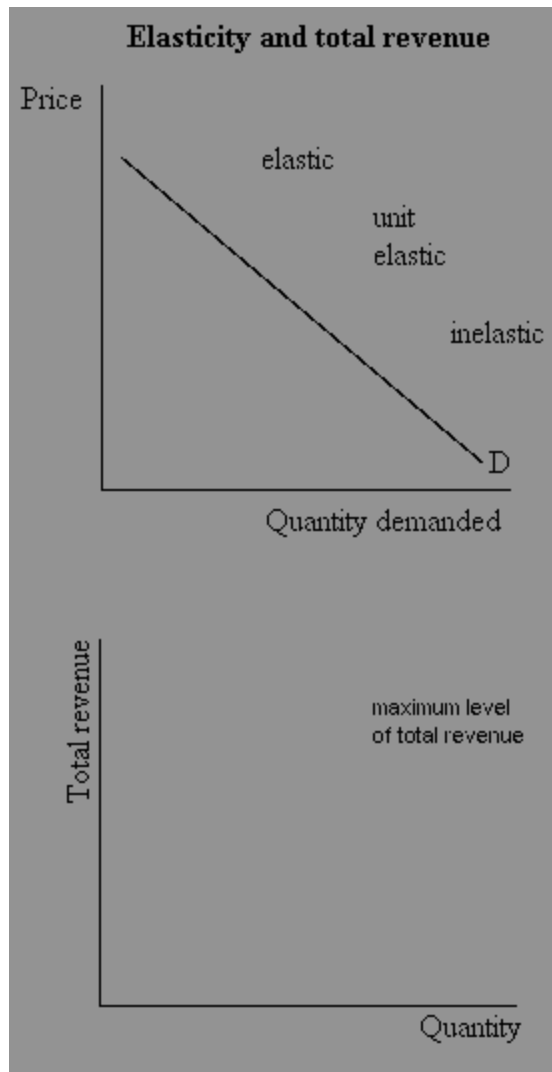
Using the logic discussed above, we can note that a reduction in price will lead to:

- an increase in total revenue when demand is elastic,
- no change in total revenue when demand is unit elastic, and
- a decrease in total revenue when demand is inelastic.

In a similar manner, an increase in price will lead to:

- a reduction in total revenue when demand is elastic,
- no change in total revenue when demand is unit elastic, and
- an increase in total revenue when demand is inelastic.

The diagram below illustrates the relationship that exists between total revenue and demand elasticity along a linear demand curve.



As this diagram illustrates, total revenue increases as quantity increases (and price decreases) in the region in which demand is unit elastic. Total revenue falls as quantity increases (and price decreases) in the inelastic portion of the demand curve. Total revenue is maximized at the point at which demand is unit elastic.

LESSON 9: INCOME ELASTICITY AND CROSS-ELASTICITIES OF DEMAND**INCOME ELASTICITY OF DEMAND**

Income elasticity is the responsiveness of demand for a commodity to changes in income.

$$\text{IED} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in income}}$$

The value for the income elasticity of demand can be positive or negative. A normal good is one where, as one would expect, its demand rises as consumers' income rises. There is a positive relationship between real income and the demand for the good in question. Some goods are known as inferior goods. With inferior goods, there is an inverse relationship between real income and the demand for the good in question. If real incomes rise, the demand for an inferior good will fall. If real incomes fall (in a recession, for instance), the demand for an inferior good will rise.

| IED | IED Value | Type of good |
|----------------------------|------------------|---------------------|
| Income elastic | IED > 1 | Normal good |
| Income inelastic | IED < 1 but > 0 | Normal good |
| Negative income elasticity | IED < 1 | Inferior good |

Factors Affecting Income Elasticity of Demand**1. Degree of necessity of a good**

The more necessary a good, the more people will want to buy it whatever their level of income and therefore the more income inelastic it will tend to be

2. The rate at which the desire for a good is satisfied as consumption increases

If desire for the good is not quickly satisfied, then people will want to go on buying the good as their income level increases and therefore the more income elastic the good will tend to be.

3. The level of income of consumers

As income levels change, so the pattern of spending will change. The higher the level of income, the more goods will tend to become income elastic.

Applications of Income Elasticity of Demand

Income elasticity is an important concept for firms in considering the size of the market for their product, in response to changes in national income over the long term and short term fluctuations in the economy. If the firm is producing an income elastic product and the rate of economic growth is increasing then they can expect the demand for their product to grow proportionately faster and they will need to plan accordingly. The same firm, with an income elastic product, can expect demand to fall considerably if there is a recession.

QUESTION

- 1. Average real incomes rise by 8% over a given year. As a result, the demand for cars rises by 24%. What is the income elasticity of demand (ceteris paribus)?**
- 2. Average real incomes rise by 5% over a given year. As a result, the demand for bus travel falls by 10%. What is the income elasticity of demand (ceteris paribus)?**
- 3. During a recession, average real incomes fall by 5% over a given year. The income elasticity of demand with respect to Brand X lager is +2.5. If initial sales of Brand X nation-wide were 25 million litres, what will the new sales figure be as a result of the rise in income (ceteris paribus)?**
- 4. Using the concept of income elasticity of demand, compare the impact of a fall in the level of disposable income on (i) a supermarket chain (ii) DIY shops (iii) a holiday firm.**

CROSS ELASTICITY OF DEMAND

This is the responsiveness of demand for one good to a change in the price of another.

$$\text{CED}_{ab} = \frac{\% \text{ change in quantity demanded of good A}}{\% \text{ change in price of good B}}$$

This relationship will be **positive** if the goods are **substitutes** and **negative** if the good are **complements**.

The cross price elasticity of demand is useful for economists because it tells you whether two goods (A and B) are **substitutes**, **complements** or even unrelated. Briefly, the price of coffee falls, so the demand for tea falls. This is a positive relationship, as is true for **all** pairs of goods that are substitutes. If the cross price elasticity of demand is **positive** then the two goods in question will be **substitutes**. Similarly, when the price of tea falls, so the demand for sugar rises. This is a negative relationship, as is true for **all** pairs of goods that are complements. If the cross price elasticity of demand is **negative** then the two goods in question will be **complements**. What will happen to the demand for sugar when the price of cinema admissions changes, ceteris paribus? Absolutely nothing. The two goods are completely unrelated. If the cross price elasticity of demand is **zero** then the two goods in question will be **totally unrelated** (or independent).

Finally, note that the higher the value of the cross price elasticity, the stronger the relationship between the two goods in question, whether they be substitutes or complements. The nearer the figure is to zero, the more likely that the two goods are unrelated.

Applications

The cross elasticity of demand provides a measure for firms of the extent to which their goods are substitutes for other goods, and therefore indicates the degree of competition in the market.

QUESTIONS

1. Calculate the cross elasticity of demand in each of these examples and state whether they are substitutes or complements. Remember to include a positive or negative sign as appropriate.

(i) A 50% increase in the price of coffee brings about a 20% increase in the demand for tea.

(ii) A 50% fall in the price of computers brings about a 60% increase in the demand for discs.

2. Assume the following cross elasticity of demand relationships:

Coca Cola and Pepsi + 1.5

Coca cola and Fresh Juice + 0.2

The price of Coca Cola has risen from £1.00 to £1.20 a bottle. What effect does this have on the demand for Pepsi and Fresh juice?

Summary - Cross Elasticity and Income Elasticity

A. Cross Elasticity of Demand

The cross elasticity of demand is a measure of the extent to which the demand for a good changes when the price of a substitute or complement changes, other things remaining the same.

1. The formula used to calculate the cross elasticity of demand is:

$$\text{Cross elasticity of demand} = \frac{\text{Percentage change in quantity demanded of a good}}{\text{Percentage change in price of one of its substitutes or complements}}$$

2. The cross elasticity of demand for a substitute is positive.

3. The cross elasticity of demand for a complement is negative.

B. Income Elasticity of Demand

The income elasticity of demand is a measure of the extent to which the demand for a good changes when income changes, other things remaining the same.

1. The formula used to calculate the income elasticity of demand is:

$$\text{Income elasticity of demand} = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in income}}$$

2. For a normal good, the income elasticity of demand is positive.

3. When the income elasticity of demand is greater than 1, demand is income elastic. 4. When the income elasticity of demand is between zero and 1, demand is income inelastic.

5. For an *inferior* good, the income elasticity of demand is less than 0.

LESSON 10: PRICE ELASTICITY OF SUPPLY

The price of elasticity of supply measures how changes in price affect the quantity supplied. Supply is said to be elastic when changes in price greatly affect the quantity supplied. Supply is said to be inelastic when changes in price do not greatly affect the quantity supplied. The price elasticity of supply depends on how easily sellers can change the amount of the good they produce. When it is difficult to change the amount produced supply tends to be inelastic, when it is easy to change the amount produced supply tends to be elastic. The price elasticity of supply is the percentage change in the quantity supplied divided by the percentage change in the price. That is

Price elasticity of supply = % change in quantity supplied / % change in price

For example suppose that an increase in price from 6.00 to 6.30 raises the amount produced from 12000 to 13500.

Percentage change in price = $(6.30 - 6.00) / 6.00 * 100 = 10$ percent.

Similarly we calculate the percentage change in quantity supplied = $(13,500 - 12,000) / 12000 * 100 = 15$ percent.

Price elasticity of supply = $15 \text{ percent} / 10 \text{ percent} = 1.5$

Supply elasticities are usually positive with values greater than zero.

Applications

1. Prices may rise when there is insufficient spare capacity in the economy to respond to an increase in demand.

2. Inelasticity of supply in the short run contributes to understanding why the price of primary products tends to be more volatile than the price of manufactured goods.

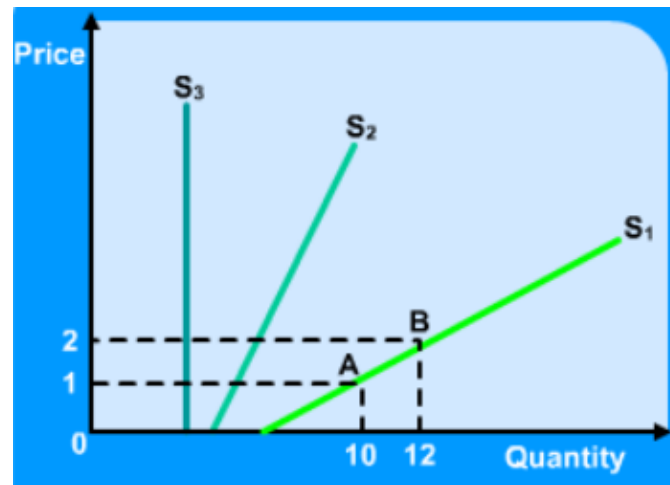
Elastic, inelastic and unitary supply

Notice that the elasticities are positive. Supply curves tend to be upward sloping, so the relationship between price and quantity supplied is nearly **always** positive.

As with demand, a perfectly elastic supply curve is horizontal, implying that firms can supply as much as they want at a given price. Another way of looking at it is that if there is a change in price then the quantity supplied will fall to zero.

The diagrams

Unlike with elasticity of demand where the slope determines whether demand is elastic or inelastic at a specific point, with supply curves, the issue is not so much the gradient of the curve but whether it cuts the x-axis, the y-axis or the origin.



In the diagram above, S₁ is quite a flat curve but S₂ is fairly steep. But the gradient is not the issue. Both curves have an elasticity of **less** than one because they both cut the **x-axis**. The percentage change in quantity supplied **has to** be higher than the percentage change in price because one is working out the percentage change in quantity supplied from a higher initial figure.

You might expect the flatter curve to be relatively elastic. Looking at the move from point A to point B in the diagram, if the price rises from 1 to 2 (a 100% increase) this causes quantity supplied to rise from 10 to 12 (a 20% rise). This gives an elasticity of +0.2 (20 divided by 100), which is very **inelastic**.

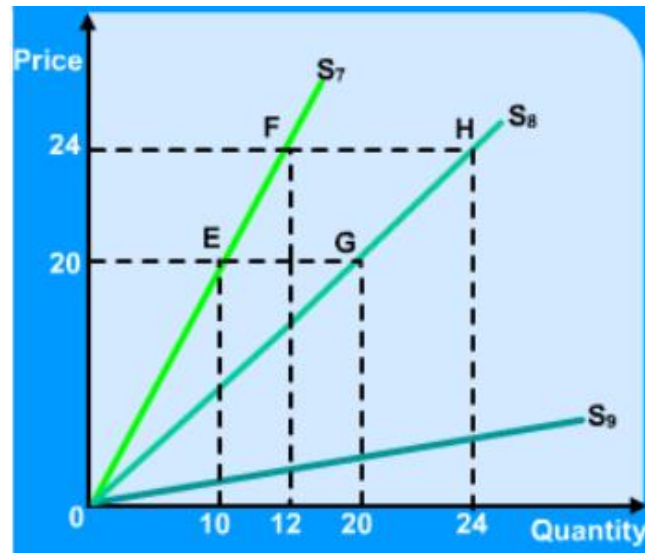
The vertical curve S_3 is perfectly inelastic in the same way that a vertical demand curve is **perfectly inelastic**.



In the diagram above, S_5 is quite a flat curve but S_4 is fairly steep. Again, the gradient is not the issue. Both curves have an elasticity of **more** than one because they both cut the **y-axis**. The percentage change in price **has to** be higher than the percentage change in quantity demanded because one is working out the percentage change in price from a higher initial figure.

You might expect the steeper curve to be relatively inelastic. Looking at the move from point C to point D in the diagram, if the price rises from 10 to 12 (a 20% increase) this causes quantity supplied to rise from 2 to 4 (a 100% rise). This gives an elasticity of +2.5 (50 divided by 20), which is very **elastic**.

The vertical curve S_6 is **perfectly elastic** in the same way that a horizontal demand curve is perfectly elastic.



In the diagram above, all three curves go through the origin. Again, the gradient is not the issue. Whether the curve is steep, flattish or at an angle of 45 degrees, the percentage change in the quantity supplied will be **exactly the same** as the percentage change in price.

Look at the moves from point E to F and from point G to H. In both cases the price increases from 20 to 24 (a 20% increase). When moving from E to F, the quantity supplied rises from 10 to 12 (a 20% rise). When moving from G to H the quantity supplied rises from 20 to 24 (a 20% rise). In both cases the percentage change in quantity supplied is **exactly the same** as the percentage change in price.

What determines PES?

Stock Levels:

The more stock a producer has available to him, the more easily the producer will be able to release more stock onto the market, so the higher the PES value will be. If demand goes up, the price goes up, and if the price goes up, the producer wants to be able to supply more of his good. A large increase in supply due to the price change would give the good a high PES value.

Spare Capacity:

If the firm has enough spare capacity, it should be able to increase its supply to the level that the product is being demanded at. A lot of spare capacity means a high PES value.

Time Period:

The longer a producer has to change its supply, the higher PES is likely to be. This is because they have more opportunity to make the change in output occur, leading to increased PES.

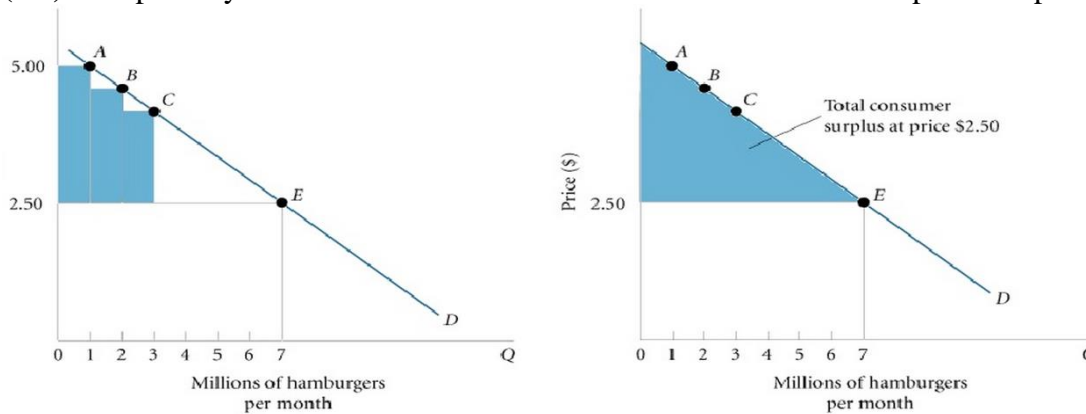
Factor Substitution:

The more versatile the factors of production of a good are, the more likely the PES is to be high. This is because a change in price would significantly change supply

Lesson 11: Consumer and producer surplus

What is Consumer Surplus?

The difference between the total value of the goods purchased and the total price paid for those goods is known as **consumer surplus (CS)**. Graphically it is the area under the demand curve and above the purchase price up to the # of units purchased.[1]



Mathematically:

Consumer Surplus = Value of Units Consumed – Price Paid to purchase those units

*Consumer Surplus = 0.5(Base x Height) = 0.5[Q_0 *($Y_{intercept} - P_0$)]*

As you can see, Consumer A was willing to pay \$5 for a hamburger but only had to pay \$2.50. Their individual consumer surplus is equal to that difference. If we add each consumer's difference up to the quantity sold we get the consumer surplus of the entire market.

Note that in this interpretation we are treating the demand curve as the *marginal benefit curve* because it shows the highest price that buyers are willing to pay for each additional unit. As the quantity of goods owned increases the marginal demand or willingness to pay for an incremental unit decreases (see *utility theory*).

Defining Producer Surplus

Producer surplus (PS) is similar to consumer surplus but from the perspective of the suppliers. It is the difference between the price producers receive for the total number of sold goods and the cost they pay to produce those goods. That is:

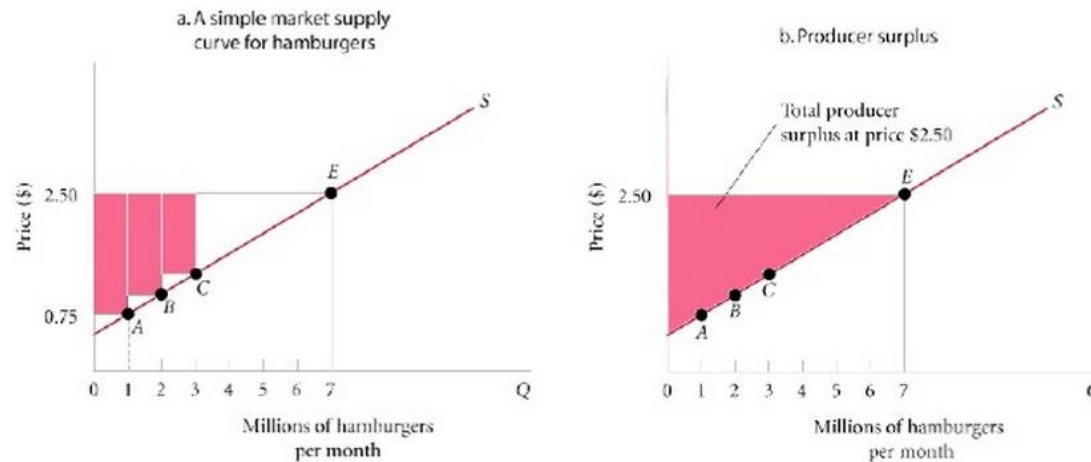
Producer Surplus = Total Revenue – Total variable cost of producing the quantity sold

*Producer Surplus = 0.5(base * height) = 0.5[$Q_0 * (P_0 - Y_{intercept})$]*

Where total revenue = # of units sold * price per unit.

Graphically, if we assume perfect competition, **the supply curve can be interpreted as the marginal cost curve**, where marginal cost is defined as the lowest price at which a seller is willing to sell the next unit of a good.

Producer surplus is shown as the area above the marginal cost curve and below the price line up to the quantity produced.[2]



Producer A's cost of goods is \$0.75 but they're able to sell for \$2.50. That extra \$1.75 is their individual producer surplus.

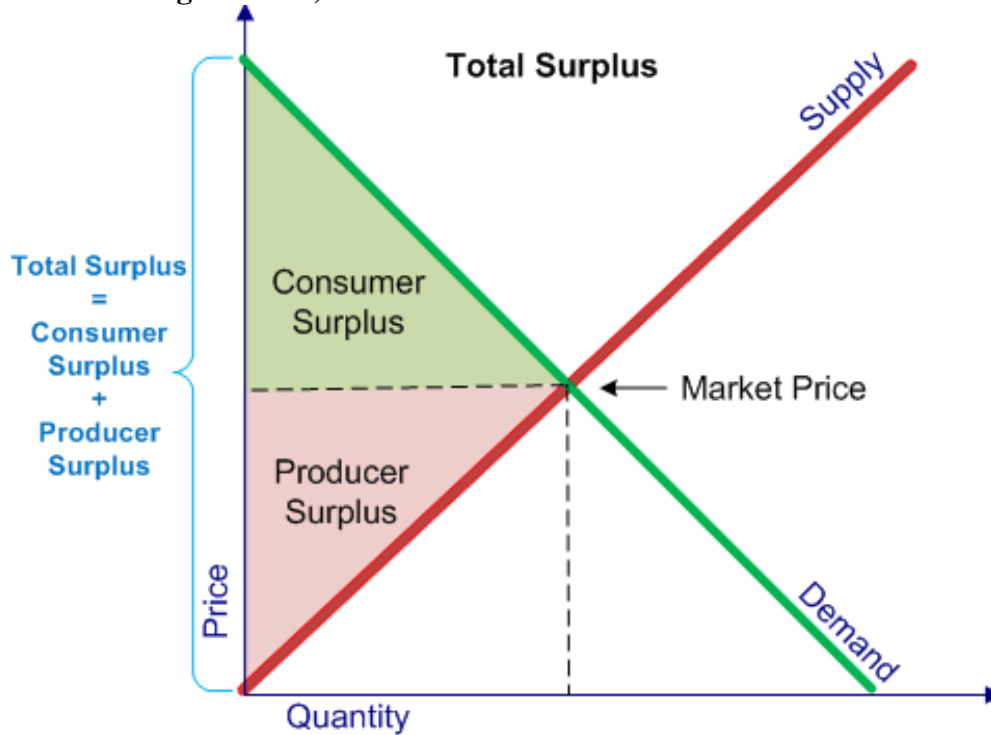
Total Surplus/Social Welfare - The Sum of CS and PS

Total surplus is the sum of the consumer and producer surplus. We can think of it as the net value to society, or *social welfare*:

Total Surplus = consumer surplus + producer surplus

As total surplus increases, social welfare goes up.

Note that in a competitive market the area of maximum social welfare occurs at market equilibrium where $Q_s = Q_d$ (i.e. where Price = Marginal Cost).



That is, the supply curve represents marginal cost and the demand curve represents marginal benefit and competition drives us towards an efficient equilibrium that allocates resources efficiently.

The division of total surplus between consumers and suppliers is an important indicator for the nature of the market. From the standpoint of equality and bargaining power alike, we care about whether consumers or producers are benefitting more.

To determine the answer we look at the relative steepness of the supply and demand curves.

- When supply curve is steeper than the demand curve, $PS > CS$
- When the demand curve is steeper than the supply curve, $CS > PS$

Lesson 12: Maximum and minimum prices; Taxes (direct and indirect) and Subsidies**Government microeconomic intervention**

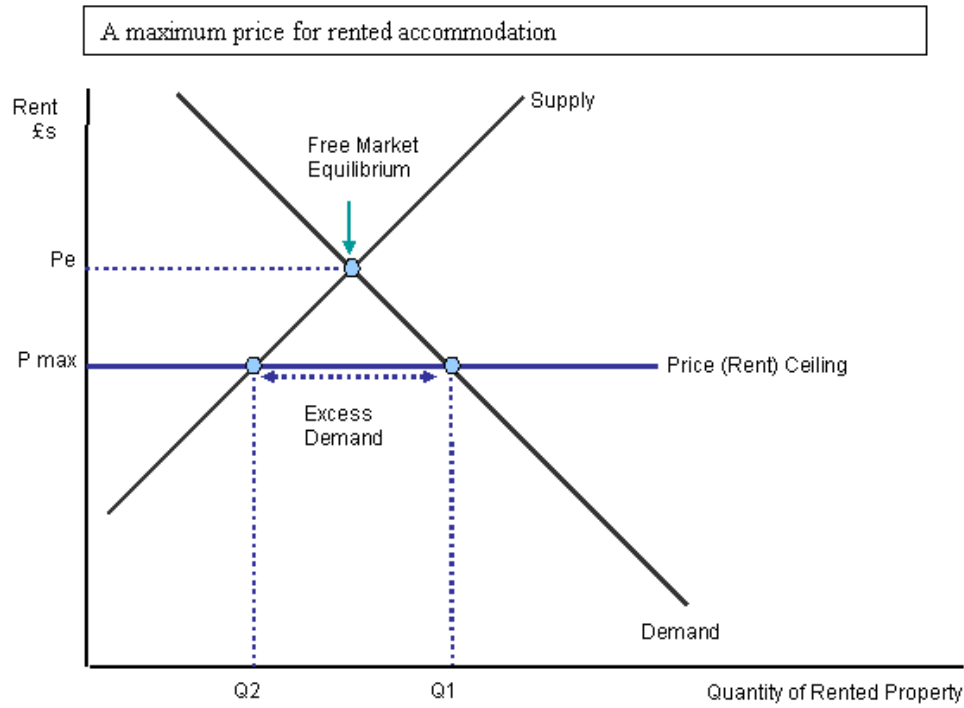
Governments may intervene in markets to alter the price or the quantity exchanged.

Governments may intervene in a market by:

- setting a minimum price;
- setting a maximum price;
- imposing tax; and
- giving a subsidy.

Maximum prices (ceilings)

The Government can set a **legally imposed maximum price** in a market that suppliers cannot exceed – in an attempt to prevent the market price from rising above a certain level. To be effective **a maximum price has to be set below the free market price**. One example of a maximum price might when shortage of essential foodstuffs threatens large rises in the free market price. Other examples include rent controls on properties. A maximum price seeks to control the price – but also involves a normative judgement on behalf of the government about what that price should be. An example of a maximum price is shown in the next diagram. The normal free market equilibrium price is shown at P_e – but the government decides to introduce a maximum price of P_{max} . This price ceiling creates excess demand for the product equal to quantity $Q_2 - Q_1$ because the price has been held below the normal equilibrium.

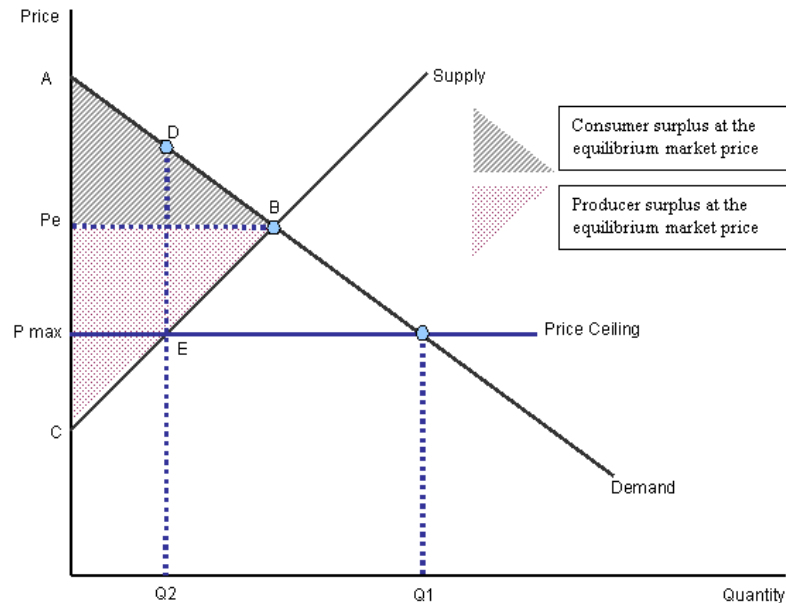


It is worth noting that a price ceiling set above the free market equilibrium price would have no effect whatsoever on the market – because for a price floor to be effective, it must be set below the normal market-clearing price.

Maximum prices and consumer and producer welfare

How does the introduction of a price ceiling affect consumer and producer surplus. This is shown in the next diagram. At the original equilibrium price consumer surplus = triangle ABP_e and producer surplus equals the triangle P_eBC .

Because of the maximum price ceiling, the quantity supplied contracts to output Q_2 . Consumers gain from the price being set artificially lower than the equilibrium, but there is a loss of consumer welfare because of the reduction in the quantity traded. At P_{max} the new level of consumer surplus = the trapezium $ADEP_{max}$. Producer surplus is reduced to a lower level $P_{max}EC$. There has been a net reduction in economic welfare shown by the triangle DBE .



Black Markets

A **black market** (or shadow market) is an illegal market in which the normal market price is higher than a legally imposed price ceiling (or maximum price). Black markets develop where there is excess demand (or a shortage) for a commodity. Some consumers are prepared to pay higher prices in black markets in order to get the goods or services they want.

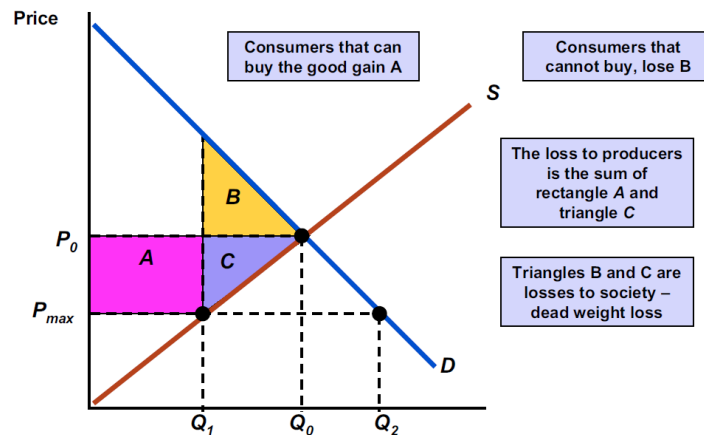
When there is a shortage, higher **prices act as a rationing device**.

- Good examples of black markets include tickets for major sporting events, rock concerts and black markets for children's toys and designer products that are in scarce supply.
- Another example is the black market for the anti-impotence drug Viagra and its new rival products now coming onto the market
- There is also evidence of black markets in the illegal distribution and sale of computer software products where pirated copies can often dwarf sales of legally produced software.

Rationing when there is a market shortage

Rationing when there is a maximum price might also be achieved by allocating the good on a 'first come, first served' basis – e.g. queues of consumers. Suppliers might also allocate the scarce goods by distributing only to preferred customers. Both of these ways of rationing goods might be considered as inequitable (unfair) – because it is likely that eventually those who might have the greatest need for a commodity are unlikely to have their needs met.

Price Control and Surplus Changes

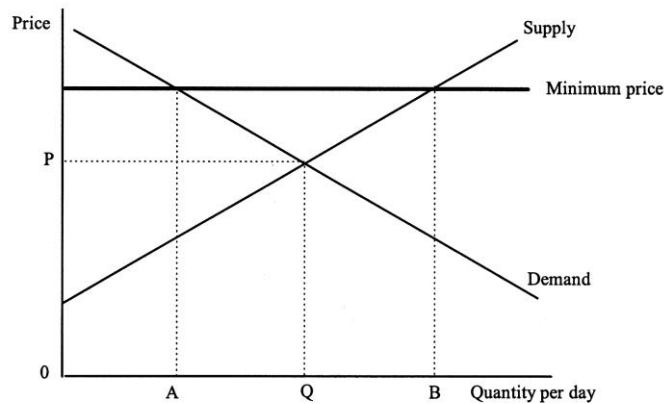


The total loss is equal to area B + C. The deadweight loss is the inefficiency of the price controls – the total loss in surplus (consumer plus producer).

Price Floors

The opposite of a price ceiling is a price floor. A price floor is an artificially introduced minimum for the price of a good. In most cases, the price floor is above the market price. Price floors are usually put in to benefit sellers. For example, price floors are sometimes used for agricultural products. The market price can sometimes be so low that farmers cannot make enough money to support themselves. In such cases, the government steps in and sets a price floor, which can cause problems of its own.

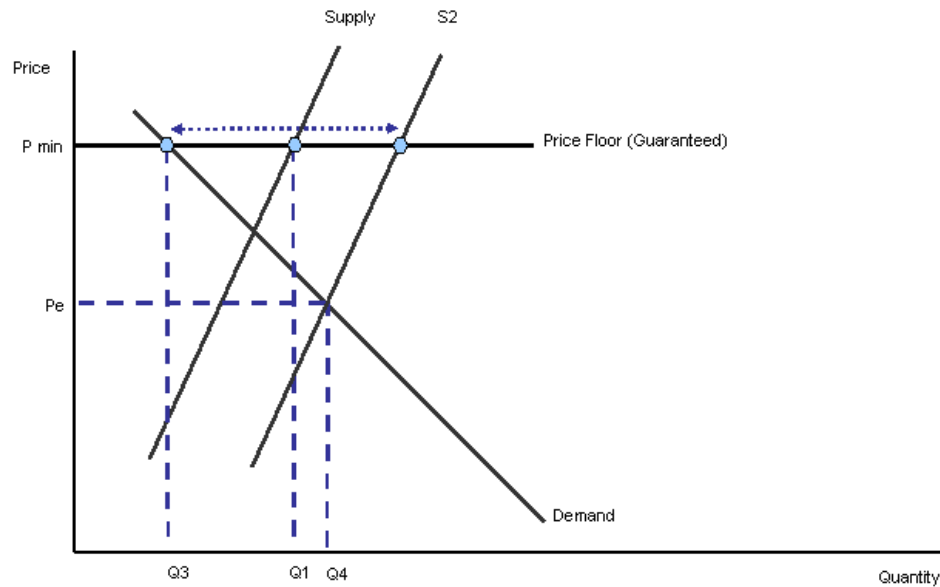
Minimum price above equilibrium. Governments may do this because they feel that the equilibrium price is too low. However, it may create the problem of surpluses as is shown by AB in the following diagram.



In order to deal with the surplus, the government can come up with a buffer stock scheme. If there is a surplus one year, the market price would fall. This is when the government will buy the surplus stocks and store the goods. This reduces supply and keeps prices higher. If there is a shortage in the next year, the government can sell from its buffer stock to reduce prices and increase market supply.

The diagram below illustrates the operation of a buffer stock scheme. The government offers a guaranteed minimum price (P_{\min}) to farmers of wheat. The price floor is set above the normal free market equilibrium price. Notice that the price elasticity of supply for

wheat in the short term is very low because of the length of time it takes for producers to supply new quantities of wheat to the market. (Indeed in the momentary period, we would draw the supply curve as vertical indicating a fixed supply).



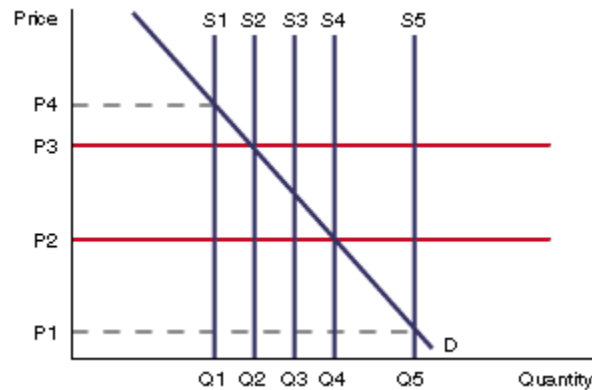
If the government is to maintain the guaranteed price at P_{min} , then it must buy up the excess supply ($Q_3 - Q_1$) and put these purchases into intervention storage. Should there be a large rise in supply due to better than expected yields of wheat at harvest time, the market supply of wheat will shift out putting downward pressure on the free market equilibrium price. In this situation, the government will have to intervene once more in the market and buy up the surplus stock of wheat to prevent the price from falling. It is easy to see how if the market supply rises faster than demand then the amount of wheat bought into storage will grow.

The problems with buffer stock schemes

In theory buffer stock schemes should be profit making, since they buy up stocks of the product when the price is low and sell them onto the market when the price is high. However, they do not often work well in practice. Clearly, perishable items cannot be stored for long periods of time and can therefore be immediately ruled out of buffer stock schemes.

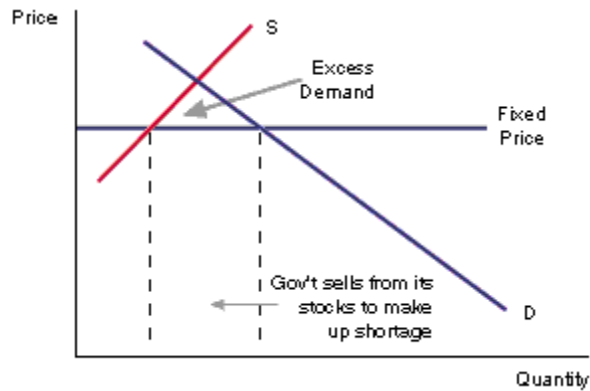
Setting up a buffer stock scheme also requires a significant amount of start up capital, since money is needed to buy up the product when prices are low. There are also high administrative and storage costs to be considered.

A buffer stock scheme aims to stabilise prices by keeping stocks of a product. The stocks are bought and sold to keep prices within certain limits.



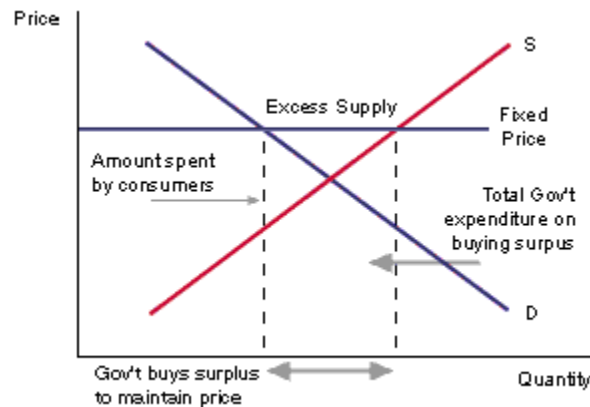
As long as the level of supply curve remains between S2 and S4 the price will remain within the limits set. However, if supply is very limited and shifts to S1, price would go beyond the higher limit. In this case the authorities could release buffer stocks and keep the price within the limits. Too much supply (S5) would reduce the price and in this case the authorities could buy some of the product and put it into stock to limit the supply and keep the price higher.

If the government or some other agency is trying to fix the price of a product they can do this by buying and selling from stocks. This is often called a buffer stock scheme. This diagram shows the operation of the scheme with a bad harvest.



When there is a bad harvest, this leads to a shortage of supply (shown by excess demand on the diagram) and this would normally push the price up. To prevent this, the government needs to sell from their stocks to keep the price at the fixed price.

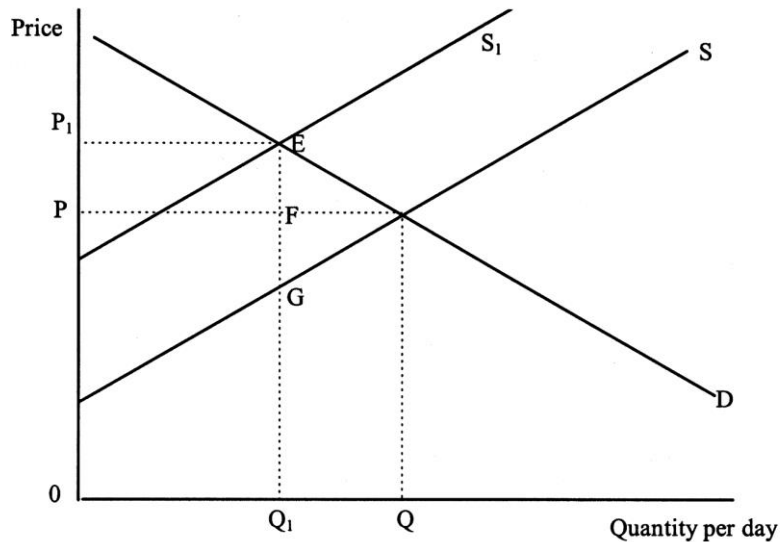
If the government or some other agency is trying to fix the price of a product they can do this by buying and selling from stocks. This is often called a buffer stock scheme. This diagram shows the operation of the scheme with a good harvest.



When there is a good harvest, this leads to a surplus (shown by excess supply on the diagram) and this would normally push the price down. To prevent this, the government needs to buy the surplus to keep the price at the fixed price.

Imposing expenditure taxes

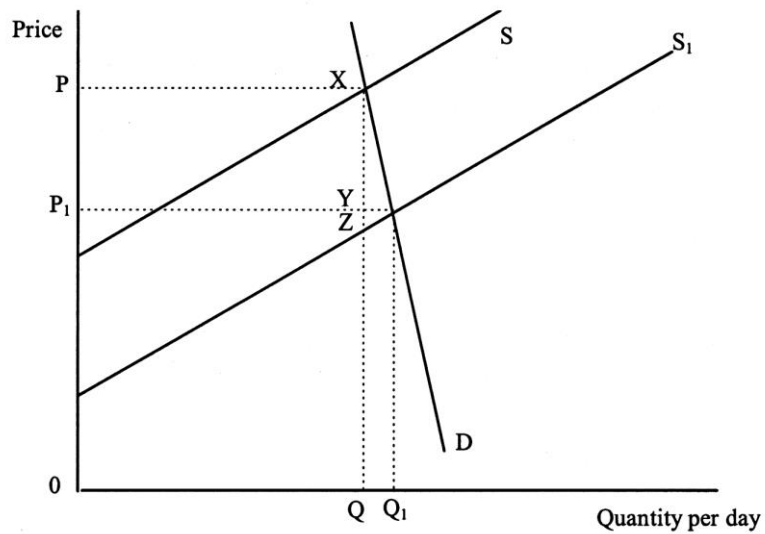
A tax on expenditure has the same effect as increasing the cost of production, since the suppliers have to pay it to the government. Producers will raise their selling price to recover this increased cost, although they may absorb part of the cost by taking a reduced profit.



Tax of EG . Supply curve moves up vertically by EG . Of the tax, consumers pay EF , i.e. price goes up from P to P_1 and the producer pays FG out of his profit.

Share of the tax burden depends on the proportion which the supplier can pass on to the consumer, which in turn depends on how responsive the consumer is to an increase in price. If the supplier believes that consumers will not cut their demand significantly, i.e. if demand is price inelastic, then more can be passed on.

Subsidies have the opposite effect to taxes. Subsidies are given to encourage supply and keep prices low, e.g. rural bus services. Costs of production are reduced and the producer may pass this on to the consumer by lowering price. The extent to which it is passed on depends on the price elasticity of demand. The more demand is price inelastic, the more will be passed on. In the following diagram, XZ is the subsidy, the consumer benefits by XY and the supplier gains by YZ .



Lesson 13: Transfer payments; Direct provision of goods and services

A tax is a compulsory charge imposed upon an individual or legal entity by government to fund various public expenditures. Tax may be levied on income, property and even at the time of purchasing a commodity. Failure to pay tax is usually punishable by law.

Types of taxes

The most fundamental classification of taxes is based on who collects the taxes from the tax payer. There are two types of taxes direct and indirect taxes.

Direct Taxes are directly paid to the government by the taxpayer. It is a tax applied on individuals and organizations directly by the government e.g. income tax, corporation tax, wealth tax etc.

Indirect Taxes are applied on the manufacture or sale of goods and services. These are initially paid to the government by an intermediary, who then adds the amount of the tax paid to the value of the goods / services and passes on the total amount to the end user. Examples of these are sales tax, service tax, excise duty etc.

Specific and ad valorem taxes:

There are two types of indirect tax; specific and ad valorem.

- A specific unit tax

A unit tax is a set amount of tax per unit sold, such as a 10p tax on packets of cigarettes.

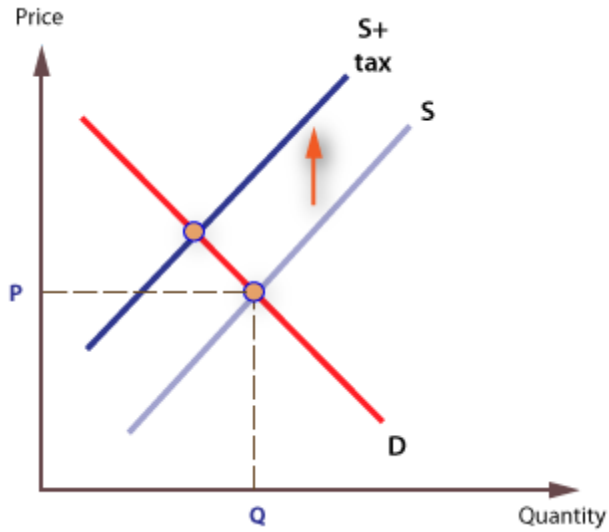
- An ad valorem tax

An ad valorem tax is a percentage tax based on the value added by the producer. For instance, if the market value of a 2,000 square-foot home is \$100,000, the ad valorem tax levied will be based solely on the home's \$100,000 value, regardless of its relative physical size. Municipal property taxes are an example of an ad valorem tax. One advantage of ad valorem taxes is that the tax revenue to the government can rise automatically as the economy grows. This means that the tax rate does not need to be adjusted frequently, as in the case of specific unit taxes, such as duties on cigarettes and alcohol.

The imposition of either type of indirect tax has an effect similar to a rise in production costs. This means that a firm's supply curve will shift up vertically by the amount of the tax.

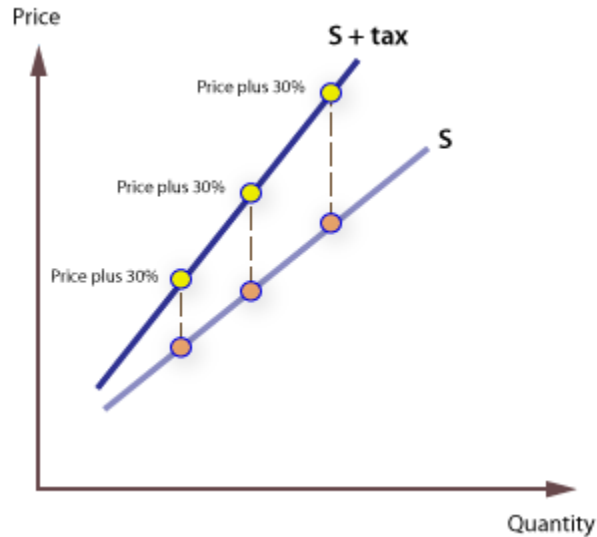
A specific unit tax

A specific *unit tax* will shift up the supply curve by the full *amount* of the tax, so that the new curve is parallel to the original one, as shown.



An ad valorem tax

The imposition of an *ad valorem tax* will shift up the supply curve by a *certain percentage*, meaning that the new supply curve will not be parallel to the original.



Proportional, Progressive and Regressive taxes:

Regressive Taxes

Under a regressive tax system, individuals and entities with low incomes pay a higher amount of that income in taxes compared to high-income earners. Rather than implementing a tax liability based on the individual or entity's ability to pay, the government assesses tax as a percentage of the asset that the taxpayer purchases or owns.

For example, a sales tax on the purchase of everyday products or services is assessed as a percentage of the item bought and is the same for every individual or entity. However, a sales tax of 7% has a greater burden on lower-income earners than it does on the wealthy because the ability to pay is not taken into consideration. Regressive taxes include real estate property taxes, state and local sales taxes as well as excise taxes on consumables such as cigarettes, gasoline, airfare or alcohol.

Proportional Taxes

A proportional tax system, or a flat tax system, assesses the same tax rate to taxpayers regardless of income or wealth. It is meant to create equality between marginal tax rate and average tax rate paid. Under a proportional tax system, individual taxpayers pay a set percentage of their income regardless of total income earned.

For example, an income tax of 10% that does not increase or decrease as income rises or falls results in a proportional tax. In this example, an individual who earns \$20,000 annually pays \$2,000 under a proportional tax system, while someone who earns \$200,000 each year pays \$20,000 in taxes. Some specific examples of proportional taxes include per capita taxes, gross receipts taxes and occupational taxes.

Progressive Taxes

The current federal income tax is a progressive tax system, in that the proportion of tax liability rises as an individual or entity's income increases. Tax burdens are meant to be more of an imposition to wealthy, high-income earners than they are to low- or middle-class individuals.

Under a progressive tax system, taxes assessed on income and business profits are based on a progressive or increasing tax rate schedule. Marginal tax rates under a progressive tax system are often higher than the average tax rates that are paid. Estate taxes are another example of progressive taxes, as a greater burden is placed on wealthy individuals.

What is the difference between a **marginal** and **average** tax rate? Even though it may not be so obvious, understanding the difference between a marginal and average tax rate can help lower your total taxes.

Knowing the difference between marginal and average tax rates is important for good tax planning.

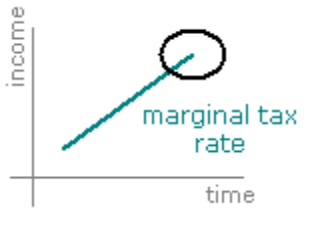
Most countries employ so called **graduated** or **progressive tax system**. Graduated tax system is aiming higher tax rates at people with higher incomes. This means that the more you earn, the higher your tax rate will be. You can see that in the following table:

| taxable income between | tax bracket |
|---------------------------|-------------|
| 0 and 8,025 | 10% |
| 8,025 and 32,550 | 15% |
| 32,550 and 78,850 | 25% |
| 78,850 and 164,550 | 28% |
| 164,550 and 357,700 | 33% |
| 357,700 and above | 35% |

One can clearly see the progressivity of the tax system. Wealthy people with taxable income pay 35% on their income in the top bracket. Less fortunate people pay only 10% on their income.

Marginal Tax Rate

The **marginal tax rate** is the rate of tax applied to the last dollar added to your taxable income. For example, if you are making \$90,000 per year (taxable income, that is total income less adjustments, deductions, exemptions), then your 90,000th dollar will be taxed at the 28% tax rate. Your 90,001th and every other tax dollar will be also taxed with the **28%** rate until your taxable income reaches \$164,550.



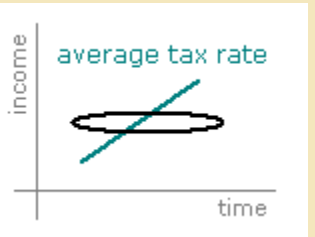
The 28% tax rate is the marginal tax rate in this case. It is important to mention that not all income dollars will be taxed at the 28% rate. Your 78,849th income dollar will be taxed at the 25% tax rate. And so on.

Average Tax Rate

The average tax rate is calculated by dividing the **total income taxes paid** by your **total income**.

$$\text{average tax rate (ATR)} = \frac{\text{total income taxes paid}}{\text{total income}}$$

The average tax rate incorporates taxes paid at all levels of income, so naturally it is obvious that it will be **less than the marginal rate**.



Note, high-income earners (taxable income over \$2,000,000) will have their average and marginal tax rates close to equal.

Example: Marginal and average tax rate calculation

Let's demonstrate the concept on Joe Smith. Joe Smith is SINGLE and makes \$105,000 of taxable income per year. That is his income after accounting for all deductions and exemptions.

Joe's tax in for example 2008 is the following:

\$782.50 (tax on the first \$7,825 of Joe's income, taxed at the 10% rate), *plus*
\$3,603.75 (tax on the income between \$7,825 and \$31,850, taxed at the 15% rate), *plus*
\$11,312.50 (tax on the income between \$31,850 and \$77,100, taxed at the 25% rate), *plus*
\$7,812.00 (tax on the income between \$77,100 and \$105,000, taxed at the 28% rate)

Joe's total tax liability is \$23,510 (rounded down). His **marginal tax rate is 28%**. The next dollar Joe earns will be taxed at 28%.

Joe's **average tax rate** is calculated as \$23,510 divided by \$105,000. Theoretically, it would be divided by Joe's total income which in our case would be \$105,000 plus any deductions, exceptions, and adjustment he may have done to arrive to his \$105,000 taxable income figure. For the simplicity of this explanation, we divide Joe's tax liability by his taxable income. Joe's average tax rate is therefore **22.4%**.

On average Joe is paying 22.4 cents for every dollar of taxable income he earns.

Joe's average tax rate is lower than his marginal tax rate because most of his income is taxed at lower tax rates.

The Canons of Taxation:

A tax has no connection with the benefit received by the payer. Also, the charge is compulsory. Hence in distributing the burden of taxation, a person's share cannot be decided with reference to the benefit derived by him.

Adam Smith laid down four principles to guide the taxing authority.

Adam Smith's Canons:

The principles or canons of taxation enunciated by Adam Smith were so important that they have become classic.

They are:

- **Canon of Equality:**

"The subjects of every State," Smith asserted, "ought to contribute towards the support of the Government as nearly as possible in proportion to their respective abilities, that is, in proportion to the revenue which they respectively enjoy under the protection of the State. In the observance or neglect of this maxim consists what is called the equality or inequality of taxation." Equality here does not mean that all tax-payers should pay an equal amount. Equality here means equality or justice. It means that the broadest shoulders must bear the heaviest burden.

- **Canon of Certainty:**

Adam Smith further said, "The tax which each individual has to pay ought to be certain and not arbitrary. The time of payment, the amount to be paid ought all to be clear and plain to the contributor and to every other person." The individual should know exactly what, when and how he is to pay a tax otherwise it will cause unnecessary suffering. Similarly, the State should also know how much it will receive from a tax.

- **Canon of Convenience:**

Smith wrote, "Every tax ought to be levied at the time or in the manner which it is most likely to be convenient to pay it." Obviously, there is no sense in fixing a time and method of payment which are not suitable. Land revenue in India is realised after the harvest has been collected. This is the time when cultivators can conveniently pay.

- **Canon of Economy:**

Lastly, Adam Smith held that "every tax ought to be so contrived as both to take out and keep out of the pockets of the people as little as possible over and above what it brings into the public treasury of the State." This means that the cost of collection should be as

small as possible. If the bulk of the tax is spent on its collection, it will take much out of the people's pockets but bring very little into the State's pocket. It is not a wise tax.

Transfer payments

Transfer Payments: These are welfare payments made available through the social security system including the Jobseekers' Allowance, Child Benefit, State Pension, Housing Benefit, Income Support and the Working Families Tax Credit. The main aim of transfer payments is to provide a basic floor of income or minimum standard of living for low income households. And they allow the government to change the final distribution of income.

Direct provision of goods and services

Pure public goods are ones that when consumed by one person can also and at the same time be consumed by everyone else and where it is impossible to exclude others from its consumption.

An Example of a pure public good is **national defence**.

However, there are a number of goods and services that have these characteristics to a lesser extent and therefore are also problematic when left to market forces to provide:

- the police service;
- street lighting;
- lighthouses;
- flood-control dams;
- pavements;
- public drainage.

It is likely that the market, left to itself, will seriously **under-produce** such goods, or possibly **not produce them at all**. This is because the market will only provide goods for which a profit can be made, and **pure public goods** possess two important properties that together make their production on the basis of private profitability extremely difficult. These features are:

- **non-rivalry (or non-diminishability);**
- **non-excludability.**

Firstly, consider the characteristic of **non-rivalry**: this means that one person's use of the public good does not deprive any other person of such use or does not diminish the amount available to others; for example, if one person enjoys the benefits of being protected by the police-force, a flood control dam or the national defence system, it does not prevent everyone else doing the same; similarly, if one person benefits from walking along a street at night-time which is paved, free of pot-holes, and well-lit, the benefits and the availability to others would not be diminished (In a strict sense this is not true so these are examples of **Quasi-Public Goods**).

Secondly, consider the characteristic of **non-excludability**: this means that when the public good is provided to one person, it is not possible to prevent others from enjoying its consumption. For example, if a police force, a flood-control dam or a national defence system is successful in offering protection to some citizens of a country, once it has been produced it is impossible to exclude anyone within the country from consuming and benefiting from them. Similarly, for a paved and well-lit public street, nobody can be prevented from enjoying these benefits (Again this is not strictly true but in practice this remains the case).

Thus, in the case of public goods, **the market fails because the private sector would be unwilling to supply them** - their non-excludability makes them non-marketable, because non-payers cannot be prevented from enjoying the benefits of consumption, and therefore prices cannot be attributed to particular consumers.

The non-rivalry also takes away the idea of consumers competing for units of the good to consume and ensuring that competition sets a market price through competition.

This involves the **free-rider problem**, which arises when it is impossible to provide a good or service to some without it automatically and freely being available to others who do not contribute to its cost.

For example, imagine a situation in which you shared an island with five other inhabitants; if you paid privately for an army to defend the island against violent invaders, your five co-inhabitants could 'free-ride' off you by enjoying the benefits of the defence, without having to pay anything towards it; there would probably come a point when you would withdraw your payments and, like the others, leave it to someone else to foot the bill; eventually, the army would not be provided at all.

Merit goods

Merit Goods are **socially desirable** and are either under-produced or under-consumed due to **positive externalities** and the market. Examples of merit goods include education, health care, welfare services, housing, fire protection, refuse collection and public parks.

Direct government provision

There are certain advantages to the idea of direct government provision of services such as healthcare and education: There may be large **economies of scale**, leading to **productive efficiency**. On the other hand without competition direct provision can create inefficient bureaucratic organisations leading to waste of valuable resources.

The idea of universal provision for all on the basis of need, with prices and profits playing no role, is one which sits very uneasily with the philosophy of market economics, and has thus in recent years come under fierce attack from right-wing, market-oriented economists. They have argued that government provision of health and education has led to an undesirable situation of **state monopoly power** in these areas and that to **increase consumer choice, lower costs and raise the level of efficiency, greater competition** is required.

Lesson 14: Nationalisation and privatisation

Privatisation is the process of transferring ownership of a business, enterprise, agency or public service from the public sector (the state or government) to the private sector. Nationalisation is the process of transforming private assets into public assets by bringing them under the public ownership of a national government or state.

REASONS FOR NATIONALISATION

Reduce Inequality: Major wealth producing assets, such as the ownership of vast landholdings, mineral deposits or water rights are capable of creating great inequalities of wealth. This is particularly so if the asset can be seen as a natural monopoly. Nationalisation enables this wealth to be earned and distributed for the good of all.

Stability and Security: Industries and services considered essential such as utilities and hospitals should be exempt from commercial vagaries and their continued ongoing existence and operation ensured. Since governments do not have to make a profit they are less likely to go out of business at short notice.

Economic Size & Efficiency: By combining small private enterprises into a large, possibly monopolistic organisation, economies of scale can be achieved and a more competitive organisation created.

Government Power & Control: Nationalisation or the threat thereof prevents non-government organisations becoming large or powerful enough to dominate or threaten governments. Control of certain key industries such as post and communications, policing, defence and the media can be crucial in ensuring governments are unchallenged or remain in power.

Substitute for Welfare: When major industries particularly those employing large numbers become bankrupt there is often a demand that the industry concerned should be taken over by the government. Effectively this can be seen as an alternative to government welfare.

REASONS FOR PRIVITISATION

Create or Increase Competition: Competition is the driving force of innovation and efficiency. Government ownership of an industry inhibits or precludes competition. This is particularly so if the government owned industry enjoys a monopoly but occurs even where competition is permitted. This is because the government owned industry does not have to make a profit to stay in business and even if nominally in competition with private competitors enjoys various advantages which the private competitor cannot match, such as access to cheaper finance.

Less Political Opprobrium: Over time the popular expectations of nationalised industries become unrealistic with people expecting more and more for less and less. Shortfalls in income can require increased taxes to pay for them. Poor performance and price increases cause political opprobrium which can be more easily deflected onto new private owners. Politically it is easier to make reductions in staff numbers if such reductions are effected by private employers.

POTENTIAL BENEFITS OF PRIVATISATION**1. Improved efficiency**

The main argument for privatisation is that private companies have a profit incentive to cut costs and be more efficient. If you work for a government run industry, managers do not usually share in any profits. However, a private firm is interested in making a profit, and so it is more likely to cut costs and be efficient.

2. Lack of political interference

It is argued governments make poor economic managers. They are motivated by political pressures rather than sound economic and business sense. For example, a state enterprise may employ surplus workers which are inefficient. The government may be reluctant to get rid of the workers because of the negative publicity involved in job losses. Therefore, state owned enterprises often employ too many workers increasing inefficiency.

3. Short term view

A government many think only in terms of the next election. Therefore, they may be unwilling to invest in infrastructure improvements which will benefit the firm in the long term because they are more concerned about projects that give a benefit before the election.

4. Shareholders

It is argued that a private firm has pressure from shareholders to perform efficiently. If the firm is inefficient then the firm could be subject to a takeover. A state owned firm doesn't have this pressure and so it is easier for them to be inefficient.

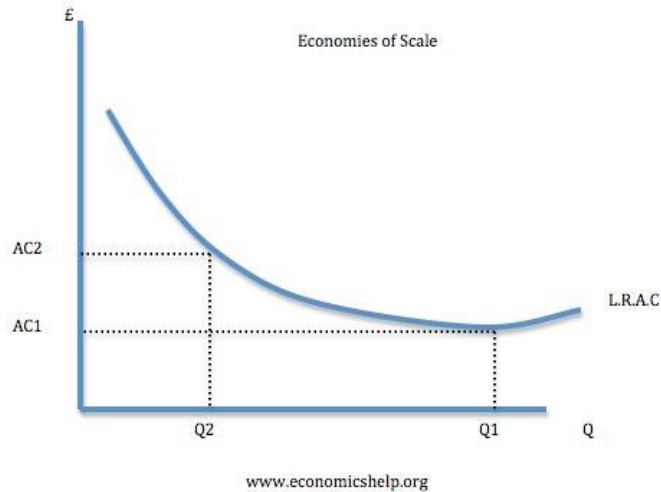
5. Increased competition

Often privatisation of state owned monopolies occurs alongside deregulation – i.e. policies to allow more firms to enter the industry and increase the competitiveness of the market. It is this increase in competition that can be the greatest spur to improvements in efficiency. For example, there is now more competition in telecoms and distribution of gas and electricity.

However, privatisation does not necessarily increase competition, it depends on the nature of the market. For example, there is no competition in tap water because it is a natural monopoly.

Disadvantages of privatisation

1. Natural monopoly



A natural monopoly occurs when the most efficient number of firms in an industry is one. For example, tap water has very significant fixed costs. Therefore there is no scope for having competition amongst several firms. Therefore, in this case, privatisation would just create a private monopoly which might seek to set higher prices which exploit consumers. Therefore it is better to have a public monopoly rather than a private monopoly which can exploit the consumer.

2. Public interest

There are many industries which perform an important public service, for example health care, education and public transport. In these industries, the profit motive shouldn't be the primary objective of firms and the industry. For example, in the case of health care, it is feared privatising health care would mean a greater priority is given to profit rather than patient care. Also, in an industry like health care, arguably we don't need a profit motive to improve standards. When doctors treat patients, they are unlikely to try harder if they get a bonus.

3. Government loses out on potential dividends.

Many of the privatised companies in the UK are quite profitable. This means the government misses out on their dividends, instead going to wealthy shareholders.

4. Problem of regulating private monopolies.

Privatisation creates private monopolies, such as the water companies and rail companies. These need regulating to prevent abuse of monopoly power. Therefore, there is still need for government regulation, similar to under state ownership.