tutor2u

AS Economics
Course Companion 2004

Volume 1:
Markets and Market Failure

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Introduction

This 2004 edition of the Tutor2u AS Economics Course Companion (Volume 1) is designed as a ***complement*** to your studies in AS Economics and should **not** be regarded as a substitute for taking effective notes in your lessons. Points raised and issues covered in class discussion invariably go beyond the confines of this Companion.

Economics being the subject that it is, events and new economic policy debates will inevitably surface over the next twelve months that take you into new and exciting territory. Providing you understand many of the core concepts and ideas available to an economist, you will be in a good position to understand many of the new issues that arise and an awareness of the problems in developing strategies and policies to combat some the main economic and social problems of out time.

Each chapter of this Companion contains a core set of notes, key definitions and diagrams together with a series of short case study readings and web links designed to encourage you to read widely and explore many aspects of the course in greater detail.

Economics is a dynamic subject, the issues change from day to day and there is a wealth of comment and analysis in the broadsheet newspapers, magazines and journals that you can delve into. The more reading you manage on the main issues of the day the wider will be your appreciation of the theory and practice of economics.

Here are some resources on the Internet that you should make a point of visiting on a regular basis:

Web Resource	Recommendation
BBC Business and Economics News	Incredible coverage of domestic and international issues
Financial Times	Articulate analysis from UK's leading financial broadsheet
Guardian	Great site for research and special reports
Independent	Strong coverage of current business/industrial trends
Office of National Statistics	The main site if you need economic statistics for essays!
The Economist	Leading international business magazine
Tutor2u Economics	The leading AS and A Level economics portal

About The Author

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About Tutor2u

Tutor2u is the leading provider of digital learning resources for students and teachers of economics, business & management, government and politics. The Tutor2u website currently attracts over 45,000 unique users per week browsing its comprehensive collection of free and subscription-based learning resources. Tutor2u provides learning resources directly to over 1,000 schools in the UK and to schools and colleges to over 40 countries abroad.

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ADVICE ON EXAM TECHNIQUE IN ECONOMICS

The AS Economics Examination

The AS economics exam tests four types of assessment objectives, knowledge, application of knowledge, analysis and evaluation:

- **Level 1** tests your knowledge of the syllabus and your ability to express that knowledge e.g. there are two main methods of measuring unemployment and different ways of measuring the rate of inflation using the Retail Price Index
- **Level 2** test your ability to apply your economics knowledge and understanding to particular problems and issues
- **Level 3** tests your ability to use economic theories and concepts to analyse macroeconomic problems e.g. use Aggregate Demand & Aggregate Supply to show a unemployment caused by a negative output gap
- **Level 4** tests your ability to evaluate problems and policies and make informed judgements based on theory and evidence e.g. short term and long term implications.

Evaluation must be based on appropriate analysis for L4 marks to be awarded

If you write good economics with clear definitions, relevant diagrams, sound explanations, an attempt to use supporting evidence and make a genuine attempt at evaluation then the examiners will treat your paper very positively

To help students give the right type of answer examining boards give command words. E.g. Describe means a level 1 answer is required demonstrating knowledge; Discuss is a level 4 directive requiring candidates to evaluate.

Command words in exam questions

Knowledge & Application of Knowledge	
Calculate	Work out using the information provided
Define	Give the exact meaning
Describe	Give a description of
Give (an account of)	As `describe'
Give (an example of)	Give a particular example
How (explain how)	In what way or in what ways
Identify	Point out
Illustrate	Give examples/diagram
Outline	Describe without detail
State	Make clear
Summarise	Give main points, without detail
Which	Give a clear example/state what

Analyse Economic Problems and Issues	
Analyse	Set out the main points
Apply	Use in a specific way
Compare	Give similarities and differences
Consider	Give your thoughts about
Explain (why)	Give clear reasons or make clear
Justify/account for	Give reasons for

Evaluate Economic Arguments and Evidence, making Informed Judgements	
Assess	Show how important something is
Criticise	Give an opinion, but support it with evidence
Discuss	Give the importance arguments, for and against

Evaluate	Discuss the importance of, making some attempt to weight your opinions
To what extent	Make a judgement

1 THE ECONOMIC PROBLEM: INTRODUCTION TO BASIC ECONOMIC CONCEPTS

1.1 The Nature and Purpose of Economic Activity

The central purpose of economic activity is the production of goods and services to satisfy needs and wants. In other words, the main purpose of production is to satisfy people's need for consumption both as a means of survival but also to meet their growing demands for an improved lifestyle or standard of living.

Production of goods and services involves in nearly all cases, using up scarce resources. Production can take place at various levels – ranging from primary industries in which basic resources are extracted through manufacturing and construction (secondary industries) to tertiary and quaternary industries (the service sector).

1.2 What is the Economic Problem?

The economic problem is about scarcity and choice: there are only a limited amount of resources available to produce the unlimited amount of goods and services we desire. All societies face the economic problem of having to decide:

- **What goods and services to produce:** does the economy uses its resources to operate hospitals or hotels?
- **How best to produce goods and services**: what is the best use of scare resources of land labour and capital?
- **Who is to receive goods and services**: what is the best method of distributing (sharing) products to ensure the highest level of wants and needs are met? Who will get expensive hospital treatment - and who not?

1.3 Scarcity and Opportunity Cost

Let us start with a basic rule of economics! If something is scarce - it will have a market value.

If the supply of a good or service is low, the **market price** will rise, providing there is sufficient demand from **consumers**.

Top class soccer players and other sports stars are also in **scarce supply** – forcing up their **market value**. The battle between the top Premiership clubs to sign star players from home and overseas and also retain existing players on long-term contracts has caused rampant inflation in football transfer fees threatening the long term financial stability of many clubs.

More recently, the collapse of ITV Digital and their contract with the Football League has seen a sharp decline in transfer activity among clubs in the lower leagues, they simply do not have the money to be **willing and able** to finance big money signings and many footballers have had their contracts cancelled leading to an increase in the supply of players on the market and a fall in transfer fees.

Goods and services that are in plentiful supply will have a lower market value because supply can meet the demand from consumers. Whenever there is **excess supply** in a market, we expect to see prices falling. For example, the prices of new cars in the UK have been falling for several years. Another example is the global market for oil. When oil production runs ahead of demand, the stock of oil available in the market rises and so the average price per barrel starts to fall.

1.4 Finite Economic Resources and Sustainability Issues

There are only a **finite** number of workers, machines, acres of land and reserves of oil and other natural resources on the earth. Because **economic resources are finite**, we cannot produce an infinite number of goods and services.

By producing more for an ever-increasing population, we are in danger of **destroying the natural resources of the planet**. This will have serious consequences for the **long-term sustainability** of economies throughout the world and potentially enormous implications for living standards and the quality of life.

Common resources: Has the cod industry had its chips?

A collapse in cod and herring fish stocks in the North Sea has forced up the market price of cod and herring. In the spring of 2001, the British government decided to ban cod fishing in the North Sea for a period of three months in a desperate attempt to curb the decline in fish stocks. The situation remains serious despite drastic measures – according to some estimates the number of young North Sea cod in early 2003 was the lowest for 20 years threatening the sustainability of the British fishing industry in the years ahead.

Adapted from BBC online and newspaper reports (2003)

Organisations such as the New Economics Foundation and Friends of the Earth seek to highlight the permanent damage to the stock of natural resources available throughout the world and the dangers from rapid economic development and global warming. One such issue is the huge threat posed by the global shortage of water

Threat to water supplies

"From disappearing lakes and dwindling rivers to military threats over shared resources, water is a cause for deep concern in many parts of the world. Supplies are threatened by overuse, bad management and changing weather patterns. The pressure will only increase as populations grow"

Adapted from BBC Online

At the heart of improving resource sustainability is the idea of **de-coupling –** i.e. increasing the efficiency with which resources are used in producing goods and services and trying to break the link between ever-increasing output and resource depletion.

If you would like to do some independent research on the issue of **sustainable economic development** try Sustainable Development International and also the UK Government's own web site promoting its policies on this topic

1.5 Infinite Wants and Basic Needs

Human beings want better food; housing; transport, education and health services. They demand the latest digital technology, more meals out at restaurants, overseas travel, more holidays and cosmetic health care treatments.

Opinion polls consistently show that the majority of the electorate expects government policies to deliver improvements in the standard of education, the National Health Service and our transport system. (Whether voters are prepared to pay for these services through higher taxes is another question!)

Whilst our economic resources are limited, human **needs** and **wants** are **infinite**. The development of society can be described as the **uncovering of new wants and needs** - which producers attempt to supply by using the available factors of production.

Human Development

For a perspective on the achievements of countries in meeting people's basic needs, the Human Development Index produced annually by the United Nations is well worth reading. Data for each country can be accessed and cross-country comparisons can be made.

1.6 Making Economic Choices – Trade-offs

Because of scarcity, **economic choices** have to be made on a daily basis by individual consumers, firms and governments. Making a choice made involves a **trade-off** - in simple terms, choosing more of one thing means giving up something in exchange. Because wants are unlimited but resources are finite, choice is an unavoidable issue in economics.

- Choices about whether to rent or buy a home – a huge decision to make and one full of uncertainty given the recent volatility in the British housing market!
- Choosing whether to move into full-time or part-time work, or take a course in higher education lasting for at least three years – how have these choices and commitments been affected by the introduction of tuition fees?
- The choice between using Euro-Tunnel or a ferry or an airline when traveling to Europe

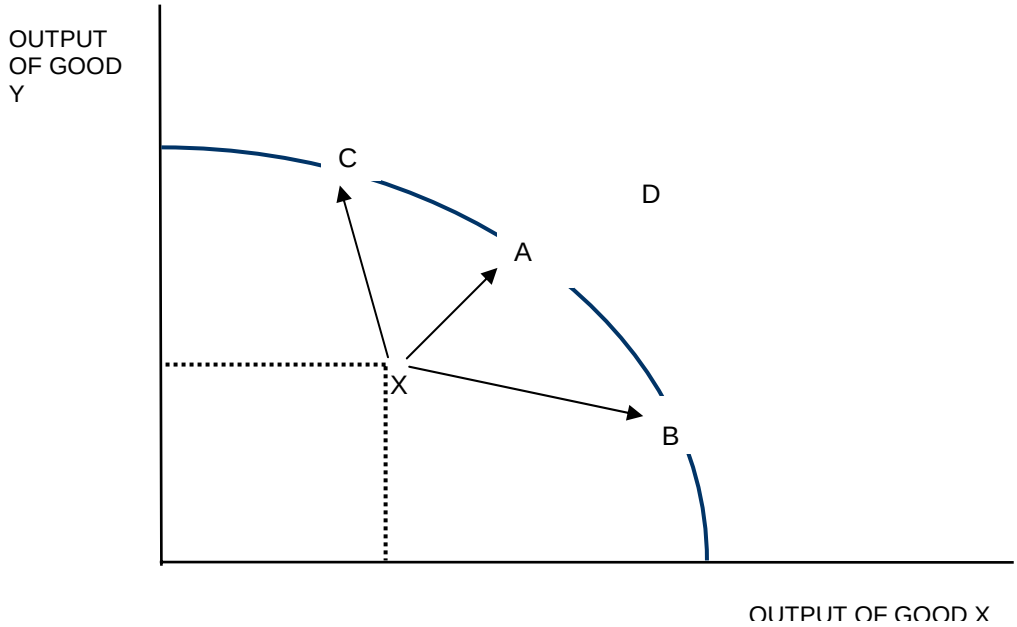
Our working assumption is that consumers make choices about what to consume based on the objective of **maximising their own welfare**. They have a limited income and seek to allocate their funds in a way that improves their own standard of living.

Of course in reality consumers rarely operate in a perfectly informed and rational way. We will see later on when we discuss market failure that very often decisions about which products to purchase and consume are based on **imperfect information** which can lead to a loss of welfare not only for consumers themselves but society as a whole.

1.7 The Production Possibility Frontier

A production possibility frontier (PPF) or boundary shows the combinations of two or more goods and services that can be produced using all available factor resources efficiently.

A PPF is normally drawn as concave to the origin because the extra output resulting from allocating more resources to one particular good may fall. I.e. as we move down the PPF, as more resources are allocated towards Good Y, the extra output gets smaller – and more of Good X has to be given up in order to produce the extra output of Good Y. This is known as the **law of diminishing returns**.



- The diagram above shows a **production possibility frontier** for two goods X and Y.
- Combinations of output of goods X and Y lying inside the PPF occur when there are **unemployed resources** or when the economy uses resources **inefficiently**. Point X is an example of this. We could increase total output by moving towards the production possibility frontier and reaching any of points C, A or B.
- Point D is unattainable at the moment because it lies beyond the PPF.
- A country would require an **increase in resources**, or an **increase in the efficiency (productivity) of our factor resources** or an **improvement in productive technology** to reach this combination of Good X and Good Y. If we achieve this then output combination D may become attainable.
- Producing more of both goods would represent an improvement in overall **economic welfare** and therefore an improvement in **allocative efficiency**

1.7.1 Opportunity Cost and the PPF

Reallocating scarce resources from one product to another involves an **opportunity cost**.

If we increase our output of Good X (i.e. a movement along the PPF from point A to point B) then fewer resources are available to produce good Y. Because of the shape of the PPF the **opportunity cost** of switching resources increases – i.e. we have to give up more of Good Y to achieve gains in the output of good X.

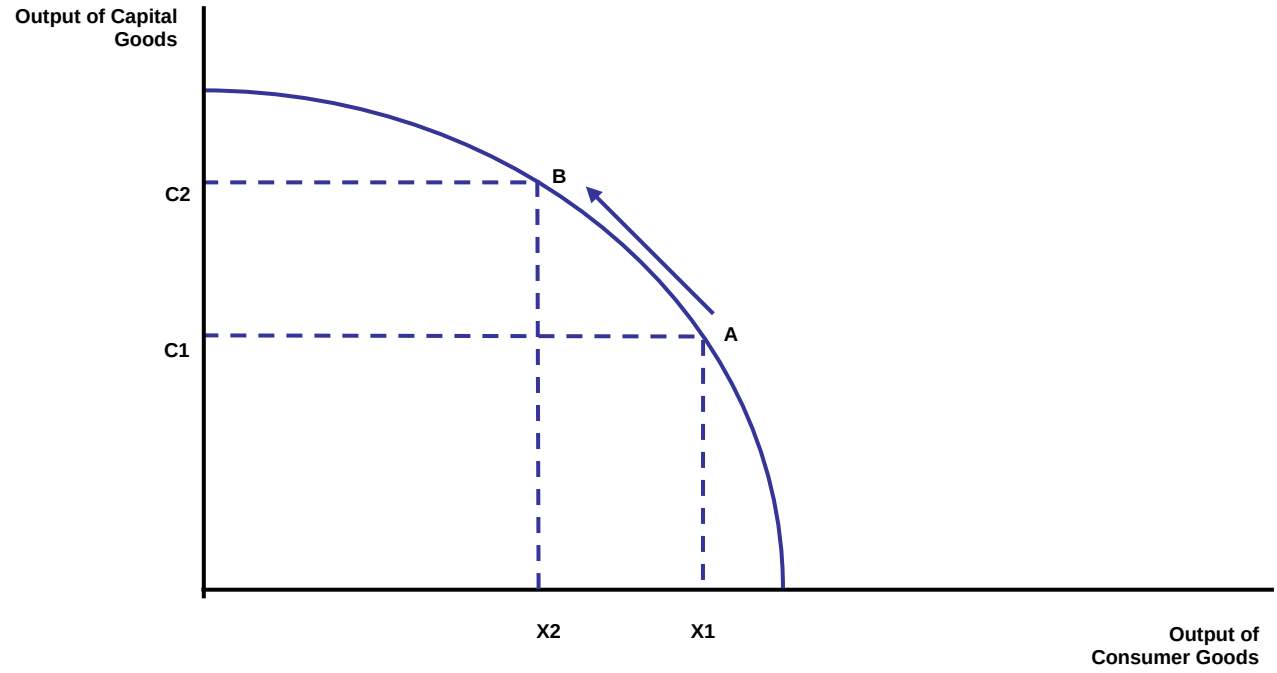
1.7.2 Free Goods

Not all goods have an opportunity cost. **Free goods** are not scarce and no cost is involved when consuming them.

Is fresh air an example of a free good? Ordinarily the answer is yes – but we know that air can become contaminated by pollutants. And, in thousands of offices, shops and schools, air-conditioning systems cool the air before it is "consumed". In the case of air pollution, there is an **external cost** to society arising from the contamination of our air supplies.

External costs are costs faced by a third party for which no appropriate compensation is forthcoming. Identifying and then estimating a monetary value for air pollution is a very difficult exercise – but one that is important for economists. We will consider this issue in more detail when we move onto the broad topic of **market failure**.

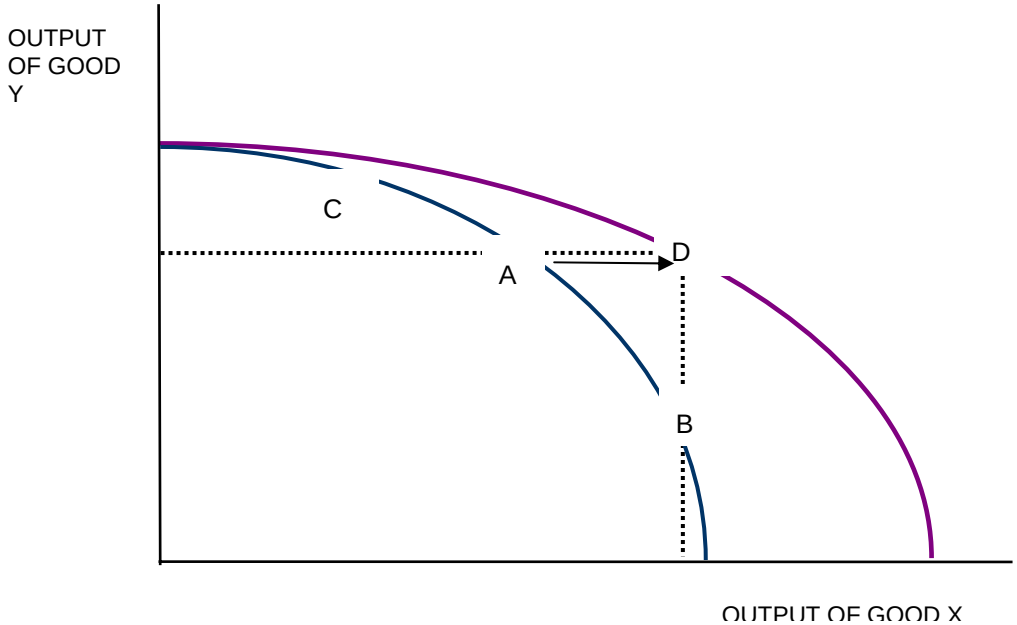
With air conditioning, scarce resources are used up in providing the "product" – for example the capital machinery and technology that goes into manufacturing the air conditioning equipment; the labour involved in its design, production, distribution and maintenance and the energy used up in powering the system. Cool air might appear to be free – but in fact it is often an expensive product to supply.



1.7.3 Explaining Shifts in the Production Possibility Frontier

The production possibility frontier will shift when:

- There are **improvements in productivity and efficiency** (perhaps because of the introduction of new technology or advances in the techniques of production)
- **More factor resources are exploited** (perhaps due to an increase in the available workforce or a rise in the amount of capital equipment available for businesses to use)



In the diagram above, there is an improvement in the state of technology which shifts the PPF outwards and means that more of good X can be produced for a given output of good Y.

As a result of this, output possibilities have increased and we can conclude (providing the good provides positive satisfaction to consumers) that there is an improvement in economic welfare.

1.7.4 Technology, Prices and Consumer welfare

Improved technology should bring the market price down and make a product more affordable to the average consumer. This has certainly been the case in the market for personal computers.

The exploitation of economies of scale and improvements in technology has brought prices down for consumers and businesses making PCs much more affordable. A price war between leading PC suppliers has also driven prices down.

1.8 Choices and Opportunity Cost – No 'Free Lunches'

There is a well known saying in economics that **"there is no such thing as a free lunch"**. Even if we are not asked to pay a price for consuming a good or a service, economic resources are used up in the production of it and there must be an opportunity cost involved – i.e. the next best alternative that might have been produced using those resources.

Opportunity cost measures the cost of any choice in terms of the **next best alternative foregone**. Many examples exist for individuals, firms and the government.

- The opportunity cost of deciding not to work is the lost wages foregone
- The opportunity cost of spending money on a foreign holiday is the lost opportunity to buy a new dishwasher or the chance to enjoy a couple of weekend breaks in the UK
- The opportunity cost of the government spending nearly £20 billion on interest payments each year on the national debt is the extra money that might have allocated to the National Health Service, education or to improving the UK transport network.
- The opportunity cost of an economy investing resources in new capital goods is the current production of consumer goods given up. We may have to accept lower living standards now, to accumulate increased capital equipment so that long run living standards can improve.
- The opportunity cost of using arable farmland to produce wheat is that the land cannot be used in that production period to harvest potatoes

1.9 Positive and Normative Economics

1.9.1 Positive Statements

Positive statements are **objective statements** that can be tested or rejected by referring to the available evidence. Positive economics deals with **objective explanation**.

For example: A rise in consumer incomes will lead to a rise in the demand for new cars. Or, a fall in the exchange rate will lead to an increase in exports overseas. Or if the government decides to raise the tax (duty) on beer, this will lead to a fall in profits of the major brewers.

1.9.2 Normative Statements

Normative statements express an **opinion** about what **ought** to be. They are **subjective statements** rather than objective statements – i.e. they carry value judgments.

For example, the level of duty on petrol is too unfair and unfairly penalizes motorists. Or the government should increase the national minimum wage to £6 per hour in order to reduce relative poverty. A third example – the UK government should join the Single European Currency as soon as possible.

When you are reading articles on economics, it is important to be able to distinguish where possible between objective and subjective statement and also to be able to evaluate the relevance of what is being said.

1.10 Factors of Production

Factors of production are simply the resources we have available to produce goods and services. We can distinguish between three main groups of **factor inputs**:

1.10.1 Land

Land is the **natural resources** available for production. Some nations are endowed with natural resources and specialise in the extraction and production of these resources – for example – the development of the North Sea Oil and Gas in Britain and Norway.

1.10.2 Labour

Labour is our **human input** into the production process. To get a feel for the size of the UK labour market, consider these figures averaged over the year 2001:

- In 2001, there were 28.1 million people in employment working an average of 37.8 hours per week and earning an average of £428 per week
- 74.8% of the population of working age is in some form of paid employment (the highest employment rate in the European Union)
- In 2001 1.4 million people were unemployed (4.8% of the labour force)

A housewife, a keen gardener and a DIY enthusiast all produce goods and services, but they do not get paid for their economic activity. The final output of these people is not included directly in Gross Domestic Product although many of the resources they buy to do their "work" are included in our national income and spending statistics.

Another important point is that not all labour is of the same quality. Some workers are more productive than others because of the education, training and experience they have received. An increase in both the size and the quality of the labour force is vital if a country wants to achieve sustained economic growth.

Raising productivity is one of the key long-term aims of Chancellor Gordon Brown. Consider this report from his October 2000 speech to the Confederation of British Industry

Closing the Productivity Gap

"Chancellor Gordon Brown is looking to union and business leaders to work out how to boost Britain's economy. Productivity in the UK falls behind competitors such as the United States by a third, and a quarter behind the French.

Gordon Brown blamed the shortfall on the "old British problems" of low skills, under-investment, resistance to change and complacency"

1.10.3 Capital

The term capital means **investment in goods that are used to produce other goods in the future**. **Fixed capital** includes machinery, plant and equipment, new technology, factories and buildings – all of which are goods designed to increase the **productive potential of the economy** in future years.

Working capital refers to stocks of finished and semi-finished goods (components) that will be either consumed in the near or will be made into finished consumer goods. Another term for stocks is inventories.

New items of capital machinery, buildings or technology are generally used to enhance the **productivity** of other factors of production (e.g. improved technology in farming has increased the productivity of our agricultural sector and investment in information and communication technology can increase the efficiency of workers across many industries).

1.11 Entrepreneurship

An **entrepreneur** is an individual who seeks to supply products to a market for a rate of return (i.e. a profit). Entrepreneurs will usually invest their own **financial capital** in a business and take on the risks associated with a business investment. The reward to this risk-taking is the profit made from running the business.

Many economists agree that entrepreneurs should be classed as specialised part of the factor input 'labour'.

There is a consensus that Britain needs to encourage and develop more of an entrepreneurial culture if it is to achieve faster economic growth in the years ahead. The emergence of new businesses and higher levels of **research and development spending** from smaller “seed-corn companies” is more firmly established in other countries (noticeably the United States).

Read this article from New Business about the inventor and entrepreneur James Dyson the man who invented the bag less vacuum cleaner and the new dual-cylinder washing machine.

Another high-profile entrepreneur in recent years has been Stelios Haji-Ioannou, the founder of EasyJet and EasyEverything.

Have a look at this article on social entrepreneurs from the BBC online web site and further advice on achieving success with small businesses.

1.11.1 Micro and Macroeconomics

Microeconomics concerns itself with the study of economics and decisions taken at the level of the individual firm, industry or consumer / household. Microeconomics is also concerned with how prices are determined in markets, how much people get paid in different occupations, how we decide what to buy; the effects of Government intervention on the prices and quantities of individual goods and services and also the efficiency with which our scarce resources are used.

Macroeconomics is more concerned with the economy as a whole. For example, how the levels of output, inflation, employment, growth, imports and exports are determined.

A sound knowledge of Micro is useful when attempting to understand Macro as well as being of value in its own right. Both branches of economics use a common set of tools and ideas.

1.12 Rewards to the Factors of Production

Factors of production are used to create output to be sold in markets. Each factor used in production can expect some reward. A summary appears below:

1.12.1 Income

Income represents a **flow of earnings** from using factors of production to generate an output of goods and services. The main sources of income for individuals and households are the following:

- **Wages and salaries from work** supplemented by overtime and productivity bonuses
- **Interest from savings held in banks**, building societies and other accounts
- Dividends from share ownership

- **Rent income** from the ownership of property

1.12.2 Wealth

Wealth is a **stock of assets** that generates a flow of income and can be held in a variety of forms by individuals, firms and also the nation as a whole:

- **Financial wealth** - stocks and shares, bank and building society accounts
- **Marketable wealth** - consumer durables that can be sold for a price
- **Social capital** - social infrastructure such as transport systems, schools and hospitals

It is important to distinguish between **income** and **wealth**. If you receive a higher wage or salary – this adds to your monthly income. If this is saved (in a bank, or by making contributions to a pension fund) you are adding to your financial wealth.

Being wealthy can also generate income. If you have shares – you can expect to receive dividend income every few months; if you have money in a savings account – you will be paid interest.

Of course the value of financial wealth can fluctuate over time. From 2000-2003 we have seen a boom in the UK housing market leading to sharp rises in average house prices, particularly in London and the South East. The result has been a sharp jump in **housing wealth** for people with mortgages, but a growing **problem of affordability** for people looking to enter the housing market for the first time on relatively low incomes. See this article on "Where the housing ladder is out of reach"

The distribution of wealth in the UK is highly unequal. The latest available data shows that 94% of the total marketable wealth in this country is held by 50% of the population. Put another way, the other half of our population can lay claim to only 6% of total wealth.

1.12.3 Labour and Wages

Most people have the ability to do some form of work. If they are of working age and actively seeking a job then they are included in the **working population**. In industries and occupations where labour is not particularly scarce, so wages are lower. Millions of workers in the UK are paid hourly wages well below the national average.

The National Minimum Wage seeks to address some of the problems associated with low pay. On the other hand, some people have skills that are quite rare, and these people will command high wages and salaries in the modern labour market.

1.12.4 Capital and Interest

Businesses often need to borrow money to fund new capital equipment. The reward for investing money is called interest. Interest rates can of course go up or down. If the interest rate is high, it becomes less worthwhile to borrow money because any project will have to make more money than before to be profitable since more interest is now being paid.

Low interest rates reduce the opportunity cost of using funds to invest and therefore should stimulate an increase in the demand for credit.

1.12.5 Enterprise and Profit

In return for having the ideas that bring together the factors of production and taking the risk in putting funds into a business the entrepreneur takes any money that the business has left after the other factors of production have received their rewards. This is called **gross profit**. Taxes then have to be paid to the government, and the entrepreneur takes what is left. This after-tax profit is called net profit.

Economists often assume that one of the main objectives of a business is to achieve **maximum profits** from selling their output to consumers. This is not always the case! Some businesses are looking to achieve the highest **market share**. Increasing market share might mean sacrificing some profits in the short run by cutting prices and under-cutting rival suppliers in the market.

There is growing interest in the concept of ethical businesses and corporate social responsibility where the traditional assumption of businesses driven solely by the profit motive is challenged and where businesses are encouraged to take account of their economic, social and environmental impacts.

1.13 Resource Allocation in a Market Economy

All economic systems have to choose between alternative allocations (uses) of land, labour and capital.

In a **free market (private sector) economy**, households own resources and markets allocate resources through the price mechanism

An increase in demand raises the market price and encourages firms to switch additional resources into the production of that product – leading to an expansion of supply

The amount of goods and services consumed by households depends on their income. In this sense, every pound of income represents one **economic vote** in the market place. Household income depends mainly on the **market value of an individual's work**

Firms make decisions about the amount of capital and labour to use in production

The interaction of consumers and producers in markets determines the equilibrium price and equilibrium quantity bought and sold, hence the amount of resources used

In a **free market economic system**, governments take the view that markets work, assume a laissez faire (let alone) approach, step back, and allow the forces of supply and demand to set prices and allocate resources

Government intervention is required mainly to **prevent or correct market failure** through for example enforcing anti monopoly legislation (i.e. preventing abuses of market power), enforcing private property rights, and redistributing income through the tax and benefit system etc

1.14 The Importance of Incentives

Incentives matter enormously in our study of microeconomics, markets and market failure. For competitive markets to work efficiently **economic agents** (i.e. consumers and producers) must respond to appropriate **price signals in the market**.

As we shall see later, market failure occurs when the signalling and incentive function of the price mechanism fails to operate optimally

Government intervention in markets can often change the incentives that both producers and consumers face – for example a change in relative prices brought about by the introduction of government subsidies and taxation.

Suppose for example that the government decides to introduce a new tax on aviation fuel in a bid to reduce some of the externalities created by the air transport industry.

- How will airlines respond?
- Will they pass on the tax to consumers?
- Can they choose instead to absorb the tax and seek cost-savings elsewhere in their operations?
- If the tax does raise prices for air travelers, will they change their behaviour in the market?
- Is an aviation tax the most effective way of controlling pollution?
- Or could incentives and behaviour be changed through other means?

Agents may not always respond to incentives in the manner in which textbook economics suggests. The **"law of unintended consequences"** encapsulates the idea that government policy interventions can often be misguided of have unintended consequences! We shall return to this theme at various points in the study companion.

2 SPECIALISATION AND EXCHANGE AND THE GAINS FROM INTERNATIONAL TRADE

International trade is beneficial when there are differences between countries in the **relative costs** of producing goods and services. If countries opt to **specialise** in the production of certain commodities and if they can achieve a much higher output as a result, there are **potential gains in economic welfare** if free trade can take place between countries.

2.1 Comparative Advantage and the Gains from Specialisation and Trade

We introduce at this point the idea of comparative advantage and consider how this principle can be used to illustrate the potential gains from trade

In the example shown in the table below we assume that there are two countries each producing two commodities. Each country has the same factor resources available allocated to the production to two goods, freezers and dishwashers. The output produced when half of the available resources are divided between each industry in each country is shown in the first part of the table.

2.2 Comparative Advantage – the Importance of Relative Costs

The **pre-specialisation output** shows that the UK can produce more of both goods than can Italy. This suggests that the absolute level of factor efficiency (or productivity) is higher in the UK. If wages and other costs are similar, then we would expect the UK to be able to produce these goods at a lower unit cost than in Italy. However what matters more in terms of the potential benefits from specialization and trade are the **relative costs of production** for each country.

Consider the **opportunity cost** for the UK if it decides to produce extra dishwashers. Assuming constant returns to scale (i.e. output is proportionate to the inputs allocated to each industry), then for the UK, for every extra dishwasher produced, the opportunity cost is that we must give up 2 freezers. Consider the same scenario for Italy. If it decides to specialise in dishwashers, the opportunity cost of each extra unit means having to give up four freezers. On this basis, the opportunity cost ratio is lower for the UK – and this suggests that the UK has a **comparative advantage** in the production of dishwashers.

What about a decision to produce extra freezers? Consider the opportunity cost of this for both countries. For the UK, each extra freezer means giving up ½ of a dishwasher. For Italy, an extra freezer can be achieved by giving up only ¼ of a dishwasher. Here the relative cost advantage lies with Italy – it has a comparative advantage in specialising in freezers, even though as we have seen, the UK can produce in absolute terms more of both.

2.2.1 Worked Example of Specialisation and Comparative Advantage

Half of total resources in each country are allocated to each industry		
Pre Specialisation Output	**Freezers**	**Dishwashers**
	000s per year	**000s per year**
UK	1000	500
Italy	800	200
Total Production	1800	700
Post Specialisation Output	**Freezers**	**Dishwashers**
	000s per year	**000s per year**
UK	400	800
Italy	1600	0
Total Production	2000	800
Terms of Trade: 3 Freezers for 1 Dishwasher		
Post Specialisation and Trade	**Freezers**	**Dishwashers**
	000s per year	**000s per year**
UK	1150	550
Italy	850	250
Total Production	2000	800
UK exports 250 dishwashers in exchange for 750 freezers		
Italy exports 750 freezers in exchange for 250 dishwashers		

Post trade (exchange) both countries have the opportunity to consume more of both goods

We now move on to consider the **potential gains** from both countries **specialising** in the products in which they possess a comparative advantage. Once again we make a working assumption that there are **constant returns to scale** from reallocating resources – in other words that resources in the UK currently employed producing freezers are equally productive (efficient) when they are re-deployed to increase output of dishwashers.

Some economists would argue that in fact specialisation will lead to **increasing returns to scale**, i.e. the extra output will be more than proportionate to the increased resources given over to an industry. Others might point to the risk of **decreasing returns**, particularly if some of the factor resources such as labour and capital used in one industry is not perfectly mobile and capable of being utilised in another.

In our example from the previous page, we assume that Italy specialises completely in the production of freezers and manages to double its output to 1600. The UK possessing an **absolute advantage** in each, decides to part-specialise focusing most of its resources in dishwashers. The result is that the total output of freezers rises from 1800 to 2000 and the total production of dishwashers increases from 700 to 800.

Specialisation based on **comparative advantage** has led to an increase in the total output of both goods, even though the total factor resources made available has not changed.

2.2.2 How Can These Two Countries Now Benefit from Trade (Exchange)?

Much depends on the two nations finding mutually beneficial terms **of trade** i.e. an acceptable rate of exchange of freezers for dishwashers and vice versa.

How do we find such a terms of trade? We go back a step to consider the **internal opportunity cost ratios** for each country – in other words, the rate at which each country must give up freezers for dishwashers if it did not trade with another country, but instead simply reallocated resources within its own economy. For the UK, the opportunity cost of each extra dishwasher is 2 freezers, for Italy the same choice involves an opportunity cost of 4 freezers.

An acceptable trade would be 3 freezers for each extra dishwasher because Italy having specialised in freezers now only has to give up 3 freezers in exchange for each dishwasher. For the UK with a surplus of dishwashers, instead of getting only 2 freezers for each dishwasher it gives up, a trade of 3F:1D means that it will get more freezers in exchange when it exports dishwashers to Italy.

The final part of the table on the previous page shows how the distribution of the two goods might look after exchange has taken place. The UK has sold (exported) 250 of its dishwashers to Italy and in return it has imported 750 freezers, leaving the UK with 1150 freezers (150 more than it had at the start) and 550 dishwashers (50 higher than at the beginning).

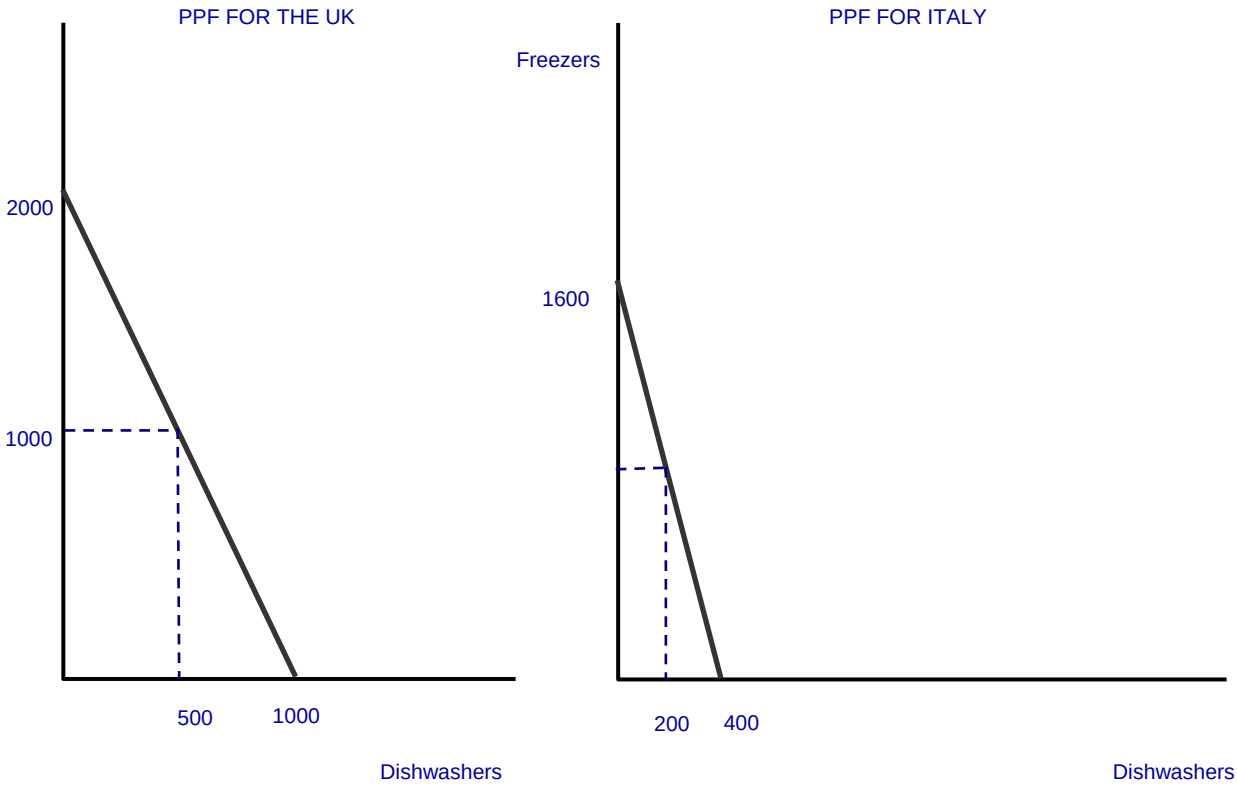
Italy has exported 750 of its 1600 freezers and received in exchange 250 dishwashers. It is left with 850 freezers and 250 dishwashers, a gain of 50 of each item when we compare the **post-trade** output with the **pre-specialisation output**.

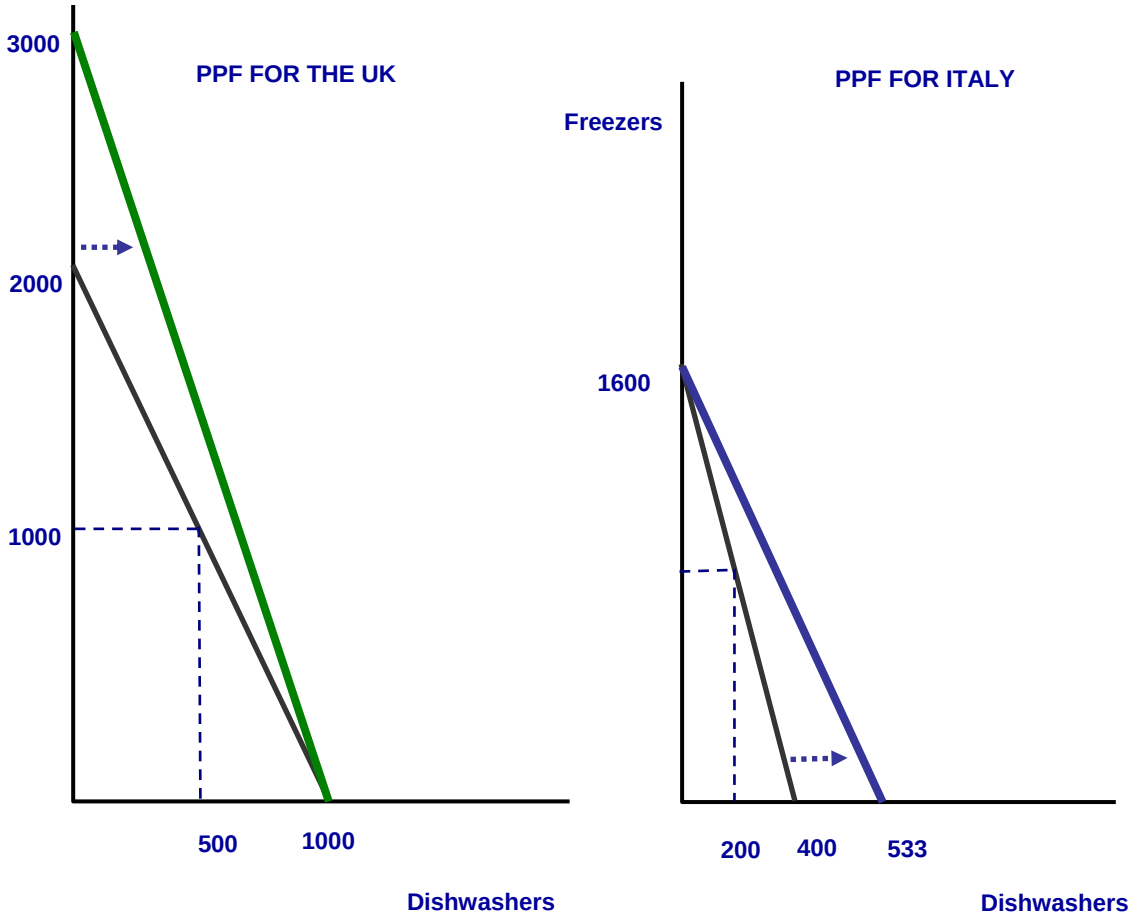
We have shown on the back of certain assumptions that specialisation and trade at an acceptable terms of trade can lead to an increase in the output of both goods presumably leaving consumers better off than they were before.

This neat piece of theory uses the concept of **comparative advantage** and lies at the heart of much of the traditional theory of international trade. The law of comparative advantage says countries specialise in producing the goods and services they make *relatively cheaply*.

2.3 Showing the Benefits of Specialisation and Trade using a PPF

We can illustrate the potential benefits from specialisation and trade by making use of the production possibility frontier. The two diagrams on the next page take us through the worked example we have used in explaining comparative advantage. In the first diagram we plot the original PPF for both the UK and Italy. The differences in the gradient of the PPF illustrate the differences in relative costs of production.





When specialisation occurs and both countries trade at a terms of trade of 3 freezers for each dishwasher, the effect is shown in the second diagram, notice that the effective PPF for each country has shifted out implying that consumers in both countries now have more of both goods available, and

suggesting an improvement in economic welfare and living standards.

2.3.1 Assumptions Behind this Theory

Our worked example of the gains from specialisation based on the **principle of comparative advantage** is based on a number of assumptions which may not hold true in reality. If we change these assumptions then the results of our work example might turn out to be different.

- **Perfect occupational mobility of factors of production** – i.e. a country's labour and capital inputs can be used in each industry with no loss of overall efficiency. In reality, some inputs are specific to particular industries and factors of production are not perfectly mobile – so workers and capital inputs switching from one sector of the economy to another might lead to a loss of economic efficiency / productivity at least in the short term
- **Constant returns to scale** (i.e. doubling the input leads to a doubling of output) – the gains from trade will be greater if economies of scale can be exploited – we will consider economies of scale when we get into the core of business economics
- We assume that there are **no externalities** arising from production and/or consumption of the goods involved
- We assume that there are **zero or insignificant transportation costs**

Despite the fact that these assumptions can be questioned or broken down, the **fundamental principle of comparative advantage and the gains from specialisation and exchange remain firm** and they have plenty of applicability in both domestic and international economic policy-making.

2.3.2 Further Reading on International Trade Issues

More information on international trade issues can be found from the web site of the World Trade Organisation

Oxfam have recently launched their Make Trade Fair campaign – seeking a better return for developing countries trading with developed economies. You can access information about their campaign from the Oxfam web site.

Fair Trade

> According to Oxfam - International trade flows have tripled in the last twenty years, but the benefits of this trade are unequally shared. The 48 least-developed countries (LDCs), home to 10 per cent of the world's citizens have seen their share of world exports decline to a tiny 0.4 per cent over the past two decades. In comparison, the US and EU contain roughly the same number of people, yet account for nearly 50 per cent of world exports.

Friends of the Earth – Global Trade Issues and also the Fair Trade Foundation

The Guardian Special Report on fair trade is also worth looking at as is the Traidcraft site

BBC News Online: "What is Fair Trade?"

3 THE PRICE MECHANISM AS A MEANS OF ALLOCATING RESOURCES

In this section we consider the allocation of resources in competitive markets.

We start with the **basic theory of demand and supply** in different markets and analyse how the forces of demand and supply interact to determine equilibrium prices and quantity.

3.1 The Price Mechanism

The **price mechanism** sends prices up when there is **excess demand** and own when there is **excess supply**. The price mechanism relies on the billions of decisions made by independent agents - consumers and producers; it is for example the means by which hotels reduce the prices of rooms that they cannot sell, where travel companies increase the price of package holidays when there is a high demand for their holidays and in which airlines slash prices in the wake of the events of the 11th of September when the market demand for transatlantic travel collapsed in the wake of the terrorist attacks on the United States.

It is usually assumed that one price eventually settles in each market until there is a change in either or both demand and supply conditions.

In a market economy, the **price mechanism** performs a number of very important functions.

3.2 Functions of the Price Mechanism

The **price mechanism** is the means by which decisions of consumers and businesses interact to determine the allocation of resources between different goods and services.

3.2.1 The Signaling Function

Firstly prices have a **signaling function** – if prices are rising because of stronger demand from consumers, this is a signal to suppliers to expand output to meet the higher demand.

In this sense **consumer** preferences send information to producers about the changing nature of our needs and wants. When demand is strong, higher market prices act as an **incentive** to raise output (production) because the supplier stands to make a **higher profit**.

Consider the decisions taken by consumers about which gaming console to use. Our stated preferences expressed in the market between Sony PlayStation II, Microsoft's Xbox and Nintendo's GameCube can ultimately have a huge effect on which console comes out as a leader in the market.

Suppliers do not always respond instantaneously to a change in the level of demand. We shall see later in the study companion that the elasticity of supply is an important concept in determining whether a producer can actually meet an increase in consumer demand. Producers may also wait until they regard demand to be at a sufficiently high level for them to be able to make a profit.

3.2.2 The Rationing Function

Prices serve also to **ration** scarce resources when demand in a market outstrips supply. When there is a shortage of a product, the price is bid up – leaving only those with a **willingness** and **ability to buy** with the effective demand necessary to purchase the product. Be it the demand for cup final tickets or the demand for a rare antique the market price acts a rationing device to equate demand with supply.

The growing popularity of **auctions** as a means of allocating resources is worth considering as a means of allocating resources and clearing a market.

Rationing by other means might be regarded as inefficient. Consumers with the highest income stand to have most influence on what is eventually produced. This can cause difficulties when there is a high degree of inequality in the distribution of income and wealth.

3.2.3 Adam Smith and the Invisible Hand

The 18th Century economist **Adam Smith** – one of the founding fathers of modern economics, described how the invisible or **hidden hand of the market** operated in a competitive market through the **pursuit of self-interest** to allocate resources in society's best interest.

This remains the central view of all free-market economists, i.e. those who believe in the virtues of a free-market economy with minimal government intervention.

The price mechanism is the only allocative mechanism solving the economic problem in a free market

economy. However, most modern economies are **mixed economies**, comprising not only a market sector, but also a non-market sector, where the government uses the planning mechanism to provide goods and services such as police, roads and health.

3.3 Examples of Important Markets

- International Commodity Markets such as the market for coffee, oil and copper
- Foreign Exchange Market - the buying and selling of currencies
- Housing Market - a really important market in determining people's wealth.
- Stock Market – e.g. the FTSE 100 index

3.4 Relative Prices

A **relative price** is the ratio of one price to another.

For example business and leisure travelers might compare the relative price of different modes of transport.

Consider the price of an airline ticket from Newcastle to London Heathrow on a scheduled British Airways flight, compared to the cost of a coach journey using National Express. The price of the airline ticket divided by the coach ticket gives the relative price. It measures how many coach journeys have to be given up to purchase one airline ticket. If rail prices rise, other things remaining equal the relative price of travelling by air will have fallen. This will affect the market demand for flights from Newcastle to Heathrow.

Of course, the price of the ticket is not the only consideration that people will make before choosing their mode of transport – but relative price (or cost) levels will influence their decision.

Recent years has seen the expansion of low cost airlines serving both domestic routes and short haul flights to European destination. As a result, the market demand for short haul flights and European City Breaks has increased in size enormously.

Price wars in markets cause changes in relative prices and will normally lead to **expenditure-switching** by consumers as suppliers engage in a battle for market share.

4 MARKET DEMAND

4.1 Introduction

Demand is defined as the quantity of a good or service that consumers are **willing and able to buy at a given price** in a given time period. Each of us has an individual demand for particular goods and services.

Market demand is simply the **sum of the individual demand** for a product from each consumer in the market. If more people enter the market, then demand at each price level will rise.

4.1.1 Example - Mobile Phones and Mobile Phone Services

For example, market demand for mobile phones has expanded rapidly over the last few years as call costs have fallen. Eventually though the market demand for mobile phones will reach **saturation point** – every product has a **life-cycle**.

An interesting case study in changing market demand is the market for third generation mobile phones. In 2000 the leading telecoms companies paid in total over £22 billion pounds to win licences to operate third generation (3G) mobile phone networks in the UK. The demand from consumers for such services has so far fallen well short of expectations causing the leading players to cut their prices and write off some of the debts accumulated when they bid such huge figures for the 3G licences. 3G services went live in March 2003 and it will be interesting to see how the level of market demand evolves over the next couple of years.

For further independent research on the mobile phone industry, use this link to a special Guardian web site report on mobile phones.

4.1.2 Example - Market Demand for Music Sales

Another example of how market demand changes over time is the demand for different formats of music in particular the declining market demand for CD music sales as the popularity of downloading music from the internet continues to grow. The internet poses a serious risk for music publishers. Global sales of CDs continued to decline in 2002.

The British music industry is facing up to a sharp fall in music sales which according to the British Phonographic Industry (BPI) threatens thousands of jobs directly and indirectly involved in the music industry.

One interesting side issue is the impact that a change in government **indirect taxation** might have on market demand for CD sales in the UK. At the moment, CDs are subject to **value added tax** of 17.5%. The British and European music industry is lobbying for a reduction in VAT in a bid to boost sales and also to bring the industry in line with other hobbies such as books and cinema tickets which at the moment are not subject to valued added tax.

4.2 Effective Demand and Willingness to Pay

Demand in economics must be **effective**. Only when a consumers' **desire** to buy a product is backed up by an **ability to pay for it** do we speak of demand. For example, many people would be willing to buy a luxury sports car, but their demand would not be effective if they did not have the financial means to do so. They must have sufficient **real purchasing power**.

Consider the market for **pay-per-view boxing events** – the companies promoting these events must price carefully so that they tap into the largest possible market.

4.2.1 Willingness to Pay

What price are you **willing to pay** to view a world championship boxing event? How much are you prepared to spend to watch Premiership soccer on a pay-per-view basis? Or would you be willing and able to pay to watch Elton John perform live through subscription channels? The concept of willingness to pay is crucial to the theory of demand for goods and services.

For businesses, working this out often entails significant expense in terms of **market research** or a lengthy period in a particular market from which the lessons of trying to sell to genuine customers can be analysed. In the summer of 2002, **the Post Office** decided to run pilot schemes to test the "willingness to pay" of consumers to have guaranteed mail deliveries before 9am in the morning. The result was clear – few consumers will willing to pay anything like the charges that the Post Office was proposing and the

idea was dropped very quickly because there was simply an insufficient market demand to make the new services profitable.

Willingness to pay is also evident in the growing use of auctions in selling the rights for broadcasting sports events and scarce works of art. A good example of how the market can change lies with the bidding for the rights to show Premier Division football and England's international matches.

FA faces cash crunch over TV bids

The Football Association is facing a cash crunch after the value of bids for its next television contract covering the FA Cup and England home internationals fell by more than £115m.The FA's current £345m deal with the BBC and British Sky Broadcasting expires in summer 2004. But the total value of the highest bids for the next broadcasting contract is understood to have fallen by more than a third.

The FA has split the rights for its next deal into two packages. The first package will allow the winning bidder to choose which FA Cup matches it wants to show and also allow it to broadcast live coverage of England home matches.

The second package is expected to be sold for a smaller sum and will allow the broadcast of highlights of England matches, as well as the second pick of FA Cup matches. The sharp decline in what broadcasters are prepared to pay reflects how the market has changed since the last TV deal was struck. (Adapted from newspaper reports – June 2003)

At any given time there are likely to be many different **pricing strategies** at work in any given market. For example, many businesses practice what is called **price discrimination** whereby the same good or service is sold to different groups of customers at different prices on the grounds that each segment of the market has a different willingness to pay for the product.

4.2.2 Latent Demand

Latent demand exists when there is willingness to purchase a good or service, but where the consumer lacks the **real purchasing power** to be able to afford the product. Latent demand is affected by **persuasive advertising** – where the producer is seeking to influence consumer tastes and preferences. For background reading on advertising, go to the web site of the Advertising Standards Agency.

4.3 Concept of Derived Demand

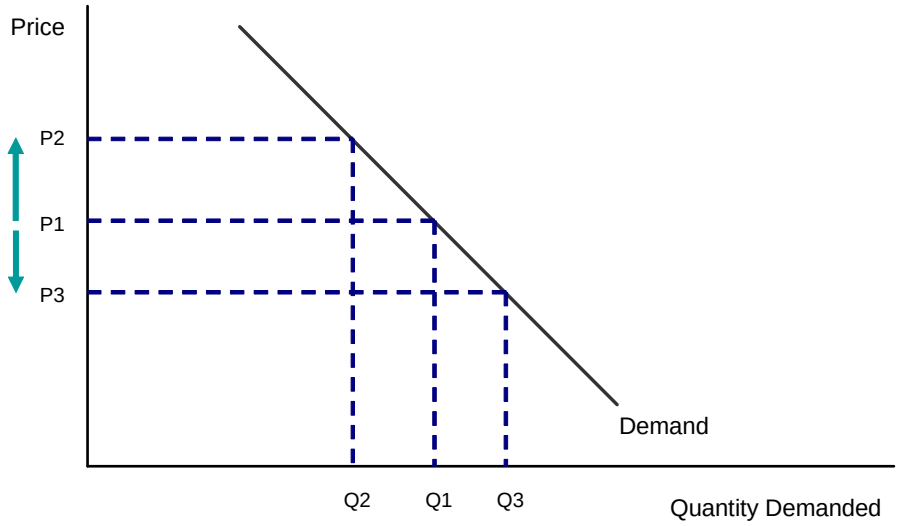
The demand for a product X might be strongly linked to the demand for a related product Y – giving rise to the idea of a derived demand. For example, the **demand for coal** is derived in part on the demand for fossil fuels to burn in the process of generating energy.

Likewise the **demand for steel** is strongly linked to the demand for new vehicles and many other manufactured products, so that when an economy goes into a downturn or recession, so we would expect the demand for steel to decline likewise. The major producer of steel in the UK is Corus. They produce for a very wide range of different industries; from agriculture, aerospace and construction industries to consumer goods producers, packing and the transport sector. Steel is a highly **cyclical industry** – the demand for steel is highly sensitive to changes in the economic cycle and fluctuations in the sterling exchange rate. In recent years, Corus has found it difficult to compete on cost and price with lower-cost steel producers in EU and non-EU countries and as a result output and jobs have fallen.

4.4 Law of Demand

The **law of demand** is that there is an **inverse relationship** between the price of a good and demand. As prices fall we see an **expansion of demand**. If price rises there should be a **contraction of demand**.

4.5 The Demand Curve



A **demand curve** shows the relationship between the price of an item and the quantity demanded over a period of time. For **normal goods**, more of a product will be demanded as the price falls. This is because at lower prices, consumers can afford to purchase more with their income. A fall in prices (shown by a movement from price P1 to p3) causes an increase in a consumers' **real income**.

Secondly, a fall in price makes one good **relatively cheaper** than a substitute encouraging consumers to **switch their** demand in favour of the lower priced product.

The demand curve is normally drawn in textbooks as a straight line suggesting a linear relationship between price and demand but in reality, the demand curve will be non-linear. No business has a perfect idea of what the demand curve for a particular product looks like, they use real-time evidence from markets to estimate the demand conditions and they accumulated experience of market conditions gives them an advantage in constructing demand-price relationships.

4.5.1 Movements along a Demand Curve

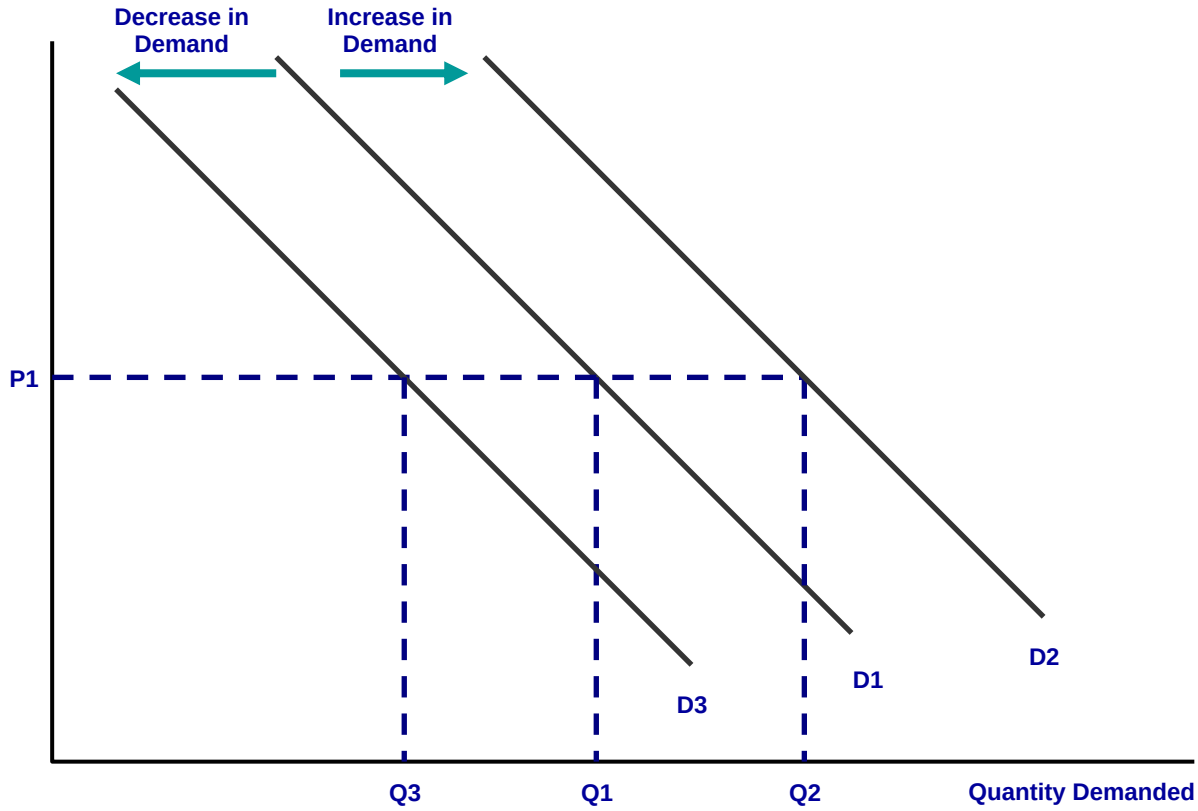
A change in the price of a good or service causes a *movement along the demand curve*. A fall in the price of a good causes an **expansion** of demand; a rise in price causes a **contraction** of demand. Many other factors can affect total demand - when these change, the demand curve can shift. This is explained below.

4.5.2 Shifts in the Demand Curve Caused by Changes in the Conditions of Demand

There are two possibilities: either the demand curve shifts to the right or it shifts to the left.

In the diagram below we see two shifts in the demand curve:

D0 - D2 would be an example of an **outward shift of the demand curve** (or an increase in demand). When this happens, more is demanded at each price. A movement from D0 - D1 would be termed an **inward shift of the demand curve** (or decrease in demand). When this happens, less is demanded at each price.



4.6 Causes of Shifts in the Demand Curve

4.6.1 Changing Price of a Substitute Good

Substitutes are goods in **competitive demand** and act as **replacements for another product**.

For example, a rise in the price of Esso petrol (other factors held constant) should cause a **substitution effect** away from Esso towards competing brands. A fall in the monthly rental charges of cable companies or Vodafone mobile phones might cause a decrease in the demand for British Telecom services.

Consumers will tend over time to switch to the cheaper brand or service provider. When it is easy to switch, consumer demand will be sensitive to price changes (see the section on price elasticity of demand)

Much depends on whether consumers have sufficient information about prices for different goods and services. One might expect that a fall in the charges from one car rental firm such as Budget might affect the demand for car rentals from Avis Hertz or Easycar. But searching for price information to get the best deal in the market can be time consuming and always involves an opportunity cost.

The development of the internet has helped to increase **price transparency** thereby making it easier for consumers to compare relative prices in markets.

4.6.2 Changing Price of a Complement

Two complements are said to be in **joint demand**. Examples include: fish and chips, DVD players and DVDs, iron ore and steel, success and hard work.

A rise in the price of a complement to Good X should cause a fall in demand for X. For example an increase in the cost of flights from London Heathrow to New York would cause a decrease in the demand for hotel rooms in New York and also a fall in the demand for taxi services both in London and New York.

A fall in the price of a complement to Good Y should cause an increase in demand for Good Y. For example a reduction in the market price of computers should lead to an increase in the demand for computer peripherals such as printers, scanners and software applications.

The extent to which a change in the price of one good leads to a change in the demand for a complement is determined by the cross-price elasticity of demand.

4.6.3 Change in the Income of Consumers

Most of the things we buy are **normal goods**, that is, more is bought when our income rises. When an individual's income goes up, their ability to purchase goods and services increases, and this causes an outward shift in the demand curve. When incomes fall, for example during an economic downturn or recession, there will be a decrease in the demand for most goods.

The size of a change in demand following a change in income is measured by income elasticity of demand.

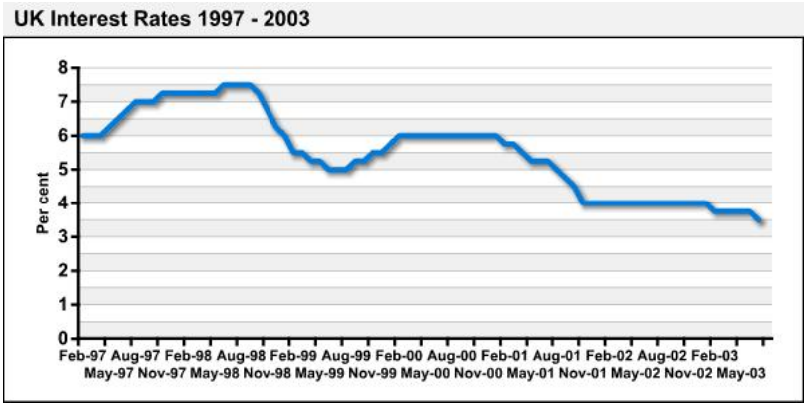
4.6.4 Change in Tastes and Preferences

Consumers' tastes can be volatile leading to unexpected fluctuations in demand. An example would be demand for British beef during the BSE crisis or the foreign demand for British lamb and pork in the wake of the Foot and Mouth crisis.

Persuasive advertising and marketing is designed to changes the tastes and preferences of consumers. The National Beef Association has been working hard over the last few years to changes consumer preferences and for a recovery in market demand for British produced beef.

4.6.5 Changes in Interest Rates

Many goods are bought on credit using borrowed money, thus the demand for them may be sensitive to the **rate of interest** charged by the lender. Therefore if the Bank of England decides to raise interest rates – the demand for many goods and services may fall. Examples of **"interest sensitive"** goods include household appliances, electronic goods, new furniture and motor vehicles. The demand for new homes is affected by changes in mortgage interest rates.



The chart above shows interest rates since 1997. The Bank of England was made independent in May 1997 and since then has had complete responsibility for setting of official interest rates in order to meet the inflation target set by the Government.

4.7 Income and Demand: Normal and Inferior Goods

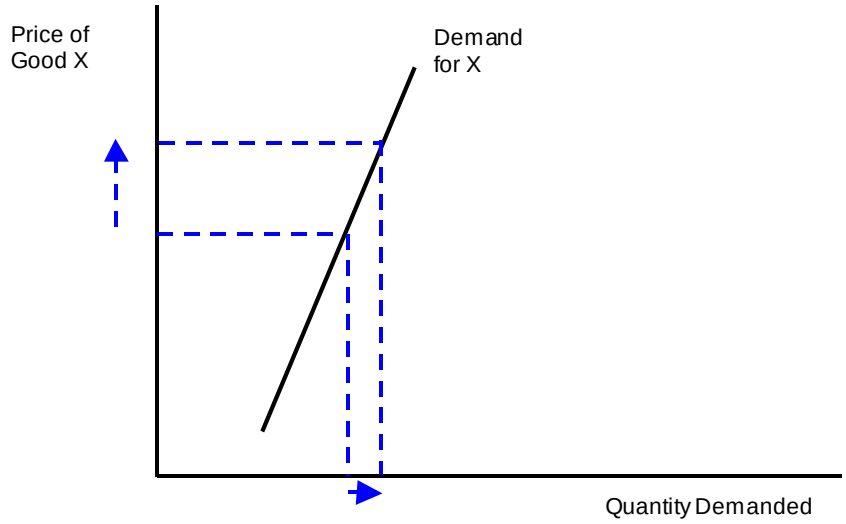
For **normal products**, more is demanded as income rises, and less as income falls.

Most products are like this but there are exceptions called **inferior products**. They are often cheaper poorer quality substitutes for some other good. Examples include black-and-white television sets, cigarettes, white bread and several other basic foods.

With a higher income a consumer can switch from the cheaper substitute to the more expensive, but preferred alternative. As a result, less of the inferior product is demanded at higher levels of income. Inferior goods have a negative income elasticity of demand.

4.8 Exceptions to the Law of Demand

Do consumers always buy more of something when the price falls? Some economists claim there are two exceptions to the normal law of demand – leading to the possibility of an upward sloping demand curve.



4.8.1 Ostentatious Consumption

Some goods are **luxurious items** where satisfaction comes from knowing both the price of the good and being able to **flaunt consumption** of it to other people!

A higher market price may also be regarded as a reflection of **product quality** and some consumers on high incomes are prepared to pay this for the **"snob value effect".** Examples might include perfumes, designer clothes, and top of the range cars.

Consider the case of VI which is considered to be the most exclusive perfume in the world. Only 475 bottles have been produced and bottles have been selling for £47,500 each – a classic case of paying through the nose for an exclusive good. The Vi perfume web site has more details if you are looking for an expensive birthday gift!

Goods of **ostentatious consumption** have a **high-income elasticity of demand**. That is, demand rises more than proportionately to an increase in consumers' income. With products of ostentatious consumption, the demand curve may slope upwards from left to right – more is bought at higher prices.

4.8.2 Speculative Demand

The demand for a product can also be affected by **speculative demand** in the marketplace. Here, potential buyers are interested not just in the satisfaction they may get from consuming the product, but also the **potential rise in market price** leading to a **capital gain** or profit.

When prices are rising, speculative demand may grow, adding to the upward pressure on prices. The speculative demand for housing and for **shares** (also known as equities) might come into this category.

5 MARKET SUPPLY

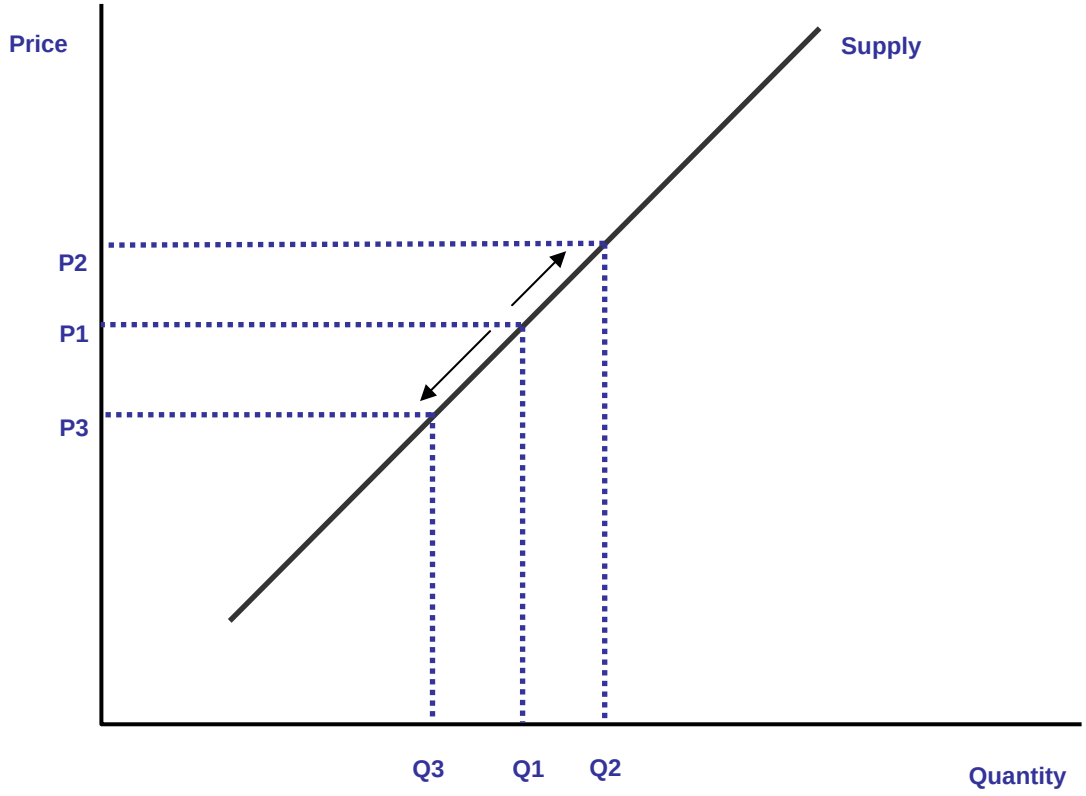
5.1 Definition of Supply

Supply is the quantity of a good or service that a producer is **willing** and **able** to supply onto the market at a given price in a given time period.

The basic law of supply is that as the market price of a commodity rises, so producers expand their supply onto the market.

5.2 The Supply Curve

A supply curve shows a relationship between price and quantity a firm is willing and able to sell.



If the price of the good varies, we move along a supply curve. In the diagram above, as the price rises from P1 to P2 there is an **expansion** of supply. If the market price falls from P1 to P3 there would be a **contraction** of supply in the market. Producers are responding to **price signals** when making their output decisions.

5.3 Explaining the Law of Supply

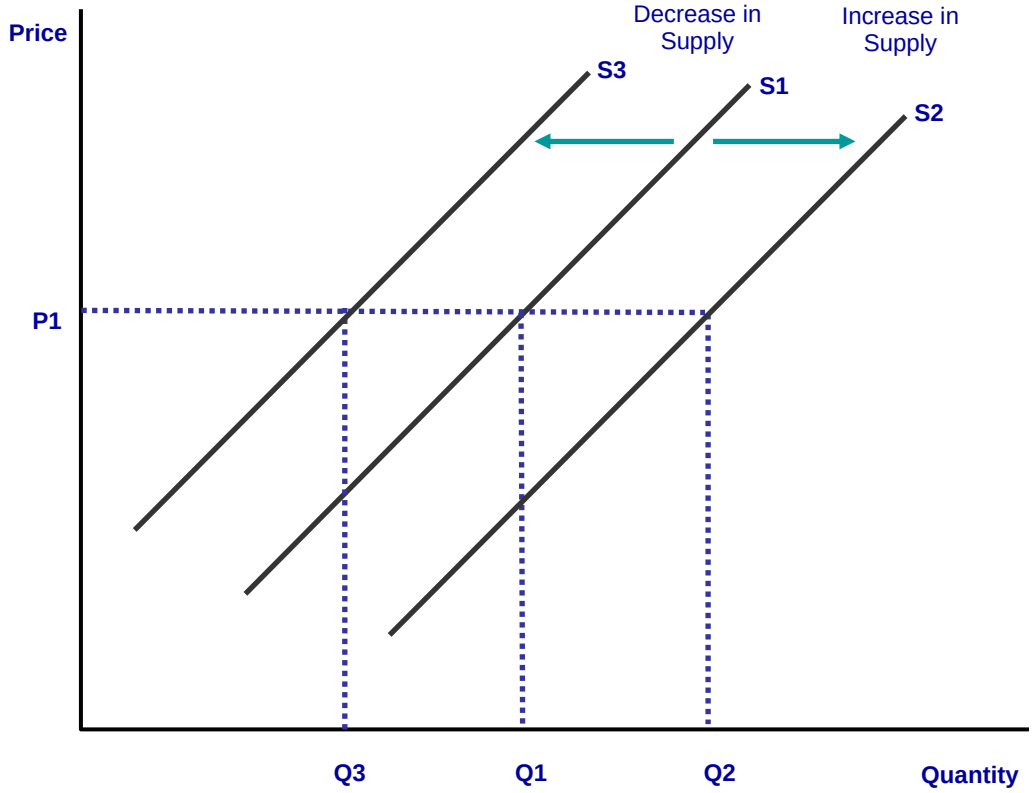
There are three main reasons why **supply curves** for most products are drawn as sloping upwards from left to right giving a positive relationship between the market price and quantity supplied:

- (1) When the market price rises (for example after an increase in consumer demand), it becomes more **profitable** for businesses to increase their output. Higher prices send signals to firms that they can increase their profits by satisfying demand in the market.
- (2) When output rises, a firm's **production costs** may rise, therefore a higher price is needed to justify the extra output and cover these extra costs of production
- (3) Higher prices makes it more **profitable** for other firms to enter the market leading to an increase in supply available for consumers to buy

5.4 Shifts in the Supply Curve

The supply curve can shift. If the supply curve shifts to the right (from S1 to S2) this is an **increase in supply**; more is provided for sale at each price. If the supply curve moves inwards from S1 to S3, there is

a **decrease in supply** meaning that less will be supplied at each price



5.4.1 Changes in the Costs of Production

Lower costs of production mean that a business can supply more at each price.

For example a publishing company might see a reduction in the cost of imported paper and inks. A car manufacturer might benefit from a stronger pound (exchange rate) because the costs of imported components and technology are lower. These cost savings can be passed through the **supply chain** and may result in a lower price for consumers.

Conversely, if costs increase, businesses cannot supply as much at the same price and this will cause an inward shift of the supply curve.

An example would be the rising expense of supplying electricity following a rise in the price of crude oil or gas. Or a decrease in the supply of personal computers at each price following a rise in the price of semi-conductor chips, an essential component in the production process.

A fall in the exchange rate causes an increase in the costs of imported components and raw materials and will (other factors remaining constant) lead to a decrease in supply in a number of different markets and industries.

5.4.2 Changes in Production Technology

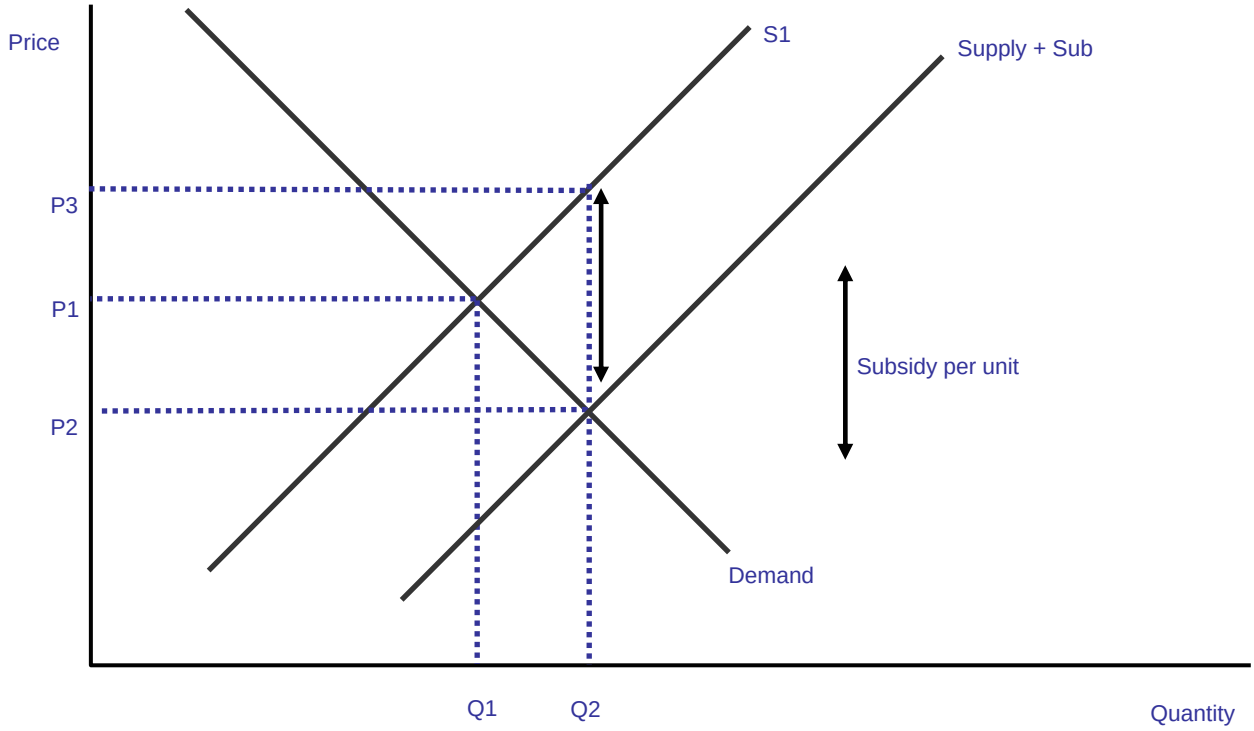
Production technologies can change quickly and in industries where technological change is rapid we see increases in supply and lower prices for the consumer.

A good example of this comes from the global market for personal computers. Rapid technological advances and improvements in production processes have contributed to sizeable cuts in retail prices each year. Dell has been one of the most successful businesses and attributes much of its market dominance to exploiting new technology both in manufacturing, distribution and marketing.

5.4.3 Government Taxes and Subsidies

Government intervention in a market can affect supply. A tax on producers causes an increase in costs and will cause the supply curve to shift upwards. Less will be supplied after the tax is introduced. A subsidy has the opposite effect as a tax cut.

A government subsidy will increase supply because a **guaranteed payment** from the Government reduces a firm's costs allowing them to produce more at a given price.



5.4.4 Climatic Conditions and Production Yields

For commodities such as coffee, climatic conditions can exert a great influence on market supply. Favourable weather will produce a bumper harvest and will increase market supply. Unfavourable weather conditions will lead to a poorer harvest, lower production yields and therefore a decrease in supply.

Changes in climate can have a dramatic effect on prices for many agricultural goods such as coffee and cocoa.

5.4.5 Change in the Prices of a Substitute in Production

A **substitute in production** is a product that could have been produced using the same resources. Take the example of barley. An increase in the price of wheat makes wheat growing more attractive. The pursuit of the **profit motive** may cause farmers to use land to grow wheat rather than barley.

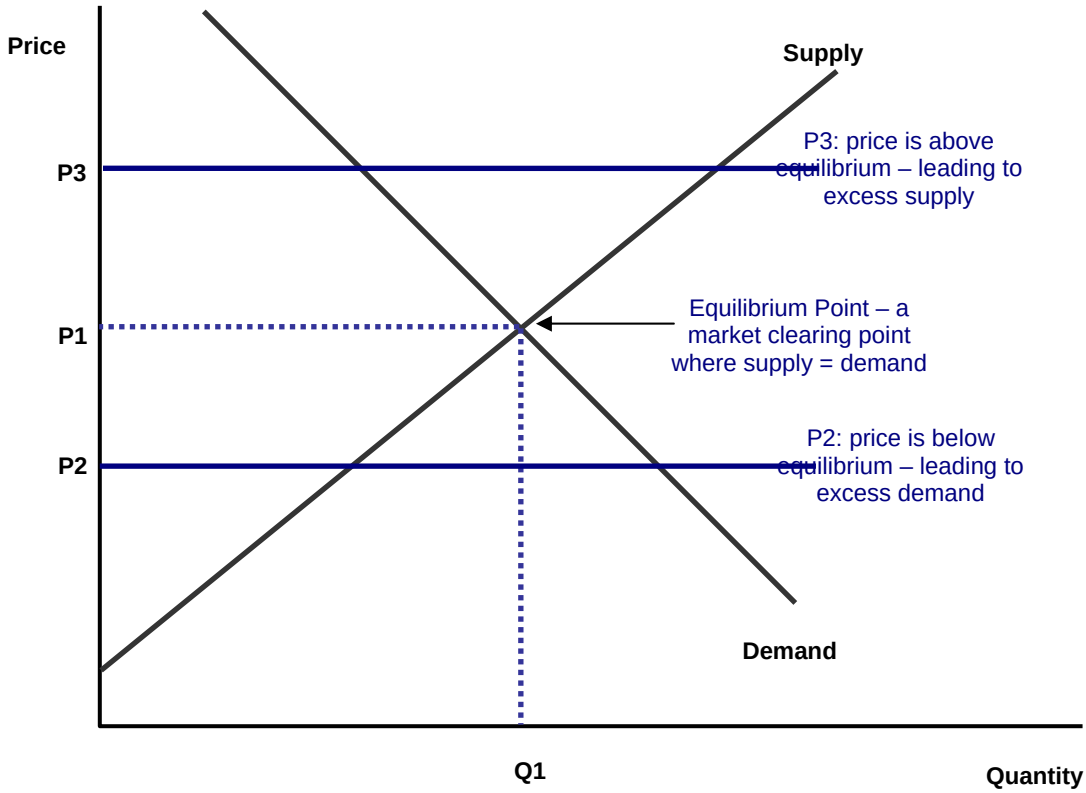
5.4.6 Number of Producers in the Market and their Objectives

The number of sellers (businesses) in an industry affects market supply. When new businesses enter a market, supply increases causing downward pressure on price.

Sometimes producers may deliberately limit supply through **output quotas**. This is designed to reduce market supply and force the price upwards. An example of this is the fishing quota introduced by the EU Commission as part of the Common Fisheries Policy. In part the quota is designed to protect fish stocks from permanent depletion.

6 EQUILIBRIUM MARKET PRICE

6.1 Concept of Market Equilibrium



Equilibrium means a state of **equality** between demand and supply. Without a shift in demand and/or supply there will be no change in market price. In the diagram above, the quantity demanded and supplied at price P1 are equal. At any price above P1, supply exceeds demand and at a price below P1, demand exceeds supply. In other words, prices where demand and supply are out of balance are termed points of **disequilibrium**.

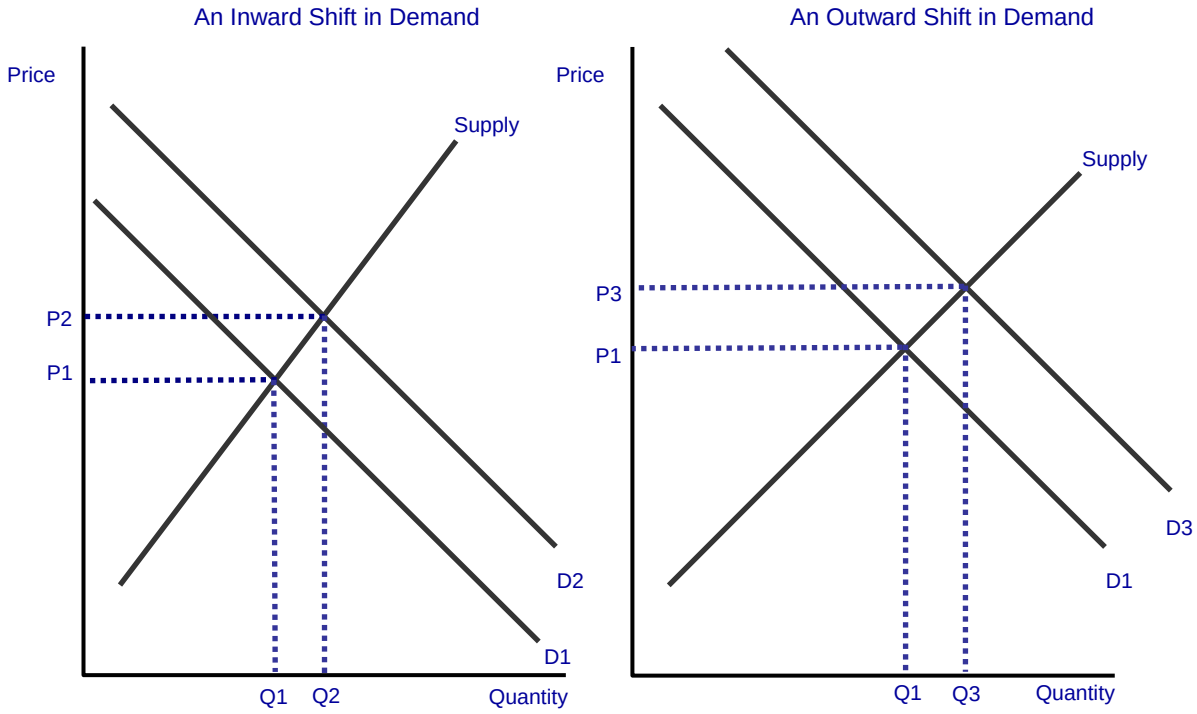
Changes in the conditions of demand or supply will shift the demand or supply curves. This will cause changes in the equilibrium price and quantity in the market.

Demand and supply schedules can be represented in a table. The example below provides an illustration of the concept of equilibrium. The weekly demand and supply schedules for T-shirts (in thousands) in a city are shown in the next table:

Price per unit (£)	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**
Demand	6	8	10	12	14	16	18	20
Supply	18	16	14	12	10	8	6	4
New Demand (2)	10	12	14	16	18	20	22	24
New Supply (2)	26	24	22	20	18	16	14	12

- The equilibrium price is £5 where demand and supply are equal at 12,000 units
- If the current market price was £3 – there would be excess demand for 8,000 units
- If the current market price was £8 – there would be excess supply of 12,000 units
- A change in fashion causes the demand for T-shirts to rise by 4,000 at each price. The next row of the table shows the higher level of demand. Assuming that the supply schedule remains unchanged, the new equilibrium price is £6 per tee shirt with an equilibrium quantity of 14,000 units
- The entry of new producers into the market causes a rise in supply of 8,000 T-shirts at each price. The new equilibrium price becomes £4 with 18,000 units bought and sold

6.2 Changes in Market Demand



The demand curve may shift to the right (increase) for several reasons:

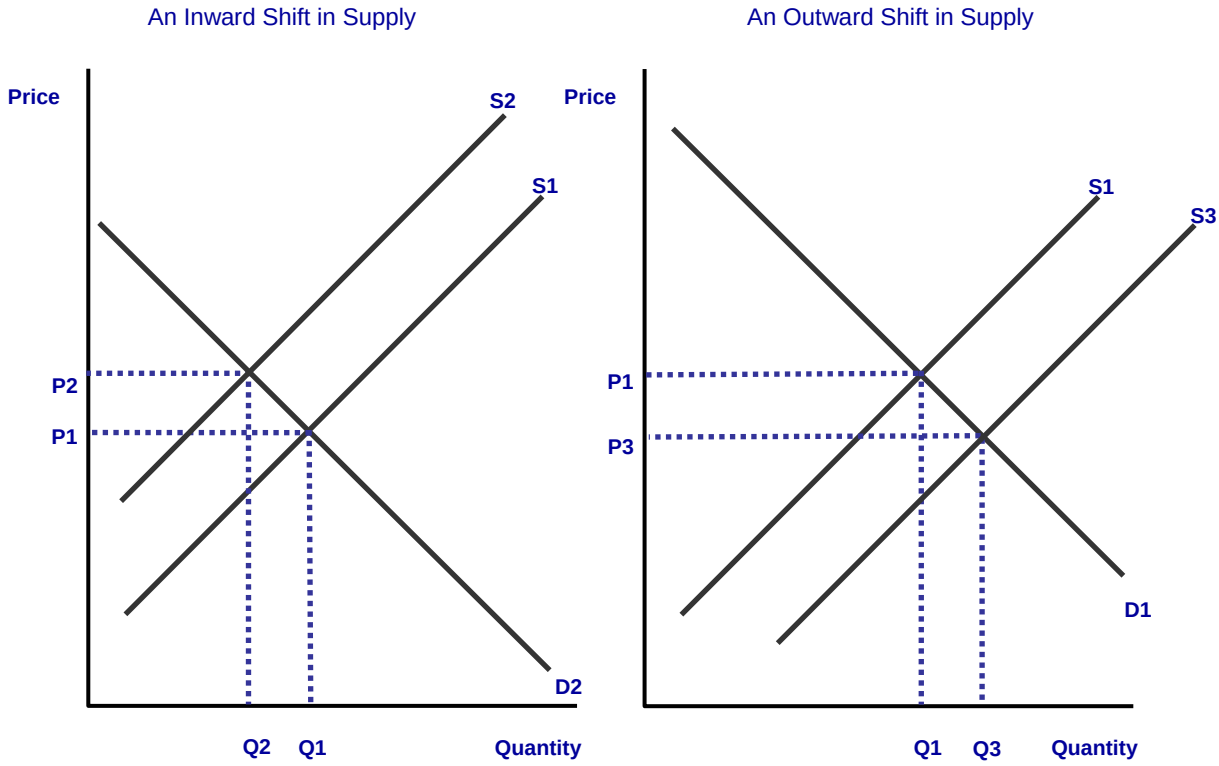
- A rise in the price of a substitute or a fall in the price of a complement
- An increase in consumers' income or wealth
- Changing consumer tastes and preferences in favour of the product
- **A fall in interest rates** (i.e. bank borrowing rates or mortgage interest rates)
- A general rise in consumer confidence and optimism

The outward shift in the demand curve causes a **movement (expansion) along the supply curve** and a rise in the equilibrium price and quantity. Firms in the market will sell more at a higher price and therefore receive more in total revenue.

The reverse effects will occur when there is an inward shift of demand. A shift in the demand curve does not cause a shift in the supply curve!

Demand and supply factors are assumed to be independent of each other although some economists claim this assumption is no longer valid!

6.3 Changes in Market Supply



The supply curve may shift outwards if there is

- **A fall in the costs of production** (e.g. a fall in labour or raw material costs)
- A **government subsidy** to producers that reduces their costs for each unit supplied
- **Favourable climatic conditions** causing higher than yields for agricultural commodities
- A fall in the price of a **substitute in production**
- An **improvement in production technology** leading to higher productivity and efficiency in the production process
- The **entry of new suppliers** (firms) into the market which leads to an increase in total market supply available to consumers

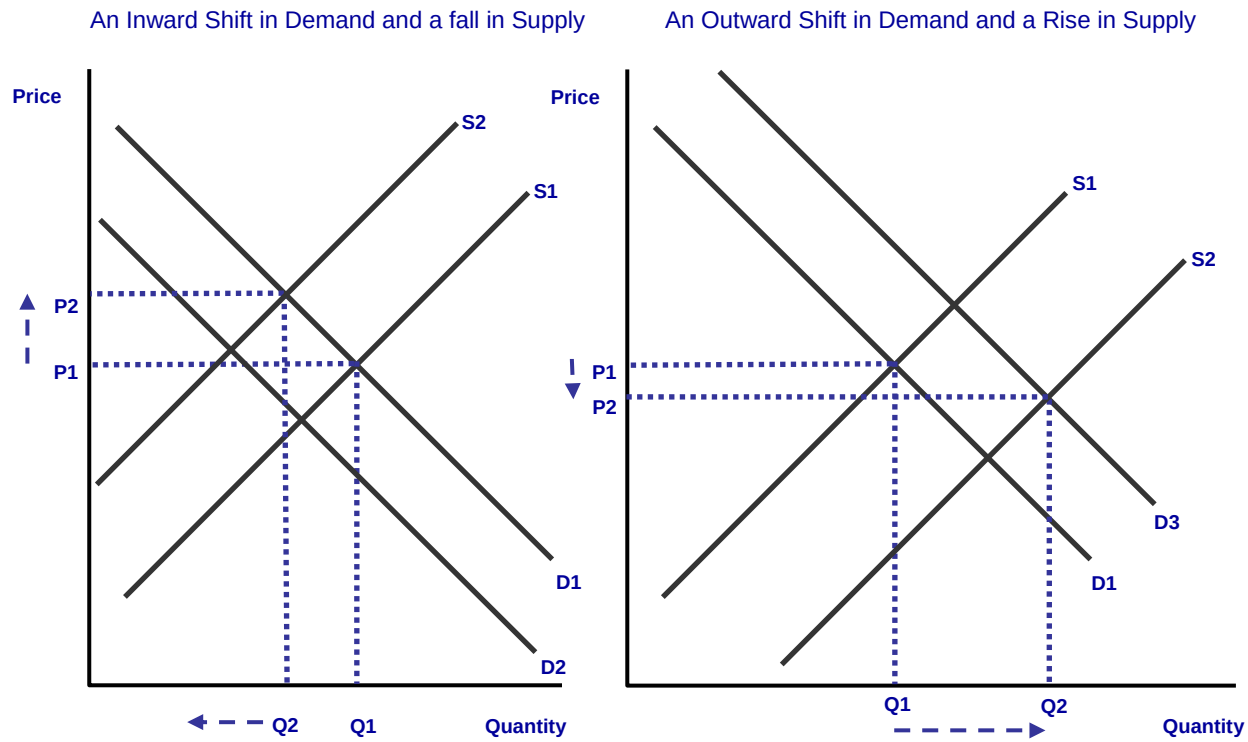
The outward shift of the supply curve increases the supply available in the market at each price and with a given demand curve, there is a fall in the market equilibrium price from P1 to P3 and a rise in the quantity of output bought and sold from Q1 to Q3. The shift in supply causes an expansion along the demand curve.

Important note for the exams: A shift in the supply curve does not cause a shift in the demand curve. Instead we move along (up or down) the demand curve to the new equilibrium position.

The inward shift in supply shown in the left-hand diagram above would be caused by the reverse of the factors listed above, for example **a rise in production costs**, the introduction of a **government tax on producers** or **difficult climatic conditions** that reduce production for farmers.

A fall in supply might also be caused by the **exit of firms from an industry** perhaps because they are not making a sufficiently high rate of return by operating in a particular market.

The equilibrium price and quantity in a market will change when there shifts in **both** market supply and demand. Two examples of this are shown in the next diagram:



In the left-hand diagram, we see an inward shift of supply (caused perhaps by rising costs or a decision by producers to cut back on output at each price level) together with a fall (inward shift) in demand (perhaps the result of a decline in consumer confidence and incomes). Both factors lead to a fall in quantity traded, but the rise in costs forces up the market price.

The second example on the right shows a rise in demand from D1 to D3 but a much bigger increase in supply from S1 to S2. The net result is a fall in equilibrium price and a sharp increase in the equilibrium quantity traded in the market.

6.3.1 Moving from One Equilibrium to Another

Changes in equilibrium prices and quantities do not happen instantaneously. The shifts in supply and demand outlined in the diagrams in previous pages are reflective of changes in conditions in the market.

So for example, an outward shift of demand will (depending upon supply conditions) leads to a short term rise in price and a fall in available **stocks**. The higher price then acts as an **incentive** for suppliers to raise their output (termed as an expansion of supply) causing a movement up the short term supply curve *towards* the new equilibrium point.

We tend to use these diagrams to illustrate movements in market prices and quantities – this is known as comparative static analysis. The reality in most markets and industries is much more complex. For a start, many firms have **imperfect knowledge** about their demand curves – they do not know precisely how demand reacts to changes in price or the true level of demand at each and every price level. Likewise, constructing accurate supply curves requires detailed information on production costs and these may not be available.

That said – you need to become familiar with using basic supply and demand analysis to show the dynamics of market situations and how the **price mechanism** goes about allocating scarce resources among competing ends in a market-based economic system.

We now move on to discuss the importance of **elasticity of demand and supply** in different markets and industries.

7 ELASTICITY OF DEMAND

7.1 Price Elasticity of Demand

Price Elasticity of Demand measures the **responsiveness** of demand for a product following a change in its own price. The **formula** for calculating the co-efficient of elasticity of demand is:

Percentage change in quantity demanded divided by Percentage change in price

If the demand increased by 10% due to a fall in a good's own price of 5%, the price elasticity of demand for a product would be 2.

Since changes in price and quantity nearly always move in opposite directions, economists usually do not bother to put in the minus sign. We are more concerned with the **co-efficient of price elasticity of demand**.

7.2 Different values for price elasticity of demand

- **If Ped = 0** then demand is said to be perfectly inelastic. This means that demand does not change at all when the price changes
- **If Ped is between 0 and 1** (i.e. the percentage change in demand from A to B is smaller than the percentage change in price), then demand is inelastic. Producers know that the change in demand will be proportionately smaller than the percentage change in price
- **If Ped = 1** (i.e. the percentage change in demand is exactly the same as the percentage change in price), then demand is said to unit elastic. A 15% rise in price would lead to a 15% contraction in demand leaving total spending by the same at each price level.
- **If Ped > 1**, then demand responds more than proportionately to a change in price. For example a 20% increase in the price of a good might lead to a 30% drop in demand. The price elasticity of demand for this price change is –1.5

7.3 What Determines Price Elasticity of Demand?

Several factors can be identified – some of which will be more important than others when we apply this idea to different markets. The main factors though to influence the value of price elasticity of demand (Ped) are as follows:

- **The number of close substitutes for a good / uniqueness of the product** – the more close substitutes the more elastic is the demand for a particular product. If a consumer has a wide choice of product, they can more easily switch their demand if the price of one product changes relative to others in the market. Another related factor is the **cost of switching between different products**. Consider for example the financial expense of changing the central heating system in your home, or perhaps the cost of switching from one mobile phone supplier to another when you might have become "locked-in" to using one supplier through a contractual agreement. When the costs of substitution are relatively high, this can make demand for a good quite price inelastic
- **The degree of necessity of consumption or whether the good is a luxury** – goods and services deemed by consumers to be **necessities** tend to have an inelastic demand whereas luxuries will tend to have a more elastic demand following a price change because consumers can do without **luxuries** when their budgets are stretched. I.e. in an economic slowdown or a recession we can often make do without luxury or discretionary items of spending.
- **The % of a consumer's income allocated to spending on the good** – goods and services that take up a significant proportion of a household's monthly or annual income will tend to have a more elastic demand than products where large price changes makes little or no difference to someone's ability to purchase the product. For example consumers are sensitive to changes in the prices of foreign holidays and new cars, whereas the demand for milk, newspapers and magazines is much affected by price changes. Price elasticity of demand nearly always varies according to the **income group of consumers** that we are considering. Take for example the current issue of introducing "top-up" fees for university courses in England and Wales. How will the demand for higher education courses be affected? Evidence from the United States is that students from high and middle ability and incomes had a tuition fee elasticity of around -0.29 (low) and students from lower income groups or of lower ability are more sensitive to changes in fees.

- **The time period allowed following a price change** – demand tends to be more price elastic, the longer that we allow consumers to respond to a price change by varying their purchasing decisions. In the short run, the demand for a product is often thought to be price inelastic, because it takes time for consumers both to notice and then to respond to price fluctuations.
- **Whether the good is subject to habitual consumption** – when this occurs demand is inelastic – the consumer becomes much less sensitive to the price of the good in question. Clearly, examples such as cigarettes and alcohol might come into this category. What of the price elasticity of demand for energy drinks such as Red Bull and Lucozade?
- **Peak and Off Peak Demand.** Demand for certain products can be high at **peak times** (e.g. the demand for package holidays during summer holidays; the demand for restaurant meals during the Festive period) but consumer demand is much lower at off-peak periods. Demand tends to be less elastic at peak times – a feature that suppliers can take advantage of when setting prices. Demand is more elastic at off-peak times, leading to lower prices for consumers.
- **The breadth of definition of a good or service** – if a good is broadly defined, i.e. the demand for petrol or meat, demand is often fairly inelastic. But specific brands of petrol or beef are likely to be more elastic following a price change

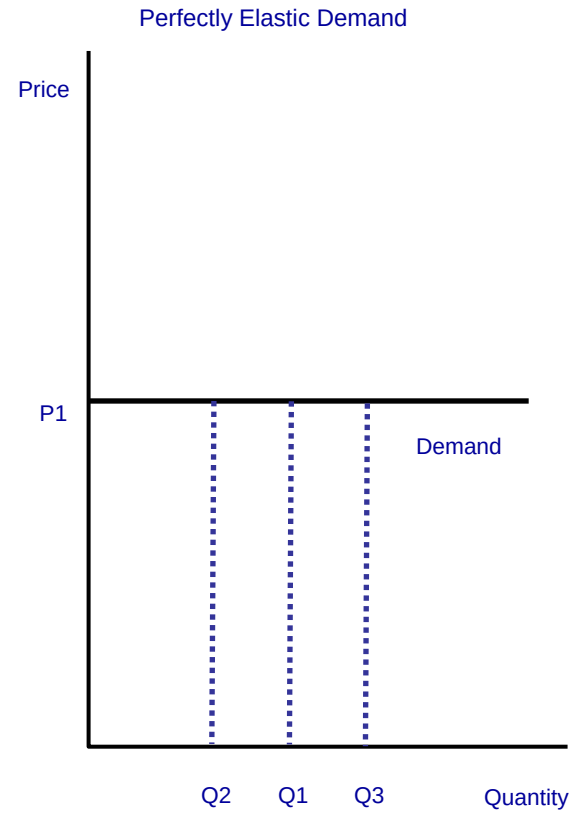
Price elasticity of demand can vary according to whether the market price of a product is rising or falling. Consumers' behaviour can change quite differently depending on where they see prices heading in the future.

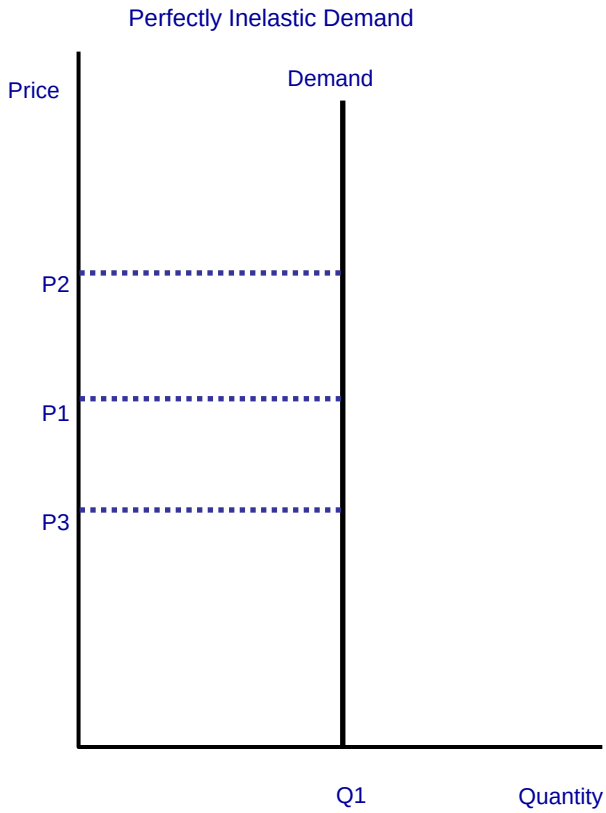
Real-world estimates of price elasticity of demand for various products can be researched using the internet. Consider a few examples shown below

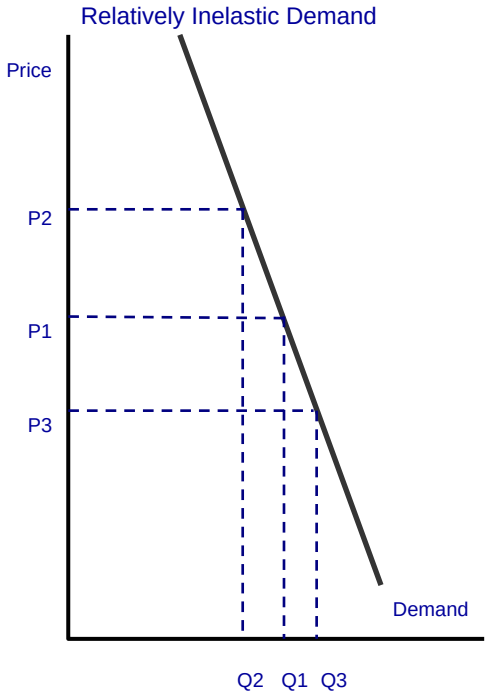
UK farmers' price elasticity of demand with respect to changes in the **prices of herbicides and pesticides**				-0.28 to -0.45		Source: DEFRA
Estimated elasticity of demand in the UK for **beer, wines and spirits** (1993-96)						Source: IFS
Beer	-0.76	Wine	-1.69	Spirits	-0.86	
Estimated price elasticity of demand for **cigarettes**						Source: Tobacco Manufacturers
For a price decrease	-0.37			For a price increase		-0.77
Estimated price elasticity of demand for **air transport** (response to changes in air fares e.g. brought about by the introduction of an aviation fuel tax) Ped for air transport is estimated overall to be -0.8 with an elasticity of demand of -1.3 in the leisure market and an elasticity of demand of -0.5 in the business market						Source: UK Department for Aviation

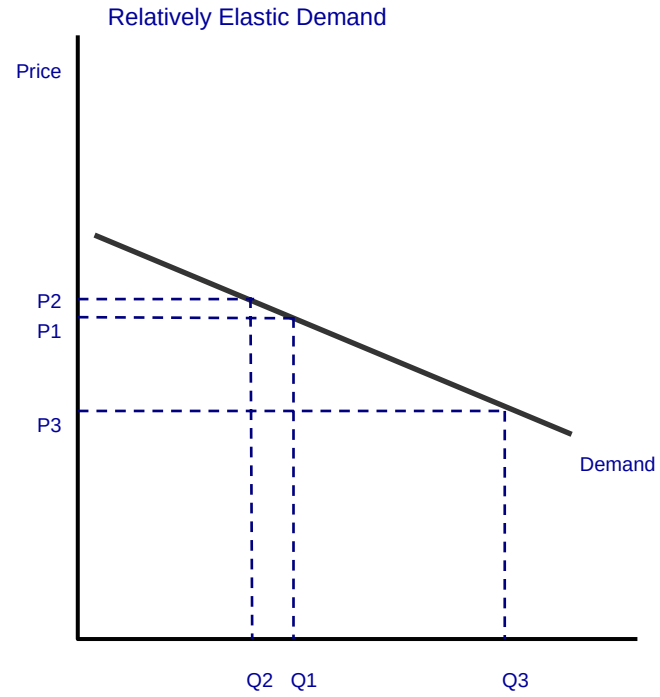
Try this site on estimates for the price elasticity of demand for cocoa across various countries

7.4 Demand Curves with Different Price Elasticity



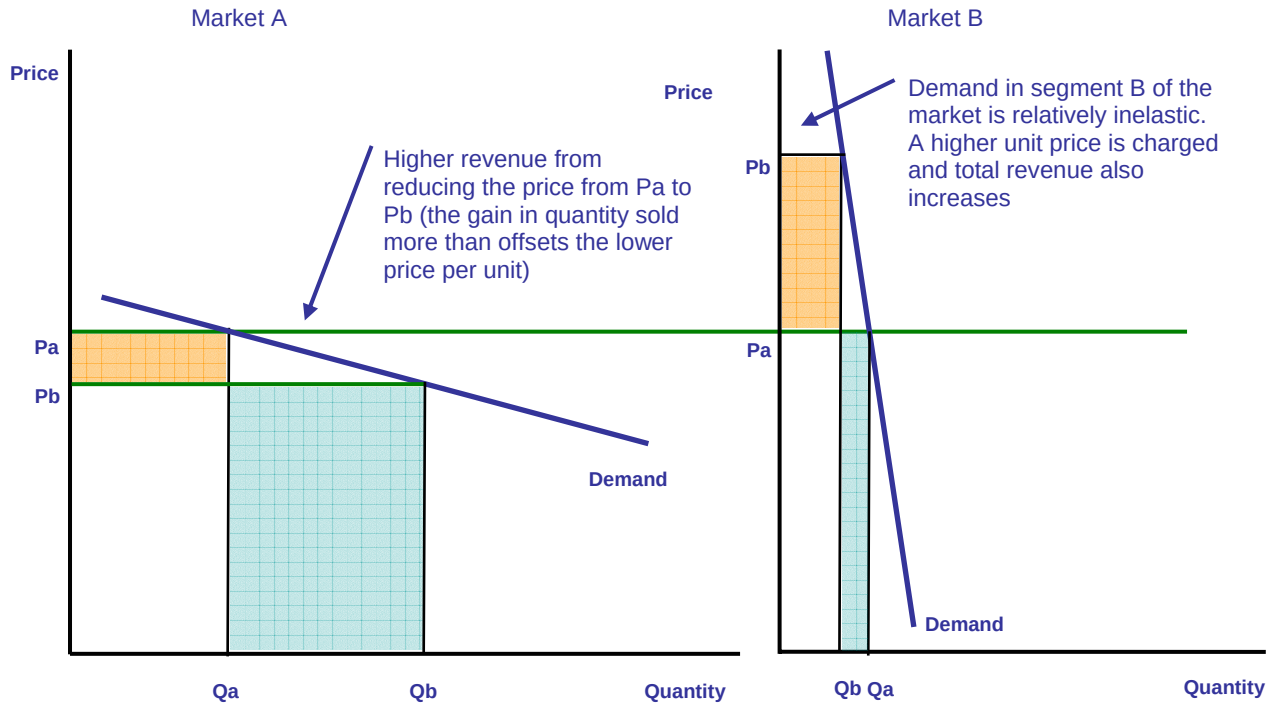






- When demand is **perfectly inelastic** (Ped = zero) any change in market price causes no change in demand
- When demand is **perfectly elastic** (Ped = infinity) there will be one ruling price in the market unless the demand curves shifts. Producers can sell any amount they want at the ruling price
- When demand is **elastic** (see Market A) a rise in price will cause a more than proportionate fall in demand and total spending on the good will fall

- When demand is **inelastic** (see market B) a rise in price causes a less than proportionate fall in demand and total spending will rise



7.4.1 How Businesses Make Use of Price Elasticity of Demand?

Firms can use price elasticity of demand (PED) estimates to predict:

- The effect of a change in price on quantity demanded
- The effect of a change in price on total revenue & expenditure
- The likely price volatility in a market following unexpected changes in supply – important for commodity producers
- The effect of a change in indirect tax on price and quantity demanded and also whether the business is able to pass on some or all of the tax onto the consumer
- Information on the price elasticity of demand can be utilised as part of a policy of price discrimination (or yield management). This is where a monopoly supplier decides to charge different prices for the same product to different segments of the market e.g. peak and off peak rail travel

7.5 Income Elasticity of Demand

Income elasticity of demand measures the relationship between a **change in quantity demanded** and a **change in real income**.

The formula for income elasticity is:

Percentage change in quantity demanded DIVIDED BY Percentage change in income

7.5.1 Normal Goods

Normal goods have a **positive income elasticity of demand** so as consumers' income rises, so more is demanded at each price level

Necessities have an income elasticity of demand of between 0 and +1

Luxuries have an income elasticity of demand > +1 i.e. the demand rises more than proportionate to a change in income

7.5.2 Inferior Goods

Inferior goods have a negative income elasticity of demand. Demand falls as income rises.

Within a given market, the income elasticity of demand for various products can vary. For example, in the market for overseas holidays, the income elasticity for full-board in 3 or 4 star hotels will be higher than for self-catering apartments in the same location.

Staying within the holiday sector, income elasticity will vary between different destinations. Spanish tourist resorts seek to attract high volumes of tourists in low-cost accommodation from consumers with a lower average income than specialist activity holidays in purpose built resorts who are prepared to pay premium prices for higher quality sporting and leisure facilities.

Detailed information on household spending on different goods and services is provided each year from the Family Household Spending Survey. From this we can make estimates of income elasticity of demand for different categories of goods and services.

For example, the income elasticity of demand is strongly positive for

- Overseas travel
- Wines and spirits
- Consumer durables such as audio visual equipment, 3rd generation mobile phones and new kitchens
- Sports and leisure facilities (including gym membership and sports clubs)
- In contrast, income elasticity of demand is lower for
- Basic household foods
- Mass transport (bus and rail)
- Cigarettes and Beer

7.5.3 How Businesses Use Estimates of Income Elasticity of Demand?

Knowledge of income elasticity of demand for different products helps firms predict:

- Effects of forecast economic growth on sales. Economic growth increases incomes
- Luxury goods experience a proportionately larger increase in demand e.g. if YED for product is 2, a 10% increase in growth and income results in a 20% increase in quantity demanded.
- Necessities experience a proportionately smaller increase in demand e.g. if YED for product is 0.3, a 10% increase in growth and income results in just a 3% increase in quantity demanded.
- **The effect of a business cycle on sales**. Economies experience a business, economic or trade cycle where actual GDP moves up and down in a regular pattern causing booms and slowdowns or perhaps a recession.

The business cycle means incomes rise and fall. Luxury Products with a high income elasticity experience greater sales volatility over the business cycle than necessities where demand from consumers is less sensitive to changes in the economic cycle

7.6 Cross Price Elasticity of Demand

Cross price elasticity (CPed) measures the responsiveness of demand for good X following a change in the price of good Y (a related good).

With cross price elasticity we make an important distinction between **substitute** products and **complementary goods and services**

- **Substitutes**: With **substitute goods** such as brands of cereal or washing powder, an increase in the price of one good will lead to an increase in demand for the rival product. Cross price elasticity will be positive. In recent years, the prices of new cars have been falling. This should increase the demand for new cars and reduce the demand for second hand cars and mass transport services such as bus travel (ceteris paribus)
- **Complements:** With goods that are in **complementary demand** such as the demand for DVD players and DVD videos, when there is a fall in the price of DVD players we expect to see more DVD players bought, leading to an expansion in market demand for DVD videos. The cross

price elasticity of demand for two complements is negative

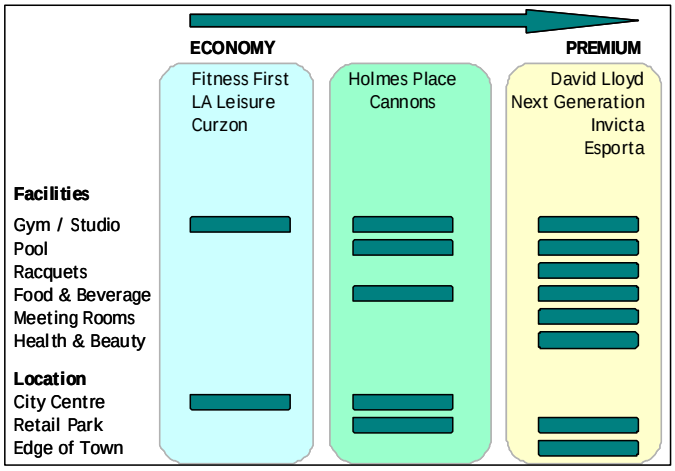
- **Un-related products:** When there is no relationship between two products, the cross price elasticity of demand is zero

How can firms make use of cross price elasticity of demand?

Firms can use cross elasticity of demand (XED) estimates to predict:

- **The impact of a rival's pricing strategies on demand for their own products**: If a competitor cuts the price of a rival product, firms use XED to predict the effect on the quantity demanded and total revenue of their own product.
- **Pricing strategies for complementary goods**: For example, popcorn and cinema tickets have a high negative XED value – they are strong complements. Popcorn has a very high mark up i.e. pop corn costs pennies to make but sells for more than a pound. If firms have a reliable estimate for XED they can estimate the effect, say, of a two-for-one cinema ticket offer on the demand for popcorn. The additional profit from extra popcorn sales may more than compensate for the lower cost of entry.

7.6.1 Case Study: Price and Income Elasticity of Demand for Health Clubs



The UK health club market is split between two broad segments: **economy and premium operators.**

Cannons, Esporta and David Lloyd Leisure are three of the best known names trading in the Premium segment, offering large units with a range of squash courts, swimming pools, specialist classes, and health and beauty services alongside traditional gym equipment. Memberships cost from £40-£100 per month.

At the other end of the sector are economy operators such as Fitness First and LA Fitness. They run smaller, less sophisticated clubs, offering good quality but basic facilities located close to large offices or residential areas. The typical cost of membership is £25-£40 per month.

The difference in facilities offered has significant capital investment implications for the health club operators. Economy operators such as Fitness First minimise the risk that a gym may not prove popular in a particular area by spending just £1m—£1.2m opening relatively small units of around 20,000 sq ft each. In sharp contrast, David Lloyd regularly invests over £10 in its larger clubs, with the average nearer to £5m.

Price Elasticity of Demand

Regular gym users regard their health club visits as an important feature of their weekly exercise regime. They are unlikely to cancel a membership if fees rise from time to time. The majority of gym members pay their subscriptions using direct debit. They may take some time to realise that their monthly charge has changed.

For most consumers, having made the decision to commit to a membership of between £25—£50 per month, a small rise in fees is unlikely to lead to a cancelled membership.

Some towns and cities are well served by health clubs in both the premium and economy segments of the market. When there is genuine market competition, price elasticity of demand should be higher.

Income Elasticity of Demand

Income elasticity measures the responsiveness of demand to a change in consumers' real income. Although some fitness fanatics may regard their membership as a necessity (giving a low but positive value for income elasticity), for many consumers, an individual or family membership is often seen as a luxury item in their annual budget – an item of discretionary spending that can be dispensed with if income falls or consumer confidence declines.

Normal luxury products have a highly positive income elasticity of demand. When the economy is strong, and incomes and employment are rising, we expect to see strong growth in market demand for health and fitness activities. This encompasses health clubs together with other activities (including sports-based holidays). In an economic slowdown, discretionary spending on health clubs may fall—although in the short term, thousands of members are committed to an annual fee.

8 PRICE ELASTICITY OF SUPPLY

8.1 Introduction

Price elasticity of supply (Pes) measures the relationship between change in quantity supplied and a change in price.

- When supply is elastic, producers can increase production without a rise in cost or a time delay
- When supply is inelastic, firms find it hard to change their production levels in a given time period.

The **formula** for price elasticity of supply is:

Percentage change in quantity supplied divided by the Percentage change in price

The **co-efficient of elasticity of supply** is positive, because an increase in price is likely to increase the quantity supplied to the market and vice versa. When Pes > 1, then supply is price elastic. When Pes < 1 then supply is price inelastic. When Pes = 0, supply is perfectly inelastic and when Pes = infinity, supply is perfectly elastic following a change in demand.

8.2 Factors that Affect Price Elasticity of Supply

Many factors can influence the elasticity of supply for a product in a given time period. They will vary in importance from good to good – but the main factors are discussed below:

8.2.1 Spare Production Capacity

If there is plenty of **spare capacity**, a business should be able to increase its output without a rise in costs and therefore supply will be relatively elastic in response to a change in demand.

The supply of goods and services to a market is often most elastic towards the end of an recession, when there is plenty of spare labour and capital resources available to step up output as the economy recovers. In contrast during a boom, resources used in production may become scarce and these shortages will reduce elasticity of supply.

Consider the market for air travel. The demand for air travel has soared in recent years – although new airport terminals have been built and there have been improvements to air traffic control systems, the supply of available air space is becoming less elastic and the capacity of the system comes under increasing stress.

In contrast, heavy investment in the telecommunications industry has left the mobile phone sector with a huge amount of spare capacity as yet unfilled by consumer demand. The glut of potential supply makes supply elastic and puts downward pressure on prices and profit margins.

8.2.2 Stocks of Finished Products and Components

If stocks of raw materials and finished products are at a high level then a firm is able to respond to a change in demand quickly by supplying these stocks onto the market - supply will be price elastic. Conversely when stocks are low, dwindling supplies force prices higher and unless stocks can be replenished, supply will be inelastic in response to a change in demand.

8.2.3 The Ease and Cost of Factor Substitution

Consider the sudden increase in demand for petrol canisters during the fuel shortage in September 2000. Could manufacturers of cool-boxes or other types of canister have switched their production processes quickly to meet the high demand for fuel containers? The answer is probably not at least in the short term.

If both capital and labour resources are **occupationally mobile** then the price elasticity of supply for a product is higher than if capital equipment and labour cannot easily and quickly be switched to producing something different and the **production process** is therefore inflexible in response to changes in demand for goods and services.

8.2.4 Time Period Involved in the Production Process

Supply is more price elastic the longer the **time period** that a firm or the market as a whole is allowed to adjust its production levels.

In the short run, a firm may not be able to change many of its factor inputs. In some agricultural markets for example, the supply is fixed and is determined mainly by planting decisions made months before, and

also climatic conditions, which affect the overall production yield.

Take the example of the supply of natural rubber in world markets. Rubber trees must grow for several years before they yield much sap and therefore the short term supply response will be fairly low. However, supply will be much more price elastic over a period of two to three years as producers respond to changes in prices.

Economists sometimes refer to the **momentary time period** – this is a time period that is short enough for supply to be assumed fixed i.e. supply cannot respond at all to a change in demand. In this situation, supply is deemed to be perfectly inelastic (i.e. Pes = zero).

A real world example of the importance of elasticity of supply in acting as a constraint on the growth of a market is shown in the following case study article – on the expansion of market demand for digital radios.

Digital Radios – Supply Starts to Respond

After a slow start, the **market demand for digital radios** in Britain soared during 2002-03. So much so that makers of sub-£100 digital radios, such as Imagination Technologies and Roberts Radio, have been unable to keep up with the increase in demand.

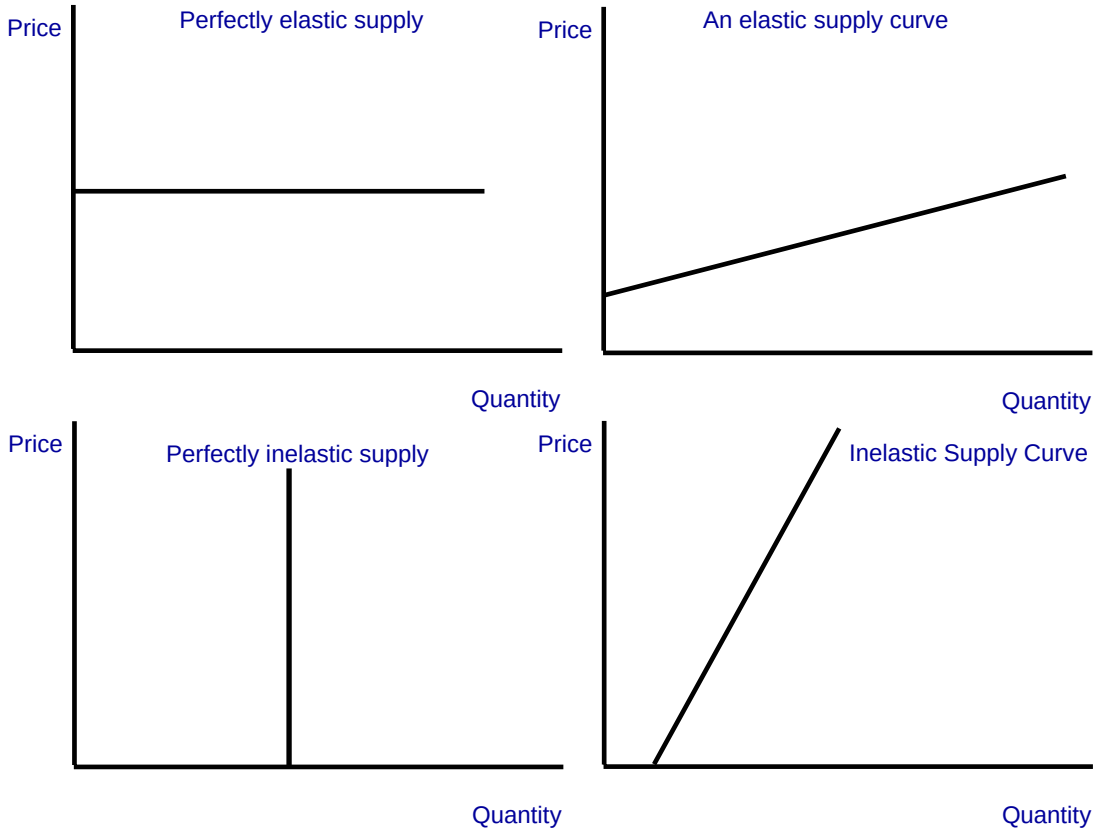
The **elasticity of supply in the industry** has been low because of the lead times required to step up production and also by the fact that some big manufacturers have yet to start making or selling digital radio sets. For example, the Dutch electronics giant Philips is not yet producing and selling a digital radio set of its own, even though it owns a series of patents that define the core digital radio technology.

As **more manufacturers enter the industry**, so market supply will increase bringing down the cost of individual digital radio devices for the home, motor vehicles, mobiles and personal computers. The exploitation of **economies of scale in production** in the long term will also drive the market forward as prices fall further in response to reductions in average costs per unit.

The expansion of the market has also been constrained by the **limits of airwaves available** to broadcast digital services. The BBC has been building 47 new digital radio transmitters over a two year period which will increase digital radio's coverage from 65% to 85% of the UK population.

Adapted from BBC online and media magazine reports

8.3 Illustrating Price Elasticity of Supply



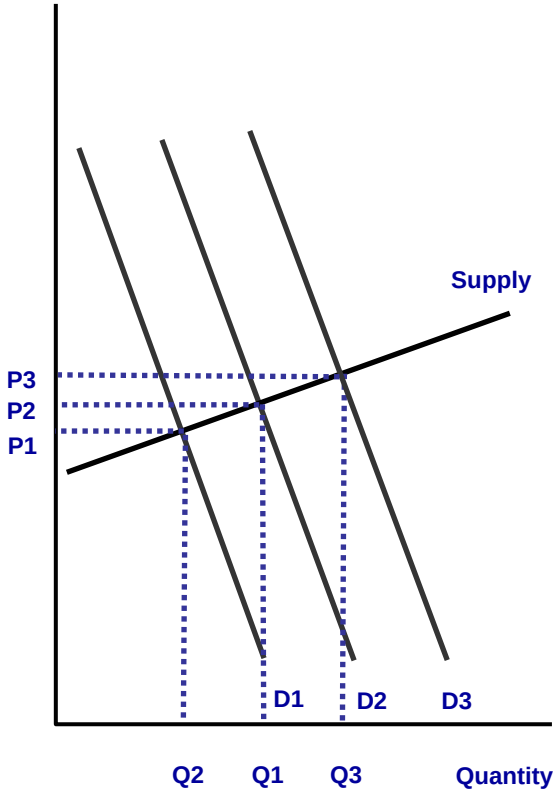
- When supply is **perfectly inelastic** a change in price has no effect on the quantity supplied onto the market. Examples include the supply of tickets for sports or musical venues, and the momentary supply of agricultural products (where the yield is fixed at harvest time) the price elasticity of supply = zero when the supply curve is vertical.
- When supply is **perfectly elastic** a firm can supply any quantity at the same market price. This occurs when the firm can produce output at a **constant cost per unit** and it has no capacity limits to its production. A change in demand alters the equilibrium quantity but not the market clearing price
- When supply is **relatively inelastic** a change in demand affects price more than quantity supplied. The reverse is the case when supply is relatively elastic. A change in demand can be met without a change in market price

8.4 Non-linear Supply Curve

The supply curve to a market may be non-linear so that the price elasticity of supply varies at different output levels. This is illustrated in the next diagram. At low output levels, where the supplier has plenty of spare capacity, the supply is price elastic. Changes in demand can be met easily by a change in supply. As output increases, so output moves closer to the production capacity of the producer – so the price elasticity of supply decreases until capacity is reached and elasticity of supply is now zero.

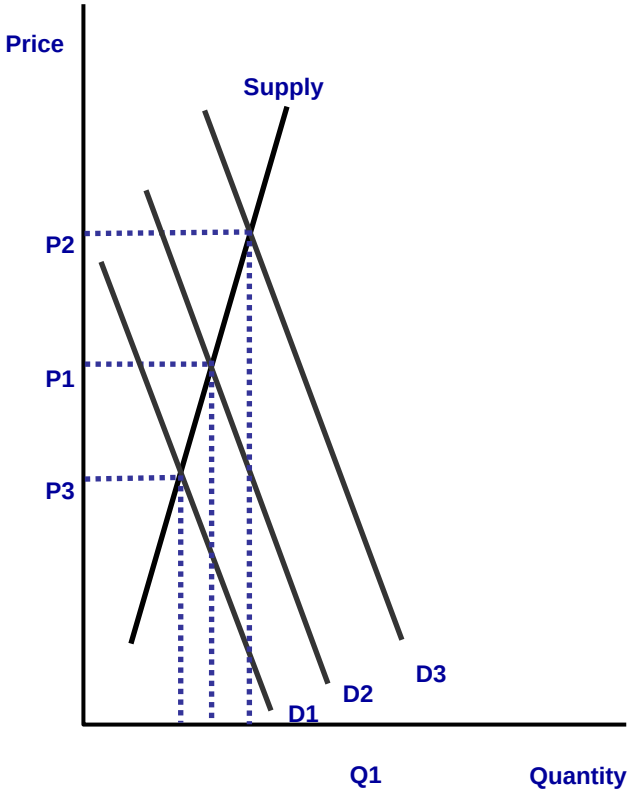
Relatively Elastic Supply

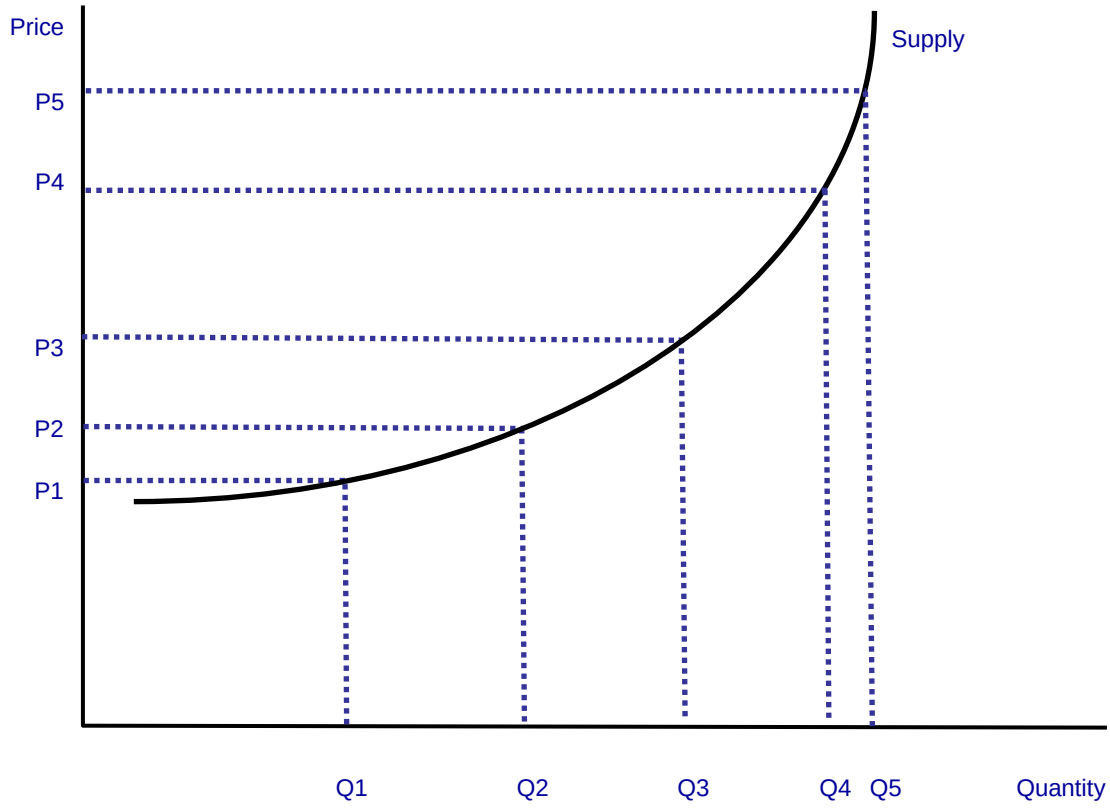
Supply responds quickly to a change in demand



Relatively Inelastic Supply

Supply responds less than proportionately to a change in price





9 MARKETS IN ACTION - APPLICATIONS OF THE THEORY OF PRICE

In a **free market**, scarce resources are allocated through the **price mechanism** where the millions of preferences and spending decisions of consumers and the supply decisions of businesses come together to determine equilibrium prices and therefore the allocation of inputs to produce the goods that people are willing and able to buy.

The free market works through **price signals**. When demand is high, the **potential profit** from supplying to a market rises, leading to an expansion in supply (output) to meet rising demand from consumers. Day to day, the free market mechanism is a tremendously powerful device for determining how scarce resources are allocated among competing ends.

9.1 Government Intervention in Markets

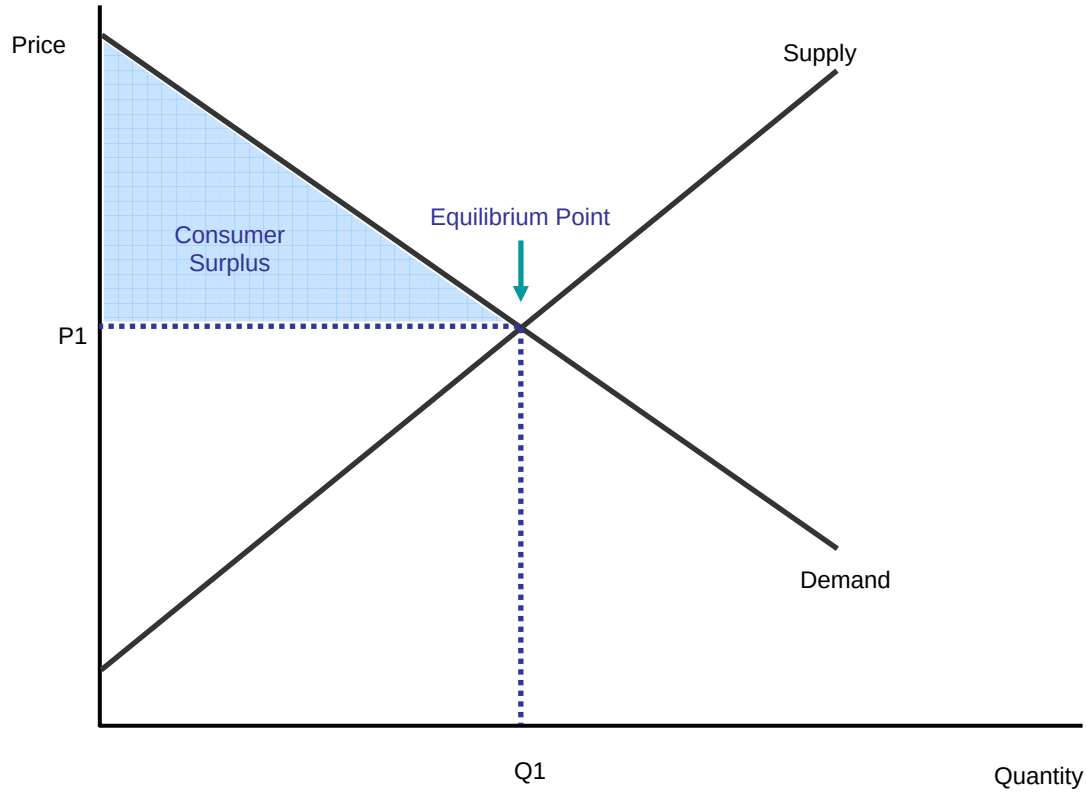
On many occasions however, the **government may choose to intervene** in the price mechanism largely on the grounds of wanting to change the allocation of resources and achieve what they perceive to be an improvement in economic and social welfare.

In this section of the AS Economics study guide we look at the effect of different forms of government intervention in the market process. This includes an analysis and evaluation of the effects of **indirect taxes** and government **subsidies**, the introduction of **maximum and minimum prices** in a market and the effects of **price support schemes** for industries such as agriculture.

In each case we are **applying the basic theory of market supply and demand** and evaluating how government intervention affects both producers and consumers. One important point to bear in mind is that **the effects of government intervention in markets are never neutral** – financial support given to one set of producers rather than another will always create winners and losers. Taxing one product more than another will similarly have different effects on disparate groups of consumers.

Before we look at these forms of government intervention, we consider two measures of **economic welfare** – **consumer and producer surplus**.

9.2 Consumer Surplus



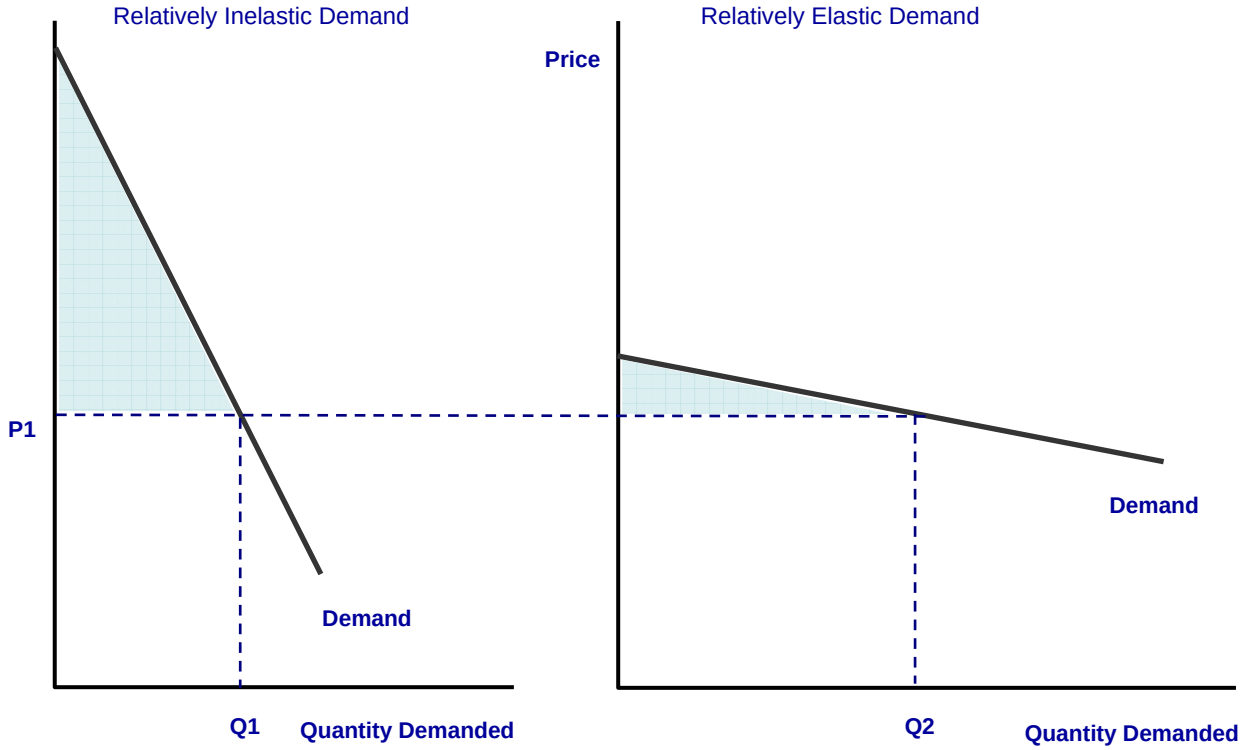
Consumer surplus is a measure of the **welfare** that people gain from the consumption of goods and services, or a measure of the **benefits** they derive from the exchange of goods.

Consumer surplus is the difference between the total amount that consumers are willing and able to pay

for a good or service (indicated by the demand curve) and the total amount that they actually pay (the market price).

The level of consumer surplus is shown by the area under the demand curve and above the ruling market price as illustrated in the previous diagram.

9.2.1 Consumer Surplus and Price Elasticity of Demand

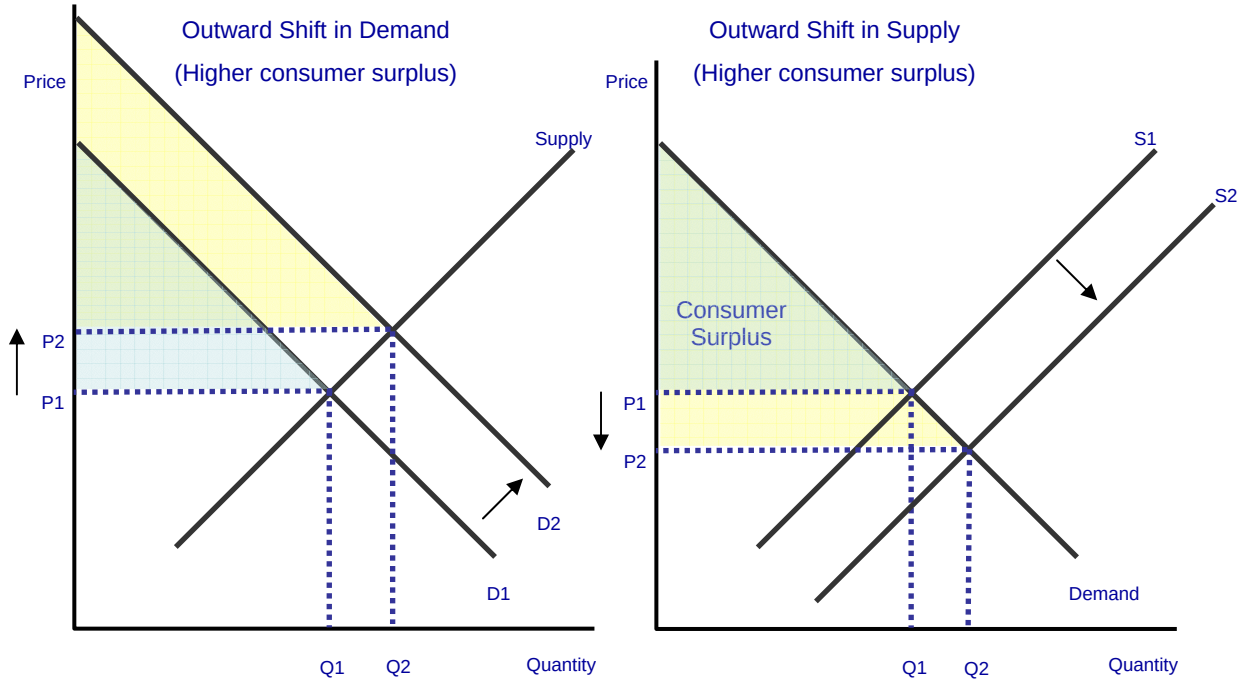


When the demand for a product is perfectly elastic, consumer surplus is zero because the price that people pay matches precisely the price they are willing to pay. This is most likely to happen in perfectly competitive markets where each individual firm is a 'price taker' in their chosen market and must sell as much as it can at the ruling market price/

In contrast, when demand is perfectly inelastic, consumer surplus is infinite. Demand is totally invariant to a price change. Whatever the price, the quantity demanded remains the same.

Note that both these situations rarely exist – the majority of demand curves are downward sloping. When demand is inelastic, there is a greater potential consumer surplus because there are some buyers willing to pay a high price to continue consuming the product. This is shown in the diagram above.

9.2.2 Changes in Demand and Consumer Surplus



When there is a **shift in the demand curve** leading to a change in the equilibrium market price and quantity, then consumer surplus will alter. This is shown in the diagrams above. Following an increase in demand from D1 to D2, the equilibrium market price rises to from P1 to P2 and the quantity traded expands. There is a higher level of consumer surplus because more is being bought at a higher price than before.

In the diagram on the right we see the effects of a **cost reducing innovation** which causes an outward shift of market supply, a lower price and an increase in the quantity traded in the market.

Consumer surplus can be used frequently when analysing the impact of government intervention in any market – for example the effects of **indirect taxation on cigarettes** consumers or the introducing of **road pricing schemes** such as the London congestion charge.

9.2.3 Applications of Consumer Surplus

Consider the entry of Internet retailers such as Lastminute.com and Amazon into the markets for travel and books respectively. What impact has their entry into the market had on consumer surplus? Have you benefited from you perceive to be lower prices and better deals as a result of using e-commerce sites offering large discounts compared to high street retailers?

How much are you prepared to pay for hotel rooms, package holidays and flights? Have a visit to the Price Line site – an innovative e-commerce idea that seeks to extract from potential customers their willingness to pay for certain goods and services.

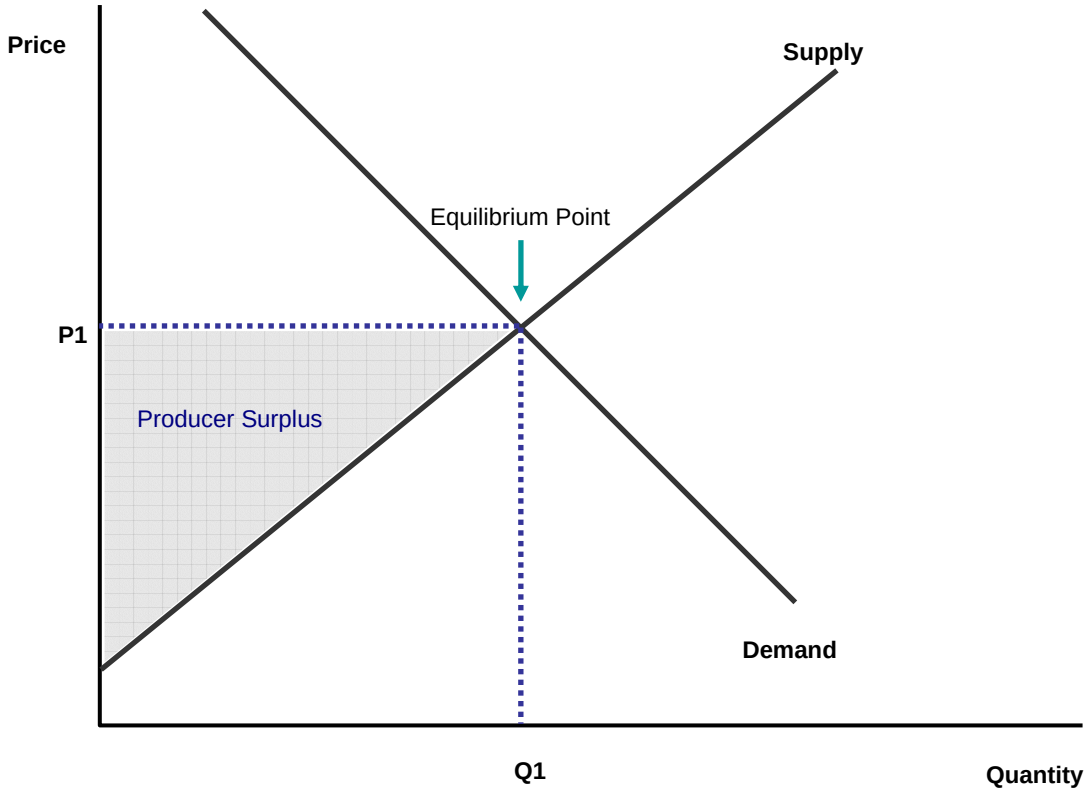
9.2.4 Price Discrimination and Consumer Surplus

Producers often take advantage of the concept of consumer surplus when setting prices. If a business can identify **different groups of consumers** within their market who are willing and able to pay different prices for the same good or service, then producers may engage in **price discrimination** – the main aim of which is to extract from the purchaser, the price they are willing to pay, thereby turning consumer surplus into extra revenue.

Airlines are expert at practising this form of **yield management**, extracting from consumers the price they are willing and able to pay for flying to different destinations are various times of the day, and exploiting variations in elasticity of demand for different types of passenger service.

One of the arguments against firms with monopoly power is that they exploit their monopoly position by raising prices in markets where demand is inelastic, extracting consumer surplus from buyers and increasing profit margins at the same time.

9.3 Producer Surplus



Producer surplus is a measure of **producer welfare**. It is measured as the difference between what producers are willing and able to supply a good for and the price they actually receive.

The level of producer surplus is shown by the area above the supply curve and below the market price and is illustrated in the diagram above.

The minimum price that the firm requires to supply to the market is shown by where the supply curve cuts the y-axis. As market price rises, (perhaps due to an increase in demand) so supply expands (we move up the supply curve).

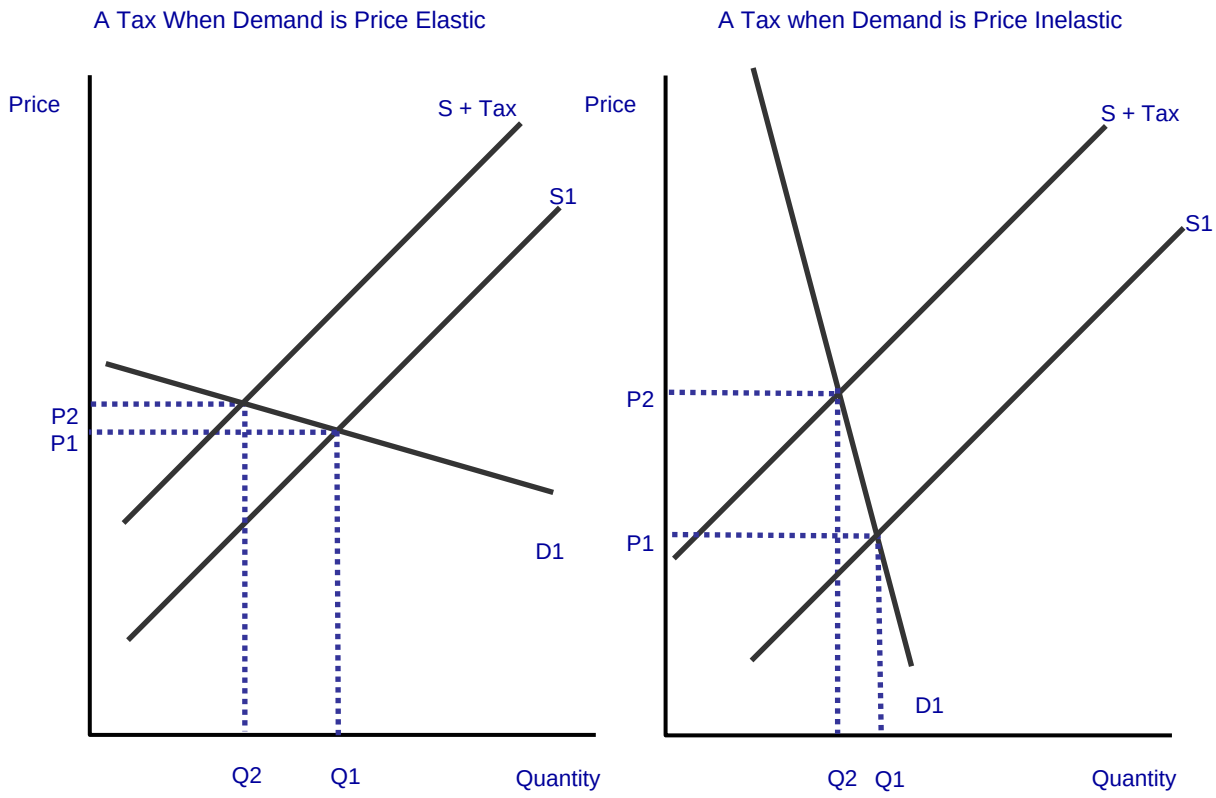
9.4 Indirect Taxes

An **indirect tax** is imposed on producers (suppliers) by the government. Examples include **excise duties on cigarettes, alcohol and** fuel and also **value added** tax.

Taxes are levied by the government for a number of reasons – among them as part of a strategy to curb pollution and improve the environment.

A tax increases the **costs** of a business causing an **inward shift in the supply curve**. The vertical distance between the pre-tax and the post-tax supply curve shows the tax per unit.

With an indirect tax, the supplier may be able to pass on some or all of this tax onto the consumer through a higher price. This is known as **shifting the burden of the tax** and the ability of businesses to do this depends on the price elasticity of demand and supply.



In the left hand diagram, demand is elastic meaning that demand is responsive to a change in price. The producer must absorb the majority of the tax itself (i.e. accept a lower profit margin on each unit sold). When demand is elastic, the effect of a tax is still to raise the price – but we see a bigger fall in equilibrium quantity. Output has fallen from Q to Q1 due to a contraction in demand.

In the right hand diagram above demand for the product is inelastic and therefore the producer is able to pass on most of the tax to the consumer through a higher price without losing too much in the way of sales.

9.4.1 Taxation, Elasticity of Demand and Government Revenue

The Government would rather place indirect taxes on commodities where demand is price inelastic because the tax causes only a small fall in the quantity consumed and as a result the total revenue from the tax will be greater. An example of this is the high level of duty on cigarettes and petrol. In 2000, tobacco duty brought in £5.7 billion of tax revenue for the British Government.

Illustrating the effects of a producer tax

The table below shows the demand and supply schedules for a good

Price (£)	Quantity Demanded	Quantity Supplied (Pre-tax)	Quantity supplied (Post-tax)
10	20	1280	600
9	60	1000	400
8	150	850	150
7	260	600	50
6	400	400	
5	600	150	
4	900	50	

1	What is the initial equilibrium price and quantity?	Price = £6 Quantity = 400
2	The government imposes a tax of £3 per unit. The new supply schedule is shown in the right hand column of the table – less is now supplied at each and every market price	
3	Find the new equilibrium price after the tax has been imposed	New price =£8
4	Calculate the total tax revenue going to the government	Tax revenue = £450
5	How have consumers been affected by this tax? There has been a fall in quantity traded and a rise in the price paid by consumers – this leads to a fall in economic welfare as measured by consumer surplus	

Examples of Indirect Taxes in the UK for 2003-04

Value added tax		
VAT standard rate		17.5%
VAT domestic fuel rate		5%
Insurance Premium Tax		5%
Excise duties		
Beer (pint)		27.1p
Wine (75cl bottle)		119p
Spirits (70cl bottle)		548p
20 cigarettes	**Specific duty**	194p
	Ad valorem (22% of retail price)	93
Unleaded petrol (litre)		48.82p
Unleaded petrol (litre) for ultra-low sulphur		45.82p
Air passenger duty		
Low rate (for destinations within the EU)		£10
High rate (for destinations outside the EU)		£40
Source: Institute for Fiscal Studies "Fiscal Facts" for 2003-04		

9.4.2 Specific Taxes

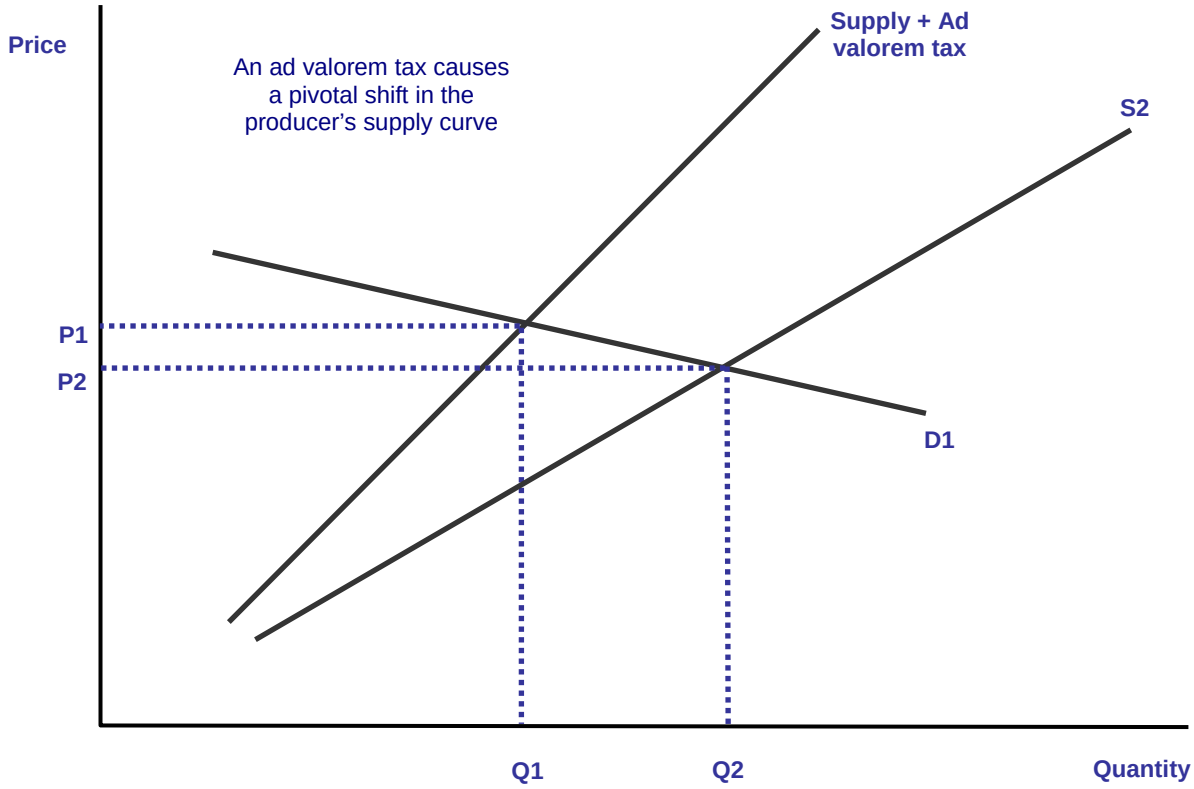
A specific tax is where the tax per unit is a fixed amount – for example the duty on a pint of beer is 27.1 pence or 194p per packet of twenty cigarettes. The chart below shows how the level of excise duty on a pint of beer has changed over the last thirty years.

Another example is the air passenger duty which imposes a standard tax of £10 for flights within the European Economic Area (EEA) and £40 for flights outside of the EEA

9.4.3 Ad Valorem Taxes

Where the tax is a percentage of the cost of supply – the best example of this is **value added tax** currently levied at the standard rate of 17.5% or Insurance Premium Tax which is taxed at 5%.

In the diagram below, an ad valorem tax has been imposed on producers. The market equilibrium price rises from P1 to P2 whilst quantity traded falls from Q1 to Q2.



Note that the effect of an ad valorem tax is to cause a **pivotal shift in the supply curve**. This is because the tax is a percentage of the unit cost of supplying the product. So a good that could be supplied for a cost of £50 will now cost £58.75 when VAT of 17.5% is applied whereas a different good that costs £400 to supply will now cost £470 when the same rate of VAT is applied. The absolute amount of the tax will go up as the market price increases.

For a specific tax the effect is different. The tax per unit is assumed to be constant therefore causing a parallel shift in the supply curve.

The effects of a government indirect tax on producers are effectively the same. Taxes cause a fall in supply and should (ceteris paribus) lead to a contraction along the market demand curve.

In recent years the government has encouraged a switch away from direct taxation on income towards indirect taxes on the goods and services that we buy and then consume. A wider range of indirect taxes has been introduced including the Insurance Premium Tax, the Air Passenger Duty and the Landfill Tax.

9.4.4 Will there be New Indirect Taxes in the Future?

It is likely that there will be pressure for further indirect taxes in various markets and industries. Two that we will consider later are a new tax on aviation fuel in a bid to correct for some of the pollution externalities linked to the growing demand for air transport, and secondly the economic case for and against a new tax on high-fat foods as part of a government strategy to reduce the economic and social costs of obesity.

9.5 Producer Subsidies

Subsidies represent **payments by the government to suppliers** that have the effect of reducing their costs and encouraging them to increase output.

The effect of a subsidy is to increase supply and therefore reduce the market equilibrium price. The subsidy causes the firm's supply curve to shift to the right. The total amount spent on the subsidy is equal to the subsidy per unit multiplied by total output.

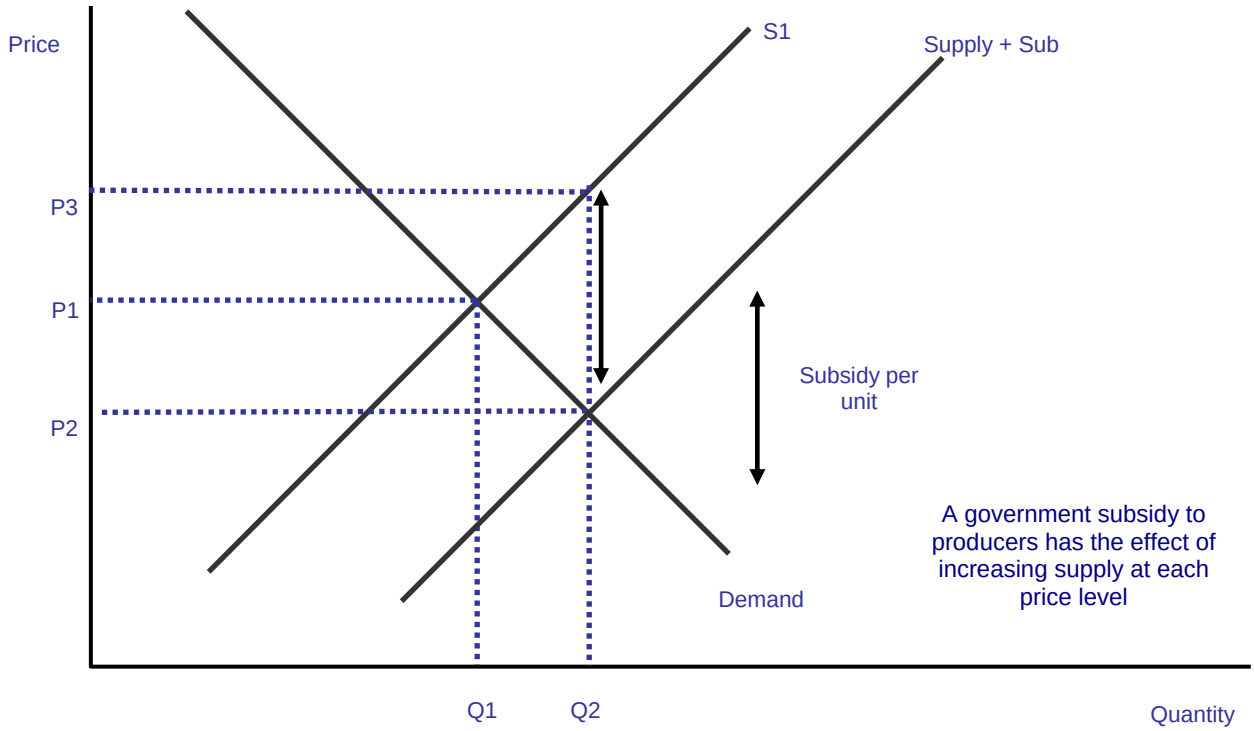
To what extent will a subsidy feed through to lower prices for consumers?

This depends on the price elasticity of demand for the product. The more inelastic the demand curve the greater the consumer's gain from a subsidy. Indeed when demand is perfectly inelastic the consumer gains most of the benefit from the subsidy since all the subsidy is passed onto the consumer through a

lower price. When demand is relatively elastic, the main effect of the subsidy is to increase the equilibrium quantity traded rather than lead to a much lower market price.

9.6 Government Spending on a Subsidy

If the subsidy is a guaranteed payment to producers, the government will pay the subsidy per unit to the producer on top of the new market price. The subsidy reduces equilibrium price from P1 to P2. Consumers gain from consuming more at a lower price. Producers will receive price P3. Total spending by the government on the subsidy will be Q2 x (P1P3).



9.7 Subsidies in International Markets

Many countries choose to offer an **export subsidy** to producers – this form of financial assistance is to encourage domestic firms to produce for the export market by guaranteeing them a market price greater than they would earn by focusing only for the home market.

9.7.1 Should we Subsidise? - An Evaluation

Financial subsidies are controversial. Subsidies can come in various forms – for example direct payments for producing output, an export subsidy, tax allowances for capital investment and research and development programmes, subsidies for employing labour.

9.7.2 Can Subsidies be Justified on Economic Grounds?

There are occasions when we can justify a government subsidy to provide incentives for the production and consumption of goods and services that create positive externalities (see also merit goods and services) – and that subsidies are a useful way to correct for **market** failure.

Other economists argue that subsidies are justified to help smooth the structural decline of certain industries and protect jobs when there is a risk of long-term unemployment in industries such as coal and heavy engineering and the railway industry. Subsidies might be justified as part of a policy of rural economic development and reducing **relative poverty** in some of the European Union's poorest regions.

However subsidies need to be **financed**. Often this is done out of general taxation. The taxpayer may not benefit directly from a subsidy, but they pay for it from their direct and indirect taxes.

Subsidies may also encourage continued **inefficiency** among producers when the operation of free market forces might result in a more efficient allocation of scarce resources. There are also widespread concerns that agricultural subsidies are leading to **long-term environmental problems** as farmers invest

in intensive farming methods that threaten the sustainability of our ecological resources. Intensive production is a main cause of desertification and soil erosion across many areas of Europe.

Chemicals killing wildlife

> Farm chemicals are poisoning some of the country's most valuable wildlife, including salmon, dragonflies and pearl mussels, and pose a serious threat to river environments. English Nature said in a report that the problem is widespread throughout England because of intensive farming practices and the use of inorganic fertilizers.

(Adapted from BBC Online and newspaper reports)

(Read this article on subsidies to olive producers in the EU taken from the BBC news web site.)

9.7.3 The Free-Market Case Against Government Subsidies

Free market economists argue that government subsidies **distort the workings of the free market mechanism** and can eventually lead to **government failure** where government intervention actually leads to a worse distribution of resources.

This adapted article from the Economist (published in December 2000) considers some of the disadvantages of export subsidies used by both developed and developing countries.

Going too far in support of trade

> Several economic justifications are offered for the existence of export subsidies. They include the need to nurse infant industries; to compensate for protectionism abroad; to promote employment; and to keep trade balances positive. Subsidies can range from simple ad valorem payments to companies based on the size of their export sales, to complex systems of tax credits, loans, insurance policies and price supports.
>
> These policies, however, bring with them some huge problems. Any company coddled by a subsidy has less incentive to improve its costs (and hence make the subsidy unnecessary). Tax revenues used for subsidies are distributed in a way that makes them regressive. And artificially low prices supported by subsidies may force more efficient producers in importing countries out of business.
>
> Besides harming domestic producers in poor importing countries, export subsidies may crowd out competing trade from other countries whose governments are too poor to retaliate

Adapted from the Economist, December 2000

The economic and social case for a subsidy should be judged carefully on the grounds of **economic efficiency** and also **fairness (or equity)**. We need to be careful to measure and evaluate who gains from any particular subsidy and who pays. Might the money used up in subsidy payments be better spent elsewhere?

Government subsidies inevitably carry an **opportunity cost** and in the long run there might be better ways of providing financial support to producers and employees in specific industries.

9.8 Tariffs and Quotas as Import Controls

A tariff is a tax on the value of imports and remains the most common form of trade protection in the world economy today despite numerous attempts by the World Trade Organization (WTO) to encourage a reduction in average tariff levels between countries.

One recent high profile tariff issue came with the decision by the US government to introduce tariffs on imported steel. This provoked a furious response from the European Union which threatened to boil over into a full scale trade dispute. There have also been well publicised trade disputes over the use of tariffs on imported beef and bananas!

Steel Tariff War between the United States and the European Union

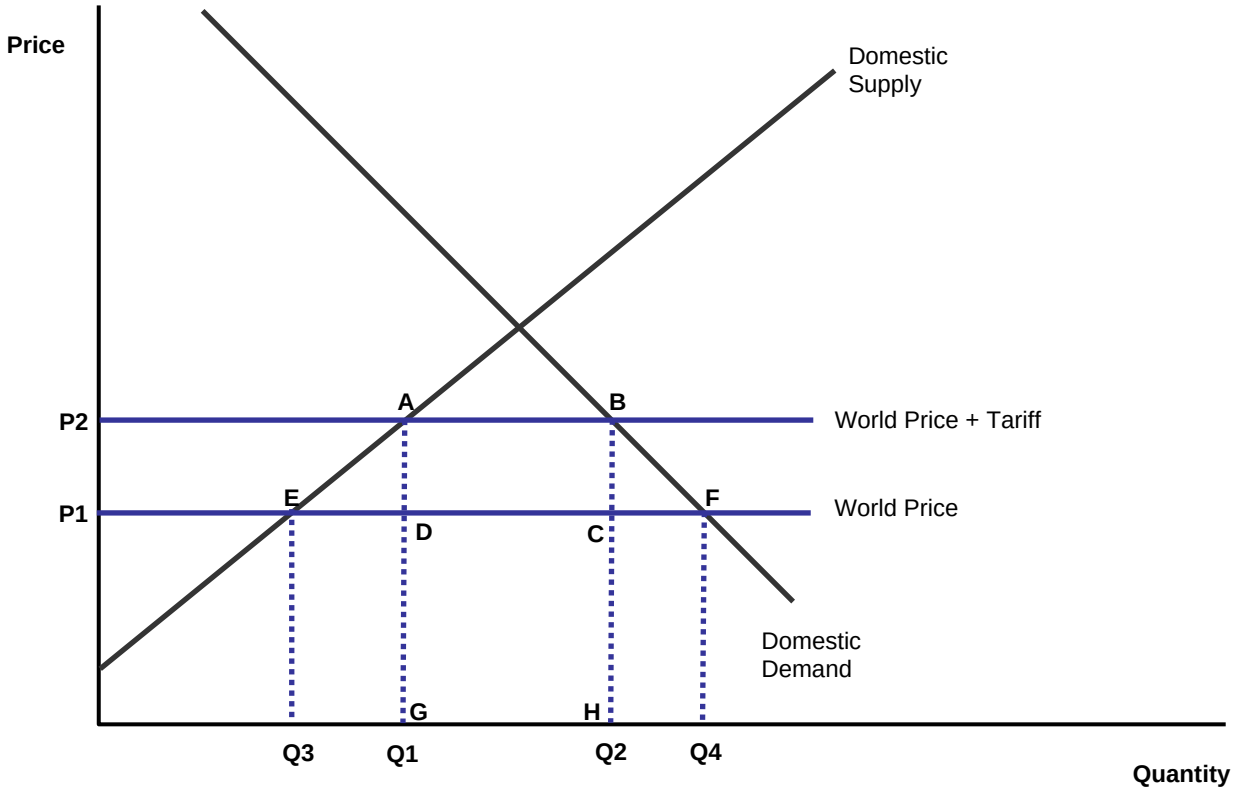
The United States imposed three year tariffs of between 8 and 30 per cent on selected steel imports in March 2002. As a result of these tariffs, US steel imports in the first half of 2003 dropped by over 15% compared with the same period before the tariffs. The EU and Japan together with six other nations launched a case against the United States with the World Trade Organisation (www.wto.org) arguing that the import tariffs were harming their exports and threatening retaliatory tariffs on textiles, shoes, fruits and vegetables.

The USA argued that their domestic steel industry required the tariffs to protect it during a period of restructuring but the US motor vehicle industry criticised the tariffs because it increased the costs of steel used in vehicle manufacturing.

Adapted from newspaper reports and the World Trade Organisation web site

Why do governments decide to introduce import tariffs? Some of the justifications are summarised below:

- Protection of domestic firms from low cost competition
- As a response to dumping by other producers – dumping occurs when a supplier sells their excess output at below cost price in another market
- Raising tax revenue for the government
- Improving the balance of payments by limiting the growth of imports
- Controlling the level of import penetration in an industry and therefore protect employment. Under the rules of the 146-nation World Trade Organisation, a country can impose tariffs for temporary protection if a sudden surge in imports poses a serious threat to the existence of an industry.



Before the import tariff, at the world price P1 domestic supply is output Q3 and domestic demand is Q4. The difference is met by **imports** (Q4-Q4).

- The tariff raises the world price to P2
- Domestic supply expands to Q1, while demand contracts to Q2
- The new level of imports is Q1-Q2 (lower than before the tariff)
- The expansion in domestic output means that domestic producers receive higher revenue

- The government receives revenue from the tariff equal to the tariff per unit multiplied by the volume of imports
- Consumer lose out because they are now paying more for the imports than they were before the introduction of a tariff

The effect of a tariff in reducing the level of imports is determined by the **price elasticity of demand and supply**. The more elastic is the demand and supply, the greater the fall in imports after imposing a tariff. We shall return to the issue of tariffs and export subsidies when we consider the economics of international trade and the balance of payments in Unit 2.

9.9 Maximum Prices (Price Ceilings)

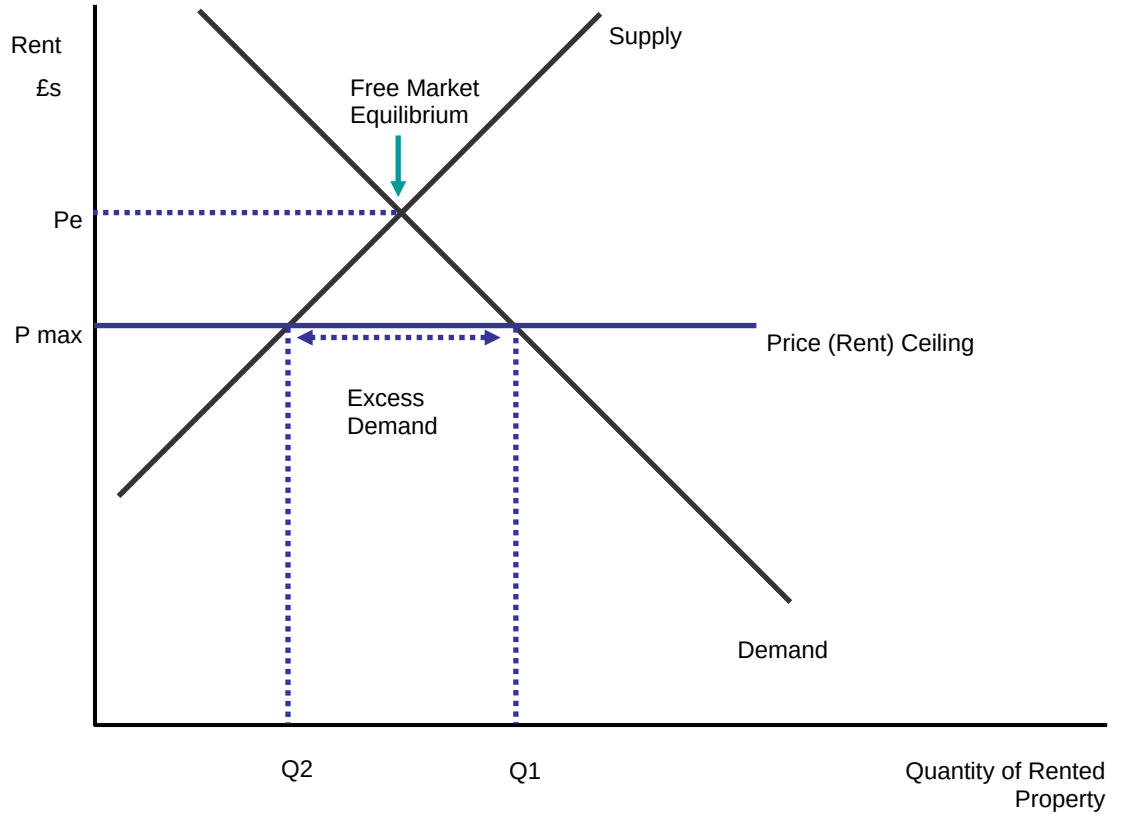
One form of government intervention that seeks to **regulate prices** directly is by introducing **price ceilings** and **price floors**. In both cases a price control is a law or regulation that forbids the adjustment of prices to clear the market.

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 be for foodstuffs when a shortage of essential foodstuffs threatens a very large rise in the free market price.

Other examples include rent controls on properties – for example the complex system of rent controls still in place in Manhattan in the United States.

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 Pe – but the government decides to introduce a maximum price of Pmax. This price ceiling creates **excess** demand for the product equal to quantity Q2-Q2 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.

9.10 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**.

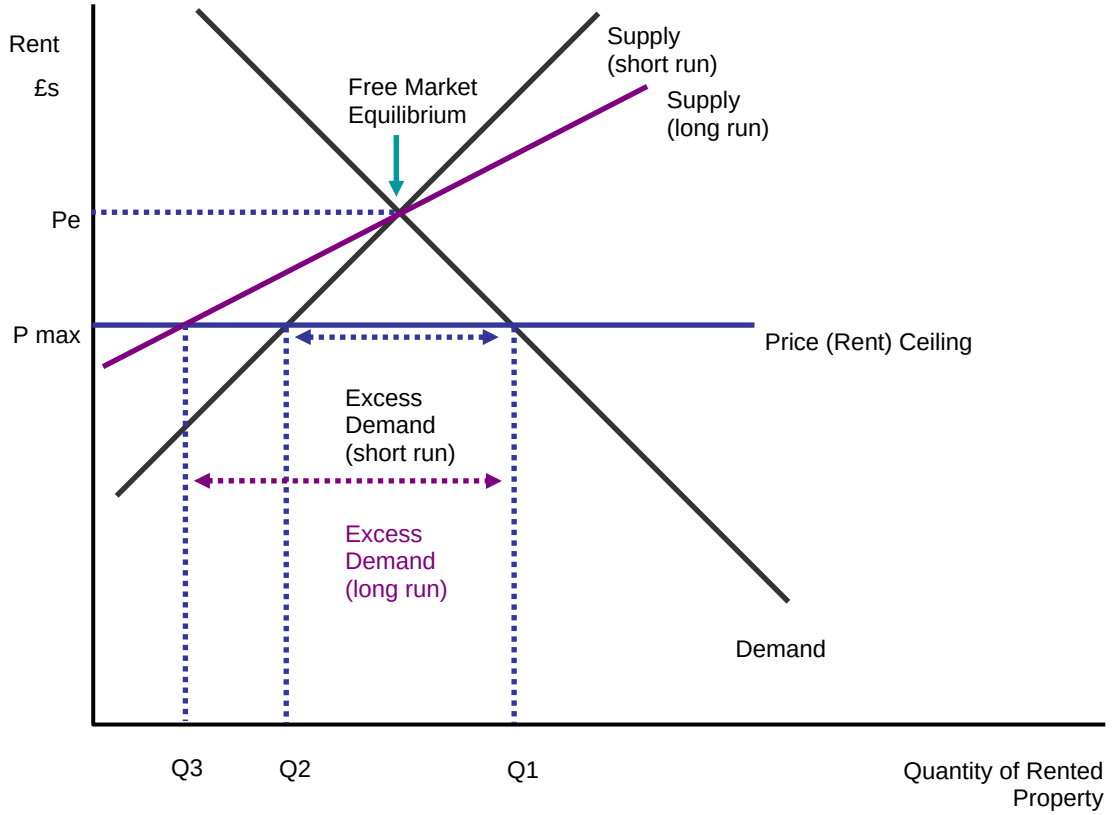
Good examples of black markets include tickets for major sporting events, rock concerts and black markets for children's toys and designer products that are in scarce supply.

Another example is the black market for the anti-impotence drug Viagra

There is also widespread 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 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.

Another problem arising from the maintenance of a maximum price is that in the long run, suppliers might respond to a maximum price by reducing their supply – the supply curve becomes more elastic in the long term. This is illustrated in the next diagram



If landlords decide that they cannot make a satisfactory rate of return by selling rented properties in the market because of the maximum price, they might decide to withdraw some properties from the market. At the prevailing maximum rent, the **long run supply curve** shows a smaller quantity of rented properties available for tenants – which with a given level of market demand cause the excess demand (shortage) in the market to increase.

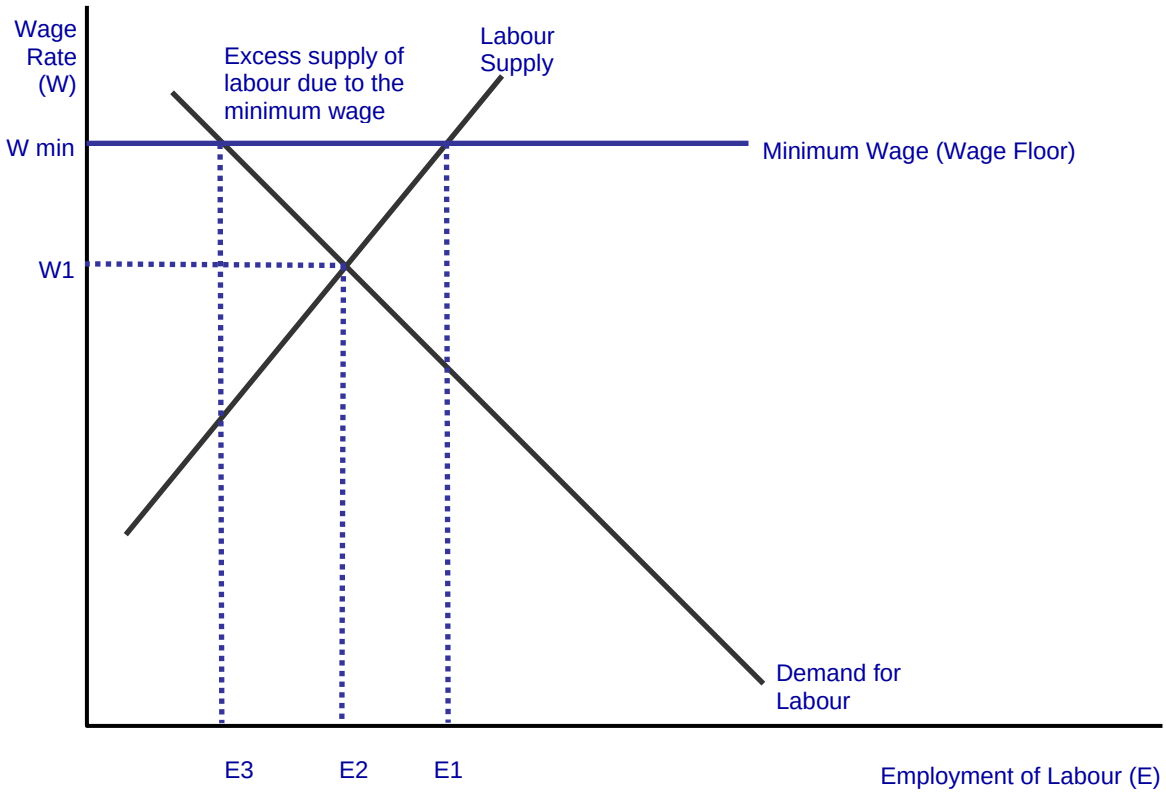
The **quality of rented properties** might also deteriorate over time because landlords decide to cut spending on routine maintenance and property improvements. The end result would be a loss of **allocative efficiency** because there are fewer properties on the market and the quality of accommodation is getting worse – fewer people's needs and wants are being met at the prevailing market price.

Although maximum prices such as rent controls are still in place in many countries, in the UK, rent controls were essentially abolished in the late 1980s. And, over the last fifteen years the government has actively sought to encourage an expansion in the total supply of rented properties provided by both private sector landlords and also registered social landlords such as housing associations. The rapid growth in the **buy-to-let** property market has also contributed to a huge increase in the supply of properties available for letting in the majority of towns and cities in the UK.

9.11 Minimum Prices (Price Floors)

A **minimum price** is a legally imposed **price floor** below which the normal market price cannot fall. To be effective the minimum price has to be set *above* the normal equilibrium price.

A good example of this is minimum wage legislation currently in force in the UK. The National Minimum Wage was introduced by the Labour Government in April 1999. The main adult rate for the minimum wage in the UK is £4.20 per hour, increasing to £4.50 per hour in October 2003.



A diagram showing the possible effects of a minimum wage is shown above. The market equilibrium wage for this particular labour market is at W1 (where demand = supply). If the minimum wage is set at Wmin, there will be an **excess supply of labour** equal to E3 – E2 because the supply of labour will expand (more workers will be willing and able to offer themselves for work at the higher wage than before) but there is a risk that the demand for workers from employers (businesses) will contract if the minimum wage is introduced.

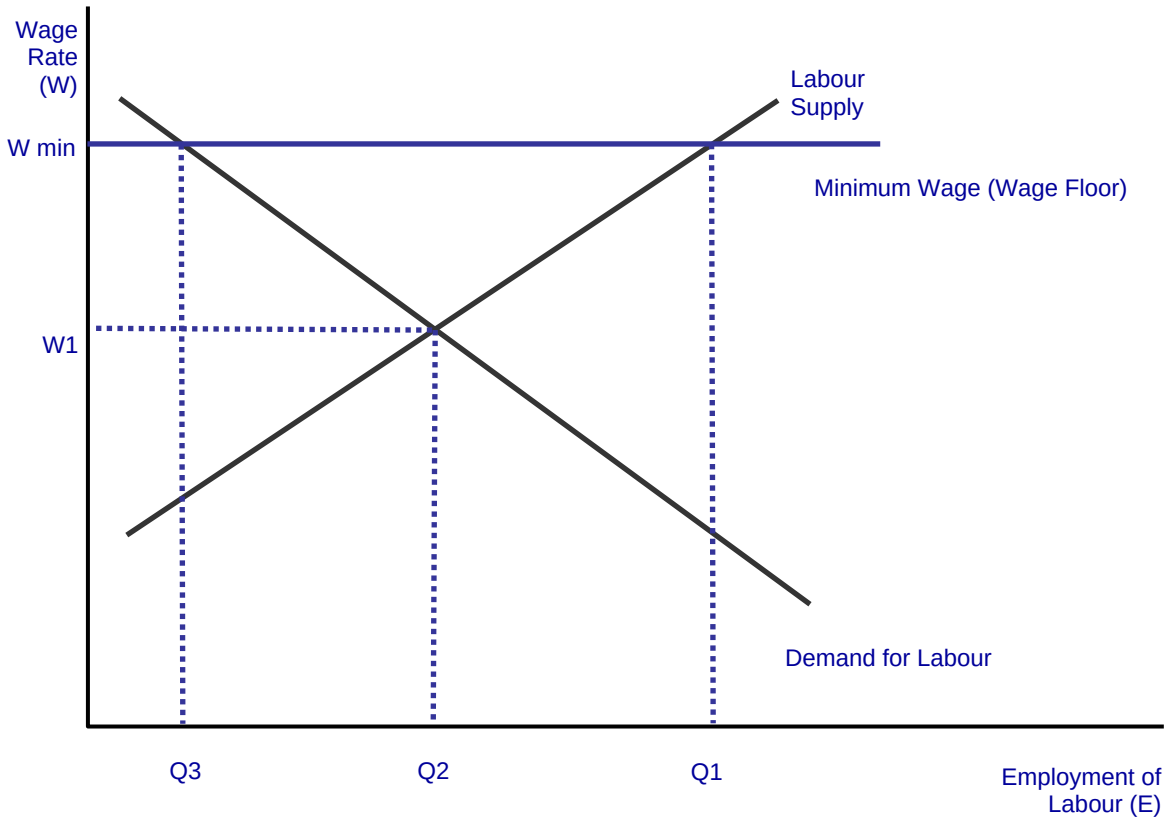
An excess supply of labour implies that there will be increased **unemployment** in the labour market. While the minimum wage may raise earnings for those in employment, there is a risk that the pay floor has a negative impact on the level of unemployment.

9.11.1 Importance of Elasticity of Demand and Supply of Labour

The impact of a minimum wage on employment levels depends in part on the **elasticity of demand** and **elasticity of supply of labour** in different industries. If labour demand is relatively inelastic then the contraction in employment is likely to be less severe than if employers' demand for labour is elastic with respect to changes in the wage level.

In the next diagram we see the possible effects of a minimum wage when both labour demand and labour supply are elastic in response to a change in the market wage rate. The excess supply created is much

higher than in the previous diagram.



In reality, a national minimum wage *does not* lead automatically to higher unemployment. Higher pay might stimulate an increase in **labour productivity** which makes workers more attractive to employers. Secondly, the **increased earnings** paid to those working in low-paid jobs will boost their **real spending power** and feed through into increased consumer spending, output and employment.

A third point is that, although businesses face higher labour costs as a result of the introduction of a national minimum wage, other costs such as raw material and component costs may have moved in the opposite direction, meaning that overall, the total production costs of a business having to pay the minimum wage may have changed relatively little.

9.11.2 Find Out More about the Minimum Wage

Although all of Britain's major political parties now support the idea of a national minimum wage, the issue remains a controversial one for economists. You can find out more about the minimum wage in Britain by visiting the Low Pay Unit, The Department for Trade and Industry, The Trades Union Congress, the Confederation of British Industry and the Federation of Small Businesses.

Minimum and maximum prices illustrate how changes price and quantity can be brought about without a change in either the conditions of demand or supply.

9.12 Guaranteed Prices – Government Intervention in Agriculture and Buffer Stocks

$235 billion worth of farm support in industrialised countries

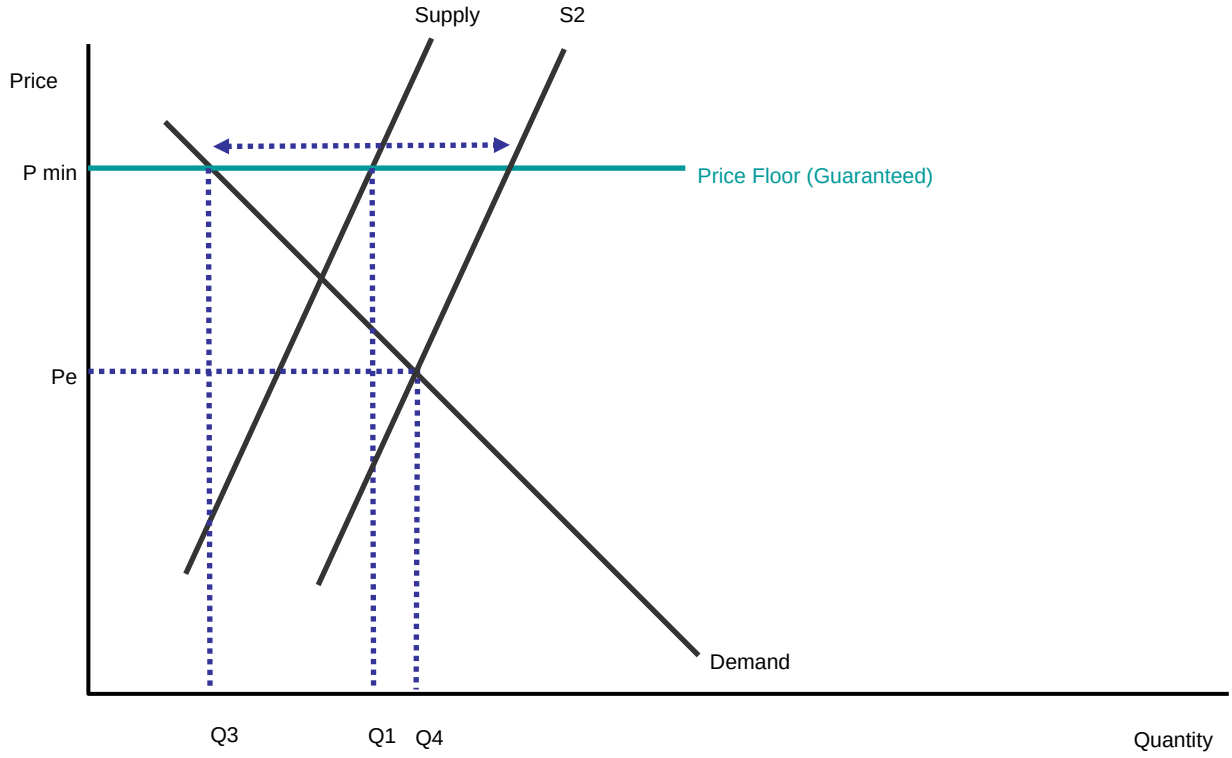
> Farm supports vary widely across OECD countries. Although these subsidies have fallen relative to output in many countries since the late 1980s, the OECD says they are still too high, reaching $235 billion in OECD countries in 2002, and they continue to distort trade by encouraging inefficient production

(Adapted from the Economist, June 2003)

The prices of agricultural products such as wheat, tea and coffee tend to fluctuate more than the prices of manufactured products and services. This is largely due to the volatility in the market supply of agricultural products coupled with the fact that demand and supply are both price inelastic.

One way to smooth out the fluctuations in prices is for the government to operate price support schemes through the use of buffer stocks. **Buffer stock schemes** seek to stabilize the market price of agricultural products by buying up supplies of the product when harvests are plentiful and selling stocks of the product onto the market when supplies are low.

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 (Q3-Q1) 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 (see the diagram on the next page) – 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.

9.12.1 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.

The success of a buffer stock scheme however ultimately depends on the ability of those managing a scheme to correctly estimate the average price of the product over a period of time. This estimate is the scheme's **target price** and obviously determines the maximum and minimum price boundaries.

But if the target price is significantly above the correct average price then the organization will find itself buying more produce than it is selling and it will eventually run out of money. The price of the product will then crash as the **excess stocks** built up by the organization are dumped onto the market.

Conversely if the target price is too low then the organization will often find the price rising above the boundary, it will end up selling more than it is buying and will eventually run out of stocks

The European Union **Common Agricultural Policy** has come under sustained attack for many years and there have been several attempts to reform the system.

For more on the economics of the CAP and an evaluation of its successes and failings try the web site of the National Farmers' Union and the European Commissioner for Agriculture and in particular their site on CAP reform

9.13 European Common Agricultural Policy (CAP)

The **Common Agricultural Policy** has been in place now for over forty five years and is one of the most controversial aspects of the European Union. To many economists, the CAP is a grossly inefficient form of farm support and is in need of fundamental reform. To others, the CAP has done much to increase the efficiency of the European farm system and has met many of its original objectives.

9.13.1 CAP Statistics

- 40% of EU farm income comes from the CAP. In 2000 – subsidies provided the equivalent of Euro 14,462 per person employed in farming or Euro 751 per hectare
- Largest 2% of farms receive 24% of all direct payments
- Smallest 60% of farms receive 10% of direct payments
- The annual cost of the CAP has spiraled to 95 billion Euro
- 10% of CAP budget goes on storage facilities and payments to food storage agencies
- Total cost of the CAP system to each EU consumer is estimated at Euro 250 per annum
- Does not include the environmental damage (latest estimate calculates external cost of farming in the UK to be £2.3 billion per annum – not all of which is due to the CAP!)

9.13.2 Original aims of the CAP

Original Aims of the CAP	Evaluative Comment
Improving production yields to guarantee farm supplies	The CAP is no longer needed to achieve this aim. Competitive agricultural markets and technological innovation has brought about guarantee sharp increases in farm production and higher yields. In a competitive market system without the CAP, farmers would have to produce efficiently to remain profitable in the long run
Ensuring a fair standard of living for EU farmers	There is a wide division between large-scale and small-scale farmers within the EU
To stabilise agricultural markets	This original objective has been largely achieved – but at great economic and environmental cost – and there is a limit to which any form of government intervention can and should seek market stability in terms of prices and incomes
Ensuring availability of farm supplies	Climactic variations in farm output are now reduced by developments in agricultural technology and biotechnology. The globalisation of agricultural markets makes fears of food shortages less of an issue.
Ensuring food supplies are available to consumers at reasonable prices	The CAP system has increased European food prices not reduced them leading to a long-term loss in economic welfare for consumers. Many economists believe that competitive market disciplines are the best route to achieve lower prices in the long run

Much of the controversy surrounding the CAP has focused on **intervention purchasing** by the EU to buy up surplus EU farm production.

The criticisms of the CAP focused on the gross inefficiencies of the system

- Increased budgetary and consumer costs created by farm surpluses (EU farm output had been driven higher than the market could possibly absorb)
- Criticisms of the CAP by non-EU countries whose international trade interests were being damaged by EU import tariffs - not least poorer countries with a high dependence on producing and then exporting agricultural goods
- Growing concern about the environmental damage caused by modern intensive-farming methods and the extensive use of fertilizers and agrichemicals

- Claims that farm incomes were still falling and rural poverty rising despite the high budgetary costs of the CAP

There have been (so far) two main reforms of the CAP

- 1992-93 MacSharry Reforms
- Agenda 2000 Reforms (currently ongoing)

A third set of reform proposals was agreed by European Union countries in June 2003.

9.13.3 Attempts to Control EU Farm Output

Several policies are now in place to control farm outputs:

- **Production Quotas** - Quotas are the maximum production quantities allocated to farmers in a given time period. Over-production above the agreed quotas results in financial penalties. National guaranteed quantities are allocated to each of the Member States in the EU. If they are exceeded, producers must pay a co-responsibility levy to the EU
- **Set-aside and incentives for diversification** - Set aside into non-food products is intended to take agricultural land out of cultivation or to encourage diversification of production (e.g. the production of raw materials for biomass fuels) in exchange for financial compensation for farmers
- **Compensatory payments** - These top up farmers' incomes and are granted on the basis of the number of animals and/or the area cultivated

9.13.4 Supporters of the CAP

Supporters of the CAP argue that the CAP has led to several long term benefits:

- CAP has undoubtedly stimulated huge increases in farm output and the European farming sector has produced the stability of supplies that was one of the original aims
- The CAP has made the EU virtually self-sufficient in all foods except tropical produce - but it only costs 0.6% of the total gross domestic product of the EU to run the CAP
- The CAP may also have been effective in reducing rural poverty and preventing excessive rural de-population in certain countries
- Productivity and investment in farming has been high leading to EU self-sufficiency in many products
- It is wrong to blame the CAP solely for the "intensification" of farming. Most of the sectors regarded as the most intensive (pigs, poultry, horticulture) receive the least financial support under the CAP; the most supported sectors (e.g. beef) are the most "extensive“
- Recent reforms to the CAP have increased the number of environmentally friendly farms from 9,521 in 1988 to 28,868 in 1993 and to 124,462 in 2000

9.13.5 Critics of the CAP

The CAP is subjected to ferocious criticism both within the EU and in many other countries around the world. A summary of the main criticisms of the CAP is provided below:

Distorting the global market

> The CAP is hugely unpopular around the world. It subsidizes European farmers to such an extent that they can undercut farmers from poor countries, who also face trade barriers that largely exclude them from the potentially lucrative European market

(Adapted from the Economist, June 2003)

- **Inefficiency and Surplus:** CAP intervention prices have encouraged excess production and permitted production inefficiencies and dependency on farm subsidies (like all forms of dependency - these can be difficult to break) – all of which leads to a mis-allocation of scarce resources
- **Loss of allocative efficiency:** The CAP is seen by much of the public as failing to deliver what

society wants from agriculture in terms of food safety, animal health and rural environment. It is neither consistent with emerging policies on sustainable development, nor with consumer demands for high quality, local and regional foods

- **Fiscal Costs:** The financial (budgetary) cost of EU farm support policies has been huge and involves a large opportunity cost in terms of the financial resources that might be channelled instead into greater funding for EU regional assistance or development programmes
- **Fraud and Government Failure:** The cost of maintaining the CAP is magnified by fraud within the system and the ever-rising costs of administration and compliance. The CAP is a hideously complex system of farm support
- **Damage to Consumer Welfare:** Farm support imposes higher food prices for EU consumers – the cost hits low income families most because they spend a higher proportion of their income on food (implying a regressive effect on the distribution of income)
- **Environmental Concerns:** The CAP has encouraged intensive farming prompting growing concern about the long-term environmental impact of CAP. The CAP at present takes only limited account of sustainability and environmental objectives. Agriculture is a significant source of greenhouse gases and of ammonia emissions to air. One study of olive growers showed they used more than 400 times the recommended level of pesticides. Reforms to the CAP are increasingly focusing on the need to reward those farmers who engage in agricultural practices that are sustainable and environmentally friendly
- **Global Market Distortions:** The CAP is anti-competitive and distorts domestic, European and international markets threatening the development potential of many low-income countries. The EU spent £2.14 billion on export subsidies in 2001

9.13.6 Cost of the CAP to the Consumer

CAP imposes a cost on EU consumers through **higher food prices** – which has a direct effect on their welfare and real incomes. The burden of the CAP on the price consumers pay for food within the EU varies according to fluctuations in world prices, but in 2000 was estimated by the Organisation for Economic Development (OECD) at around €48bn.

According to the Consumers' Association, it has been estimated that the cost of EU agricultural policies, in terms of both **taxation** and higher prices, for an average family of four in the European Union is around £16 per week. The current annual cost to UK taxpayers is around £5 billion – the equivalent of 2p on the standard rate of income tax.

The Environmental Costs of the CAP

Many economists and environmentalists argue that in promoting quantity, not quality, the CAP has encouraged EU farmers to ignore many of the **environmental impacts of their farming method**s. The ecological critique against the CAP argues that intensive farming has destroyed much of the countryside, turning once traditional landscapes into stretches of tightly packed rows. The disincentive to follow normal crop rotation strategies ruins the soil. In markets where price supports still exist there remains a direct link between production and profit. Naturally, they then make maximizing production their first priority.

Agricultural economist Jules Pretty from the University of Essex has argued that the external costs of farming are far greater than official estimates suggest. He estimates that the **social cost** of farming in Britain is more than £2.3 billion each year (equivalent to over £200 per hectare). This bill, which includes the cost of cleaning up pollution, repairing habitats and coping with sickness caused by farming, almost equals the industry's income.

Contributing to global warming

> "Agriculture does more than just produce food. It has a profound impact on many other aspects of local, national and global economies and ecosystems, and these impacts can be positive or negative. Farming can erode soils, reduce biodiversity and poison rivers as well as adding to global warming"

Julian Pretty (Agricultural Economist)

9.13.7 CAP and Developing Countries

According to Oxfam, three quarters of the world's 1.2 billion extremely poor people live and work in rural

areas: agriculture is crucial to their survival and the global fight against poverty. Nearly 3 billion people - half the world - live on less than $2 a day. This is less than the support received by the average European cow.

Oxfam argues that CAP damages producers in developing countries in two main ways. First, it undermines producers in developing countries by **dumping subsidised goods** on their local markets. An Oxfam study published in 2002 found that the EU's wheat export prices are 34 per cent below typical costs of production.

Secondly, through the system of **import tariffs** for food coming into the European Union, CAP reduces the potential for developing countries to exploit their natural comparative advantage in food production by exporting farm produce to richer European and other international markets. This has important implications for the scale of rural poverty in developing countries.

9.14 2002-03 Reforms to the CAP

The Fischler reforms developed in 2002 and agreed at an EU summit in June 2003 propose to **decouple** EU payments from production, removing farmers' incentive to produce ever more. Instead of being paid for every animal they keep or acres they harvest, farmers will receive **a single income payment** based on the subsidy received in previous years. Payments will be partly conditional on **good farming practices** – including respect of environmental, animal welfare, food safety and occupational safety standards and farmers will be eligible to receive new subsidies to help to meet them.

Fischler proposes reducing direct payment subsidies to large farmers by 3 per cent annually for six years from 2004. The savings would be channeled into schemes to improve rural development. Smaller farms, which make up 75 per cent of all farms in Europe, would be exempt from the annual subsidy cuts because they are more labour intensive, less prosperous and receive less support.

Fischler on the June 2003 CAP reforms

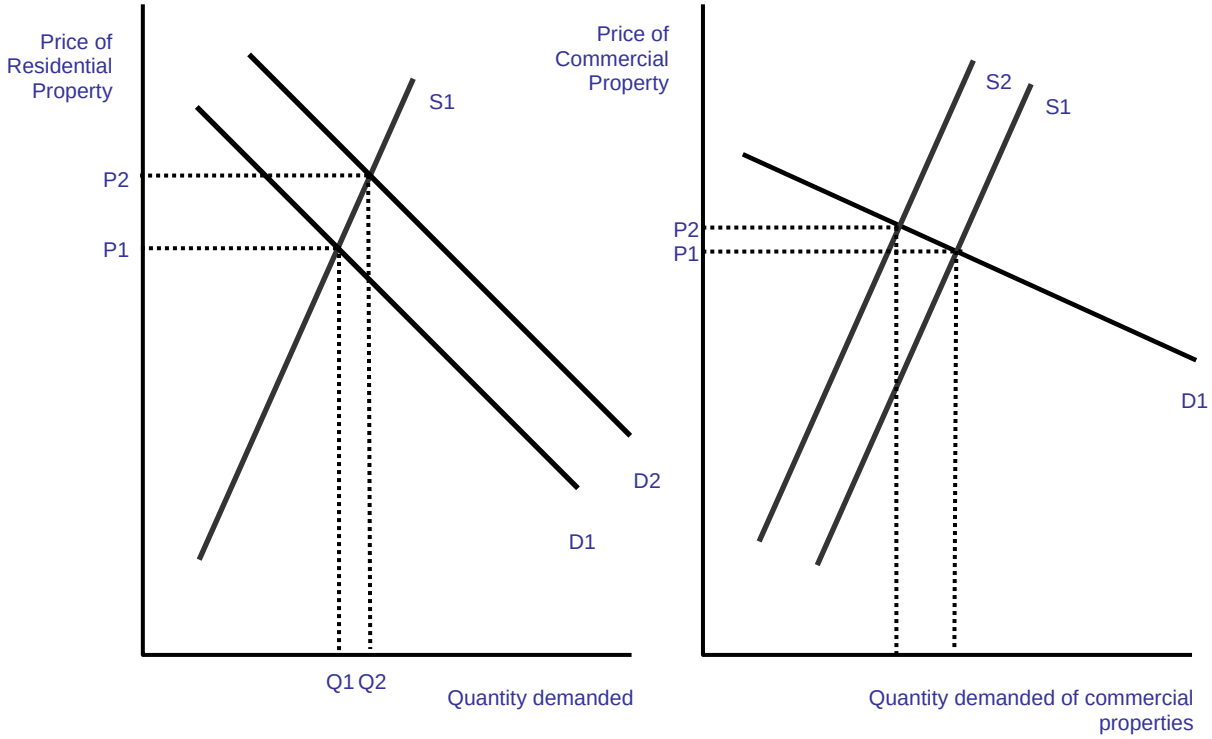
> Today marks the beginning of a new era. European agricultural policy will change fundamentally. In future, our products will be more competitive, and our agricultural policy will be greener, more trade-friendly and more consumer-oriented.
>
> Farmers will enjoy more income stability, more freedom to produce what the market wants, and a system of support which is much easier to justify from a social point of view.
>
> Consumers and taxpayers will receive more for their money: more transparency, more quality, more environmental protection and animal welfare.
>
> The reform's message to the world is clear: we have largely said goodbye to an old system of support which distorted trade. The new agricultural policy is trade-friendly, particularly as regards its effects on developing countries.

10 INTER-RELATIONSHIPS BETWEEN MARKETS

10.1 Introduction

Once you are confident about the basic supply and demand relationships in markets and the significance of elasticity of demand and supply in shaping the responsiveness or consumers and producers to changing market conditions, you should be in a good position to analyse the often complex inter-relationships between different markets and industries.

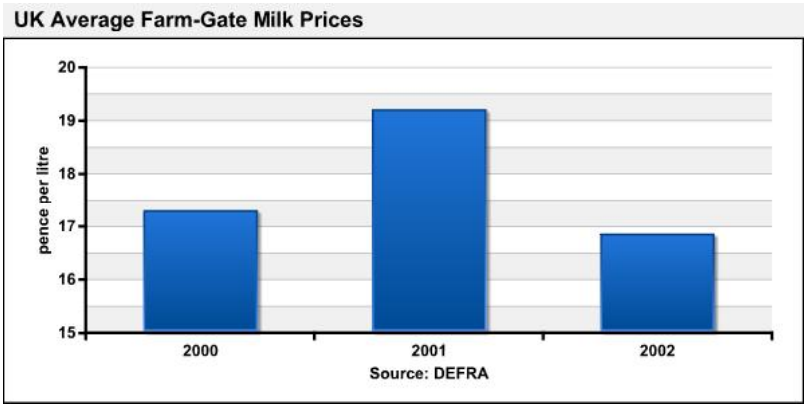
Markets operate at different stages of production. Although it is commonly accepted that the ultimate purpose of production is consumption – to meet our changing needs and wants, fluctuations in conditions in one market inevitably affect decisions made in others. We will consider a few examples of this in this section of the AS Economics Course Companion.



In the first example we see how a change in demand for one market can affect supply in another. In the diagram above we see an outward shift in the market demand for new residential property which causes an increase in equilibrium price and an expansion in quantity supplied. Land available for property development is finite. An increase in land made available for residential properties can reduce the land available for commercial developments (for example within an urban area). The effect might be an inward shift of the supply of new commercial properties because of higher land prices forcing up development costs.

Changes in the prices ruling in one market can filter through to a wide range of related industries. This is particularly the case when there are changes in the prices of essential raw materials and components which then work their way through costs and prices at later stages of the supply chain.

The example we shall consider here is that of milk prices.



The chart above shows farm-gate prices for milk for UK farmers over recent years. The price that dairy farmers receive for their milk has been a controversial issue for some time. The farmers' organisations including the National farmers' Union (www.nfu.org.uk) argue that they are being exploited by the **monopsony power** of the major supermarkets. Currently farmers are receiving just over 17p per litre for their milk, but the retail price is closer to 50p per litre. The low price that farmers receive is threatening the economic viability of the industry.

However our concern here is to see how fluctuations in the market price of milk can affect other agents in the economy. Clearly consumers are a group directly affected by volatile prices, although competition between major supermarkets can often mean that the retail price of milk is less volatile than the wholesale price.

Milk however is a vital ingredient in many different manufacturing processes, for example the production of butter, cheese, milk powder, condensed milk, cream, yoghurt and other products including milk chocolate. Of a total production of 13.5 billion litres of milk in 2002-03, only 6.64 billion litres was utilised as drinking milk.

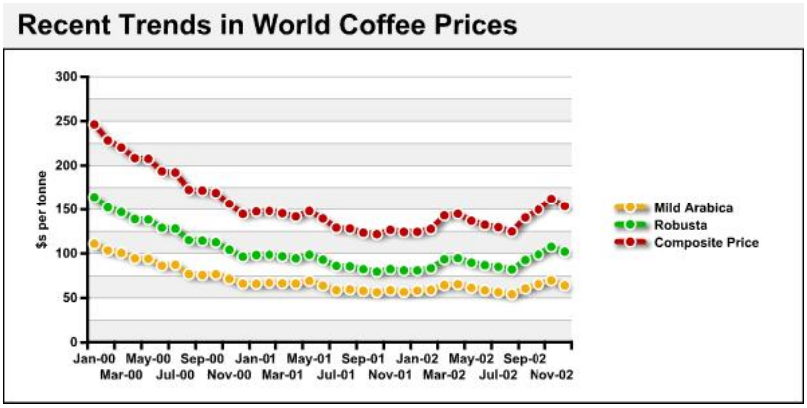
So higher milk prices will filter through to an increase in production costs for a variety of manufacturers and this will affect final retail prices for consumers.

11 MARKETS IN ACTION – COMMODITY PRICES

11.1 Coffee Prices

11.1.1 Introduction

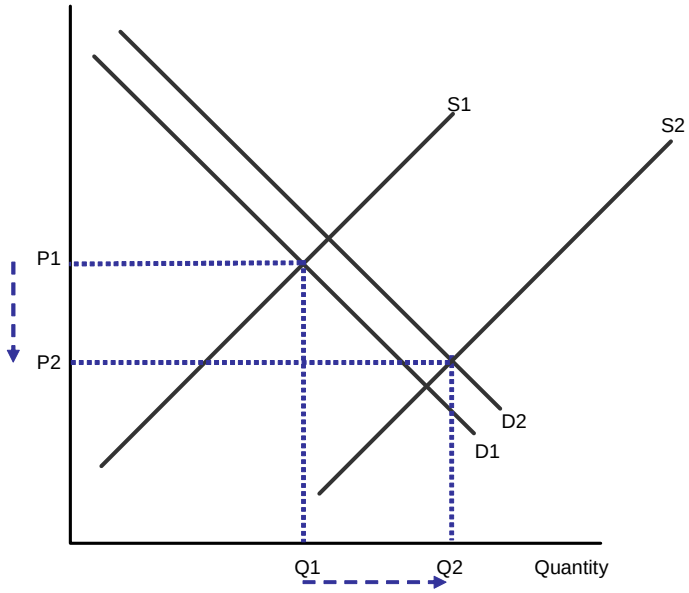
Coffee prices are amongst the most volatile in international markets. Fluctuations in demand and supply conditions cause big swings in prices for producers. In recent years the world price of coffee has plummeted raising fears of widespread **poverty** in leading coffee producing and exporting countries. The main reason for the collapse in prices (shown in the chart below) is that market supply has increased much more quickly than demand leading to a structural problem of excess supply. Tensions between the leading world coffee producers led to the collapse of the coffee export cartel (formerly run by the Association of Coffee Producers) in 2001.



10 years ago the world coffee economy was worth $30 billion, of which producers received $12bn. Today it is worth less than $50bn, with producers receiving just $8bn. The share going to producers has fallen from 40 per cent to 16 per cent. In the summer of 2003, international coffee prices had slumped to their lowest levels in 30 years (the ICO composite indicator price at 52.89 U.S. cents/lb on 16 May 2003), and in 100 years in real terms. In almost all coffee producing countries, such prices are unable to cover production costs and have led to serious social and economic problems, including increased poverty, indebtedness, and abandonment of coffee farms

The next diagram shows the effect of an outward shift in supply in excess of a shift in demand. The result is a fall in market price and also a decline in total revenue for coffee suppliers.

An Outward Shift in Coffee Demand and a Rise in Coffee Supply



11.1.2 Economic and Social Impact of the Slump in Coffee Prices

The collapse of international prices for raw coffee beans has important short and medium term effects for the leading coffee producers / exporters.

Lower prices and falling revenues have precipitated a slump in **output** and **investment** and have also caused rising **unemployment** – adding to pressure on governments to increase **financial support subsidies** to producers.

The **balance of payments** of the major coffee producing nations has worsened. Many countries rely on coffee as a major source of **export earnings** and foreign currency.

At a microeconomic level, the fall in prices paid to coffee roasting companies has led to heavy **losses** for farmers who now have less money to invest. With prices falling below the cost of production – many producers may cut their losses by selling all of their current output onto the market making the glut of coffee even worse in the short term. In the medium term some farmers will choose to abandon their crops because the coffee beans are more costly to pick than leave on the bushes.

Some farmers may switch to other crops that will yield a higher return (including heroin and other drugs) and there will be a switch towards **subsistence farming** since many small farms cannot switch production to alternative crops

Many coffee farmers in developing countries do not have access to **credit facilities** to tide them over when incomes are falling and losses are being made. The collapse in prices is therefore leading to a rise in farm **poverty and malnourishment** and a rise in **rural unemployment**.

11.1.3 Monopsony Power of the Major Coffee Roasters

One of the reasons why coffee producers in the developing world are not receiving a full price for their production lies with the **monopsony** (buying) **power** of the world's leading coffee roasters. The four main roasters are Sara Lee (producers of Douwe Egberts), Nestles, Proctor and Gamble (Folgers) and Kraft (Maxwell House).

Coffee Market Failure

> The low coffee price creates a buyers' market, leaving some of the poorest and most powerless people in the world to negotiate in an open market with some of the richest and most powerful. The result, unsurprisingly, is that the rich get richer and the poor get poorer
>
> (Oxfam Report www.maketradefair.com)

According to a report from Oxfam (part of their Make Trade Fair Campaign) the big four coffee roasters each have coffee brands worth US$1bn or more in annual sales. Together with German giant Tchibo, they buy almost half the world's coffee beans each year. Their monopsony power in the international market allows them to achieve lower prices with suppliers and contributes to very high profit margins on their final retail products. The Oxfam report argues that the world coffee market is failing to achieve an **equitable allocation of resources** and that this will lead to irreparable long term economic and social damage for many of the major coffee producing countries.

The World Bank held a conference on the coffee crisis in the late spring of 2003. At the heart of the discussion was the need to manage **structural change** in those countries overly-dependent on coffee production. Despite the volatility of the market, there is no guarantee that raw coffee bean prices will return to previous levels. One approach to the problem would be to persuade developed countries to reduce tariffs and quotas on other agricultural products to encourage coffee producing nations to diversify their agricultural base.

Open Up Markets and Encourage Diversification

> Developed countries will need to open their agricultural markets to third world producers to avert a deepening of the global coffee crisis. Coffee farmers needed to diversify to help solve the issues of overproduction and collapse of real prices to 40-year lows, which has pushed many coffee growing communities into poverty. The incomes of many farmers has halved in the past three years. The real solution is not within the coffee industry, but with the co-operation of developed nations to open up their highly protected agricultural markets to emerging markets,"
>
> Kevin Cleaver, the World Bank's director of agriculture and rural development
> www.worldbank.org

11.1.4 Retail Coffee Prices

Despite the fall in raw coffee prices, the retail price of coffee has not declined, indeed prices in retail stores both in the UK and around the world have continued to rise. See this article "Why cheap beans don't make cheap coffee" from the BBC web site

A number of factors explain this. Firstly, the price of raw coffee beans is a small percentage of the total cost and other more important expenses such as labour costs have been rising, particularly in countries where unemployment is low and labour shortages have forced up the cost of labour.

Retailers such as **Starbucks, Costa Coffee and Cafe Nero** would also justify higher prices because of an increase in the cost of renting retail premises in major cities. But there is little doubt that the main coffee retailers have taken advantage of falling coffee prices to increase their profit margins, particularly in local markets where they enjoy monopoly power.

11.1.5 Further Background Reading on Coffee Prices

Cafe Direct http://www.cafedirect.co.uk/

Cheap coffee threatens wild life (April 2003) http://news.bbc.co.uk/1/hi/sci/tech/2979941.stm

Child victims of coffee trade wars (Feb 2003) http://news.bbc.co.uk/1/hi/business/2745629.stm

Coffee Crisis Hits Brazilian Farmers (BBC News)

Collapse of the Coffee Producers Cartel (Guardian)

End of the Coffee Cartel (BBC News)

Fair Trade http://www.fairtrade.org.uk/

Global Economy Fair Trade Coffee Campaign

Grounds for a Coffee Revolution (BBC News)

International Coffee Organisation

Tea and Coffee Trade Journal

Vietnam Coffee and Cocoa Association http://www.vicofa.org.vn/vicofa/about_s.shtml

Vietnam plans chop for coffee crop (May 2003) http://news.bbc.co.uk/1/hi/business/3049565.stm

11.2 The World Sugar Industry

Another industry subject to volatile prices, productions and incomes is the international sugar market. Total world sugar consumption is currently around 140 million tonnes and is set to grow quite quickly in the years ahead.

The International Sugar Organisation comprises 63 countries and accounts for 81 per cent of world sugar production, 63 per cent of world consumption, 92 per cent of world exports and 39 per cent of world imports. The membership of the ISO comprises leading cane and beet sugar producers, as well as exporters including Australia, Brazil, Columbia, Cuba, the EU-15, Guatemala, India, Pakistan, Thailand and South Africa; numerous medium and small exporters including most of the ACP countries and sugar exporting LDCs.

World sugar production is about 135 million tonnes but only 25% of world production is sold in the world

market. In this sense the world market is best described as a “residual market” – only a small percentage of total production is internationally traded – the market for traded sugar is dominated by Brazil where the industry is heavily cross subsidised by fuel alcohol production.

11.2.1 The Global Sugar Industry and the European Union

The EU's sugar regime has been heavily criticised by international trade organisations and developing countries. The current EU sugar regime imposes import tariffs as high as 339% on raw sugar and 419% on white sugar. Though the EU applies a quota system to allow imports at lower tariff rates, the amount is less than two million tonnes a year. Sugar imports into the EU account for only 4% of the sugar exports by developing countries, which supplied 65% of global sugar exports in 2001.

Many economists believe the EU sugar regime has damaged the incomes of other sugar-producing countries by exporting subsidised EU sugar to developing countries in Africa and Asia, resulting in the reduction of sugar self-sufficiency in developing countries. Despite being a high-cost producer, the EU has exported a record six million tonnes of sugar at a time of record low world prices, even while more efficient producers were having difficulty covering production costs.

The EU provides export subsidies, known as export refunds that cover the difference between the world market price and high prices in its local market, therefore enabling that sugar to be exported. As a result, the price of the EU's surplus mainly for export, is lower than its real production cost and represents dumping in international markets,

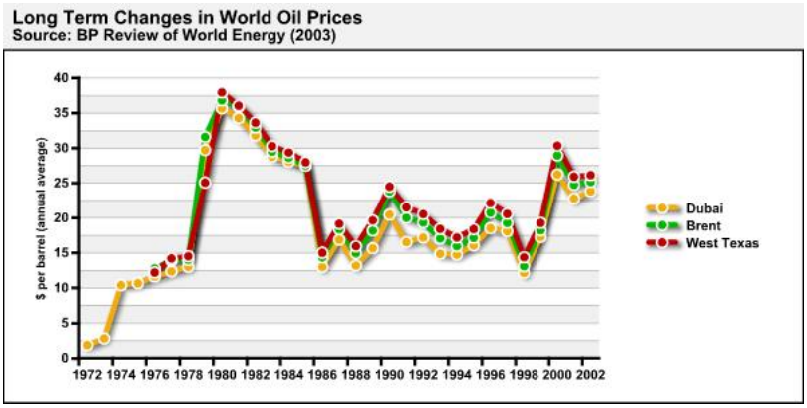
11.2.2 An Emerging Sugar Cartel

An informal sugar cartel has been established in 2003 among five of the world's top five sugar exporters. The five countries are Brazil, Thailand, Australia, South Africa and Guatemala. Australia, Brazil and Thailand are seeking to use the cartel to control exports and thereby prop up declining sugar prices in the world market. The current international price of raw sugar in the world market is eight US cents per pound, about six cents below the level the three countries consider economically viable. These five countries account for about one-third, or nearly 50 million tonnes, of the sugar market.

Brazil has emerged as a top sugar producer in recent years and its export strategy is a key influence on world prices.

11.3 International Oil Prices

There have been four major increases in world oil prices over the last thirty years. In 1973-74 OPEC managed to limit world oil supply forcing the price of Dubai crude oil to treble. The subsequent **inflationary shock** to the global economy was a key factor behind the high inflation and world recession of the mid 1970s. Further spikes in the price of oil came in the late 1970s, 1990 (during the Gulf War) and again in 2000 when the price of Brent crude oil reached $35 per barrel. However the price of oil was falling during most of 2001 because of a global economic slowdown before recovering back above $25 dollars per barrel by the middle of 2002. The lead in to the Iraq war in 2002-03 caused a new surge in world oil prices, but they have since fallen back again towards the mid range of OPEC’s target of $22 - $28 per barrel.



OIL DEMAND	OIL SUPPLY
There is a strong link between the demand for oil and the rate of global economic growth (cyclical demand)	Short run supply influenced by a series of different factors

Oil is an essential input into many industries – when the economy is expanding, the demand for oil rises	(1) Production decisions of OPEC and Non-OPEC countries
Demand also affected by the relative prices of oil substitutes (e.g. gas)	(2) Amount of spare production capacity in the oil sector
Changes in climate – e.g. affecting the demand for heating oil	(3) Production shocks (e.g. loss of output from rig closures)
There is also a speculative demand for oil (i.e. purchasers hoping for a rise in prices on world markets)	Long run oil supply is linked to
	Depletion of proven oil reserves
	Investment spending on exploring and then exploiting new oil reserves
	Technological change in oil extraction (which affects the costs of extraction)

11.3.1 Demand for Oil – Oil as a Derived Demand

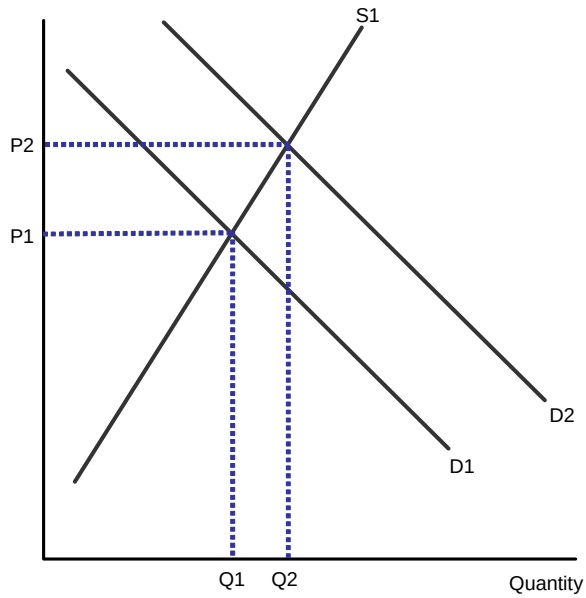
Oil is an essential **input** into many industries across the economy and oil also provides a vital **source of energy** and **fuel for the transportation sector.** As a product oil has a **derived demand**. It is used for gasoline, jet fuel, kerosene (for cooking and heating) and as fuel for industry, the power sector and in lubricants and bitumen.

The **demand for oil is highly cyclical**. When the **global economy** is enjoying a phase of sustained **economic growth** so the demand for oil increases, putting upward pressure on prices unless supply responds. The short run elasticity of supply for oil depends on production decisions of individual countries; the existing level of oil stocks and the amount of spare capacity that leading oil producers have.

Higher oil demand matched against an **inelastic short run supply of oil** invariably drives market prices higher – this is shown in the diagram above. An increase in demand causes a fall in oil stocks at the major international refineries and pushes prices higher. This acts as a signal to suppliers to expand production. However there are **time lags** between a change in price and extra supplies coming on stream. The demand for oil is also price inelastic. This combination of an inelastic demand and supply helps to explain some of the volatility in world oil prices.

11.3.2 OPEC

An Outward Shift in Oil Demand when Supply is Inelastic



The **Organization of Petroleum Exporting Countries (OPEC)** accounts for just over 40% of current world supply. This gives OPEC a pivotal influence in shaping the direction of oil prices – but only when the cartel acts together to **control production** and balance supply and demand in the international market.

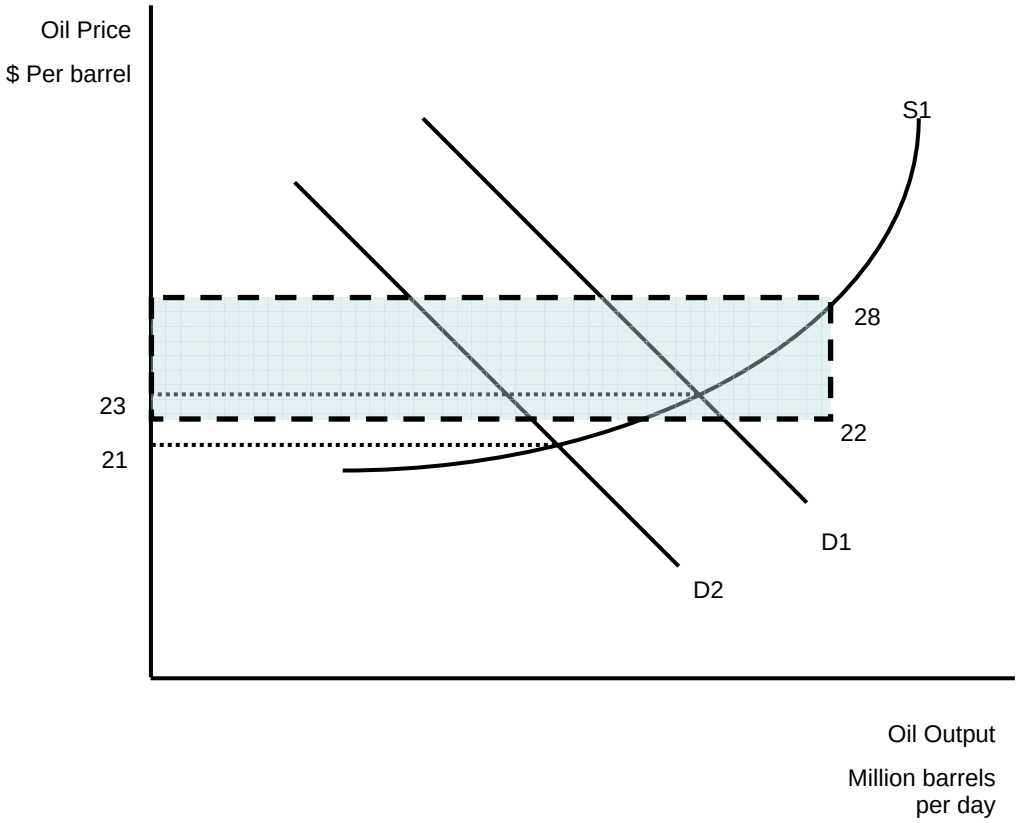
Control of a scarce resource

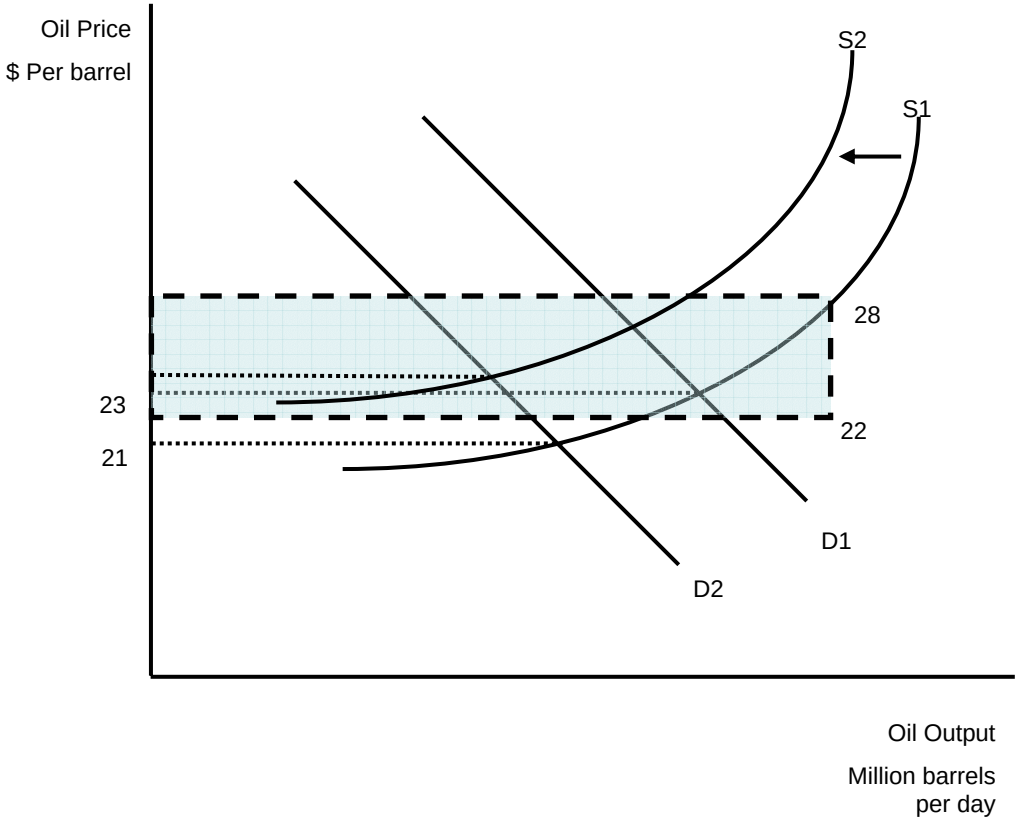
> Oil is not scarce. Enough lies underground to keep the world's motors humming for several decades yet. The snag is that the lion's share of it—and almost all the oil that is cheap to extract—lies under the desert sands of a handful of countries around the Persian Gulf

Source: The Economist, December 2001

Non-Opec countries account for the largest portion of total supply. Oil is produced in nearly every corner of the world, and nearly every region has been expanding oil production in the last decade. This includes Europe, where Norwegian oil companies are achieving a rapid increase in oil extraction and also Russia, where technical problems that caused production problems from their oil fields and pipelines are now being resolved.

- Saudi Arabia is the biggest producer of oil within the OPEC cartel with the Iranians and Venezuela next in size.
- OPEC has over seventy five per cent of total proven oil reserves – in the long term it can be expected to see its influence over oil supplies grow – and it can extract crude oil at the cheapest marginal cost. The cartel essentially acts as a **buffer** in the global oil market.
- When oil prices are high, there is incentive for Non-OPEC countries to increase production (their oil reserves can be extracted only at a high marginal cost) thereby boosting total oil supply. In this situation OPEC might seek to squeeze output to prevent too high a level of production and an accumulation of oil stocks.
- If Non-OPEC supply is cut (perhaps because of a decline in capital investment in oil exploration and drilling) and oil prices start rising, OPEC will monitor this carefully. Clearly it stands to benefit from higher average oil prices.
- An extra $2 per barrel for Saudi Arabia and other large producers makes a huge difference to their export revenues and government finances. But if prices rise too quickly, the demand for oil will contract. OPEC might then decide to raise short-term production, using up existing spare capacity at its major wells, to boost output and reduce excess demand.
- OPEC has set a target price for oil of $22 - $28 per barrel. It hopes that production agreements to bring demand and supply into balance will help to achieve much needed price stability for the leading oil suppliers.





11.3.3 Background Reading on Oil Prices

A History of Crude Oil Prices

Oil and Petrol Special Report (Guardian)

BP Review of World Energy (2003) http://www.bp.com/centres/energy/index.asp

12 BUSINESS ECONOMICS - PRODUCTION AND COSTS

12.1 Production

Production refers to the output of goods and services produced within a market. To simplify the idea of the production function, economists create time periods for analysis.

Short run production

The **short run** is a period of time when there is **at least one fixed factor of production**. This is usually the capital input such as plant and machinery and the stock of building and technology. In the short run, output expands when more **variable factors** (labour, raw materials and components) are employed.

Long run production

In the **long run**, all factors of production can change as a business can increase the scale of its operations. In order to understand **short run costs** it is essential to understand the **productivity** of the variable factor and thus the **law of diminishing returns**.

12.1.1 Productivity of the Variable Factor – Diminishing Returns

In these examples the labour input is assumed to be the only variable factor. Other factor inputs such as capital are assumed to be fixed in supply. The returns to adding more labour to the production process are measured in two ways:

Marginal product (MP) = Change in total output from adding one extra unit of labour

Average product (AP) = Total Output divided by the total units of labour employed

Units of Labour Employed	Total Physical Product (tonnes of wheat)	Marginal Product (tonnes of wheat)	Average Product (tonnes of wheat)
0	0		
1	3	3	3
2	10	7	5
3	24	14	8
4	36	12	9
5	40	4	8
6	42	2	7
7	42	0	6

Diminishing returns occur when the marginal product of labour starts to fall. In the example above, extra labour is added to a fixed supply of land when harvesting wheat. Marginal product is maximized when the 4th worker is employed. Thereafter the extra output from new workers is falling. Once marginal product falls below average product, then we have reached the point where average product is maximized – i.e. we have reached **productive efficiency**.

The Law of Diminishing Returns occurs because factors of production are not perfect substitutes for each other. Resources used in producing one type of product are not necessarily as efficient when switched to the production of another good or service. The **law of diminishing returns** lies at the heart of conventional production and cost theory.

Underlying the idea is the assumption of fixed resources and given technology. This concept may hold true for many small and medium sized businesses. However the ability of **transnational corporations** to source inputs from more than one economy and engage in **rapid transfers of technology** make the concept of diminishing returns less relevant now to the real world. Production can be switched between plants in a bid to achieve increased efficiency and cost savings.

12.2 Costs of Production

Costs are those **expenses faced by a business** when producing a good or service for a market. Every business faces costs – these must be recouped if a business is to make a **profit** from its activities. In the short run a firm will have fixed and variable costs of production

12.2.1 Total Cost

Total Cost is made up of **fixed costs** and **variable costs**

12.2.2 Fixed Costs

These costs relate to the **fixed factors of production** and do not vary directly with the level of output. Examples of fixed costs include:

- Rent and business rates
- The depreciation in the value of capital equipment (plant and machinery) due to age
- Insurance charges
- Salaried staff costs
- Interest charges on borrowed money
- The costs of purchasing new capital equipment
- Marketing and advertising costs

12.2.3 Variable Costs

Variable costs **vary directly with output**. I.e. as production rises, a firm will face higher total variable costs because it needs to purchase extra resources to achieve an expansion of supply. Common examples of variable costs for a business include the costs of raw materials, labour costs and consumables.

12.3 Fixed Cost Curves

We can illustrate the concept of fixed cost curves using the next diagram. The greater the total volume of units produced in the short run, the lower will be the fixed cost per unit as the fixed costs are spread over a higher number of units. This is one reason why mass-production can bring down significantly the unit costs for consumers – because the fixed costs are being reduced continuously as output expands.

Output (000s)	Total Fixed Costs (£000s)	Average Fixed Cost (AFC)
0	30	
1	30	30
2	30	15
3	30	10
4	30	7.5
5	30	6
6	30	5
7	30	4.3

12.4 Variable Costs, Total Cost and Average Cost

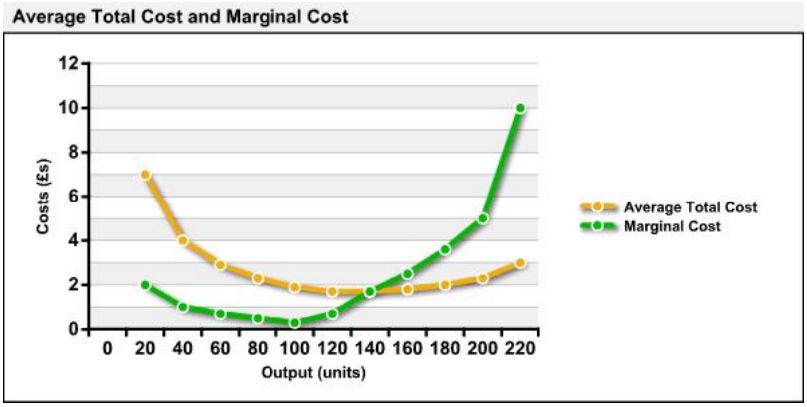
The table below gives an example of the short run costs of a firm

OUTPUT Units	Total Fixed Cost TFC (£s)	Total Variable Cost TVC (£s)	Total Cost TC (£s)	Average Total Cost ATC (£ per unit)	Marginal Cost MC (£)
0	100	0	100		
20	100	40	140	7	2
40	100	60	160	4	1
60	100	74	174	2.9	0.7
80	100	84	184	2.3	0.5
100	100	90	190	1.9	0.3
120	100	104	204	1.7	0.7
140	100	138	238	1.7	1.7
160	100	188	288	1.8	2.5
180	100	260	360	2	3.6
200	100	360	460	2.3	5

220	100	560	660	3	10

Average Total Cost (ATC) is simply the cost per unit of output produced. ATC = TC divided by output

Marginal cost (MC) is defined as the change in total costs resulting from the production of one extra unit of out



Average total cost is minimized when marginal cost cuts the average total cost curve from below. Provided that the marginal cost of producing an extra unit is below the average cost of the preceding units, then average cost will fall as output expands. But when the marginal cost of supplying additional units of output starts to rise, it may jump above the average cost, leading to a rise in average total cost.

A business achieves productive efficiency when it is producing at the lowest point of its average total cost curve. In the example shown in the table and chart above, this would be where average cost = £1.70 over the range of output 120 – 140 units.

12.5 Long Run Costs

The **long run** in economics is defined as a period of time in which **all factor inputs can be changed**. The firm can therefore alter the scale of production. If as a result of such an expansion, the firm experiences a fall in **long run average total cost**, it is experiencing **economies of scale**. Conversely, if average total cost rises as the firm expands, diseconomies of scale are happening.

12.6 Economies of Scale

Economies of scale are of huge importance to many businesses – not least those that have to compete in international markets where cost competitiveness is vital.

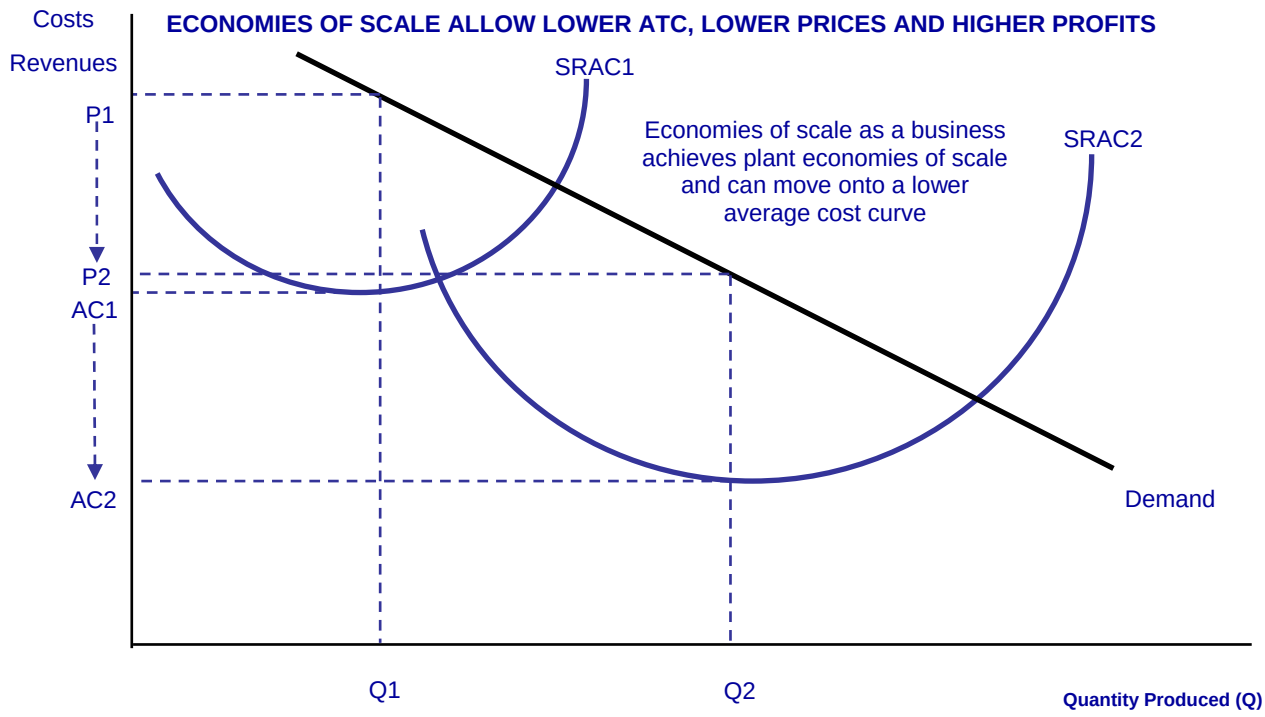
12.6.1 Benefits of Economies of Scale

Both producers and consumers stand to gain from economies of scale. Businesses can bring down their average costs by producing on a larger scale. This opens up the possibility of them making bigger **profit margins** and also building a **competitive advantage** in their chosen markets.

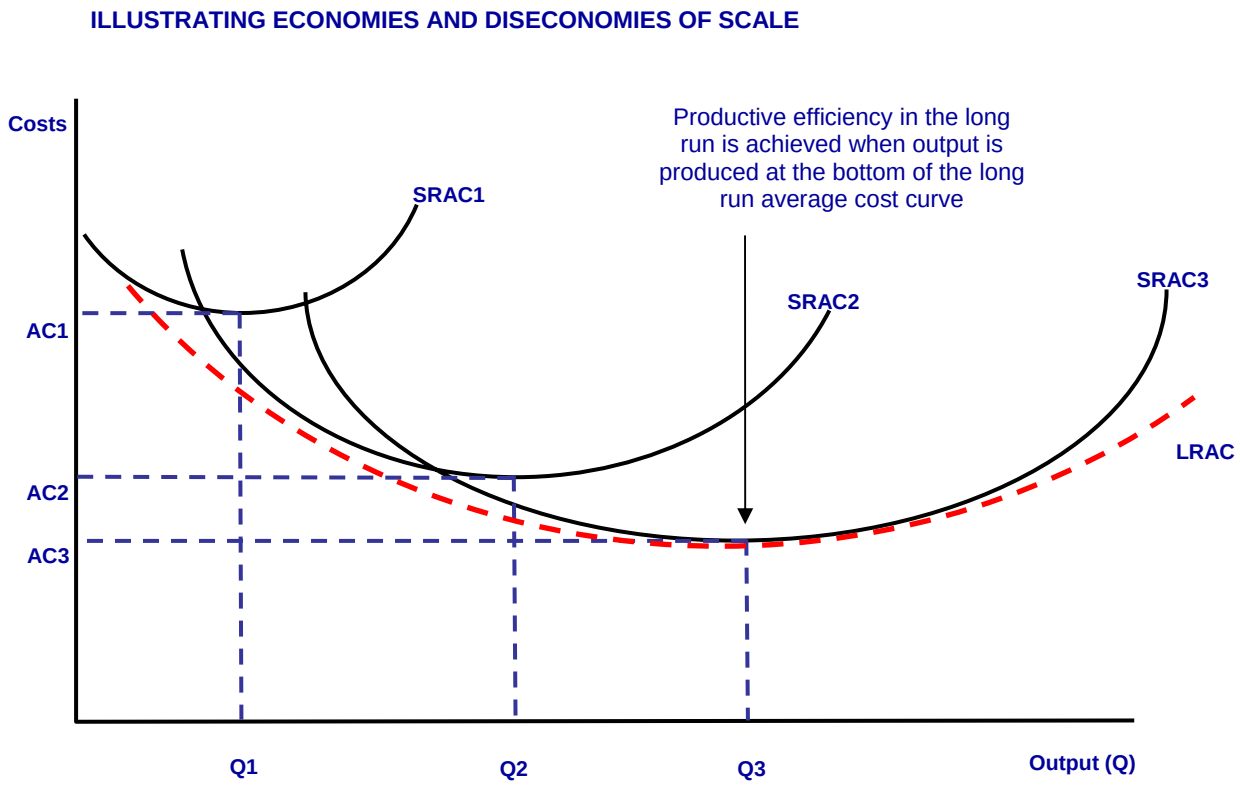
For consumers, lower costs per unit can be translated into a reduction in market prices which leads to a rise in their real purchasing power and a potential improvement in economic welfare (e.g. measured by the level of consumer surplus).

The next diagram illustrates how reductions in **average costs per unit** can be achieved as output increases in the long run. If a business can expand the scale of its operations and move short run average total cost curve SRAC1 to SRAC2, then it can produce a higher output at much lower cost per unit.

The diagram illustrates that if price falls from P1 to P2, because average cost has also declined, the total profit achieved at output Q2 is much higher than at Q1, even though consumers are paying a sharply lower price. Both consumers and suppliers stand to gain if **economies of scale** can be exploited in an industry.



The output of **productive efficiency** occurs when a business in a given market or industry reaches the **lowest point of its average cost curve**. Output is being produced at minimum cost per unit implying an efficient use of scarce resources and a high level of **factor productivity**. In the diagram above, the long run level of productive efficiency would occur at output Q2.



As we shall see later on in this section, the exploitation of economies of scale is an important factor in the **development of monopoly power** in many industries. Lower costs per unit can be used to gain a

competitive advantage against rival firms that eventually might force higher-cost suppliers out of the market, leading to an increase in the degree of market (monopoly) power that one or a few dominant firms can then exploit.

The extent of economies of scale will vary from industry to industry

12.7 Internal Economies of Scale

A variety of internal economies of scale (i.e. reductions in long run average total cost that relate to the growing size of a firm) can be achieved. These are outlined below:

12.7.1 Technical Economies of Scale

Large-scale production encourages more efficient production processes that lead to **increasing returns to scale**. This means that total output rises more than proportionate to the inputs used, causing a decline in the average total cost.

Several technical economies of scale can be identified:

- **Economies of increased dimensions – the 'container principle'**: These are useful in industries such as shipping, steel manufacturing, warehousing and transport. An increase in the scale of a surface area leads to a more than proportionate increase in the cubic area. Total costs will rise but the cubic capacity increases at a faster rate thereby reducing the cost per cubic meter of capacity. Good examples of the container principle include the use of huge blast furnaces, enormous oil tankers and other freight shipping. Huge vats also allow the exploitation of economies of scale in brewing
- Large-scale firms use **large units of capital** with high productivity if used fully. These units of machinery are often very expensive - for example capital machinery in the production of iron ore or the mass production of cars in a **fully-integrated production plant** – but the more units of output that are produced, the more this cost is spread over higher output leading to a reduction in average costs per unit
- Large-scale production allows the principles of **mass production** and **division of labour** to be exploited.
- The division of labour is where the production process is split into many separate tasks allowing individual workers to become proficient in certain tasks through **specialization**

12.7.2 Marketing Economies

A large-scale manufacturer can buy raw materials and other inputs (components) in **bulk** and thereby negotiate lower prices than the small manufacturer.

When a major buyer in a market has substantial **buying** power, this is termed a **monopsony**. For example, the major hotel chains can buy the consumables used in hotel rooms at much lower cost than individual consumers. The motor industry can use its monopsony power when negotiating the supply of tyres, in-car entertainment systems and other component parts.

The average cost of selling each unit produced can also be lower, because **advertising and marketing costs** can be spread over a large output sold and specialist salesmen/buyers are employed to maximise sales.

Giant **multinational companies** such as Coca Cola and Nike spend hundreds of millions of dollars each year on marketing their products, but because they sell hundreds of million individual units from their product range, the marketing costs as a percentage of total costs are small. Smaller businesses producing on a lower scale find it more difficult to justify such spending purely on the grounds of cost.

12.7.3 Financial Economies

Small firms often have to pay higher **interest rates** on loans since they are perceived by financial organizations to carry a higher level of **risk**. Firms therefore have to pay a **risk premium** on their loans. The smaller firm may find it more difficult to raise money through selling new shares than a larger firm.

12.7.4 Administrative or Managerial Economies

A large manufacturer can employ **specialist staff** to supervise production, thus cutting managerial costs per unit. Greater control of the workforce should raise **labour productivity**.

Specialist administrative equipment, like networked systems of computers, can be used profitably in large firms. The cost of transmitting business information is reduced and employees can communicate more effectively.

12.7.5 Risk-bearing Economies

A large firm sells in more markets and has a wider product range than a smaller company. The rapid expansion of multi product businesses is part of a process of **diversification**. This helps **spread business risks** so that if one market does badly the company has other markets to sell into.

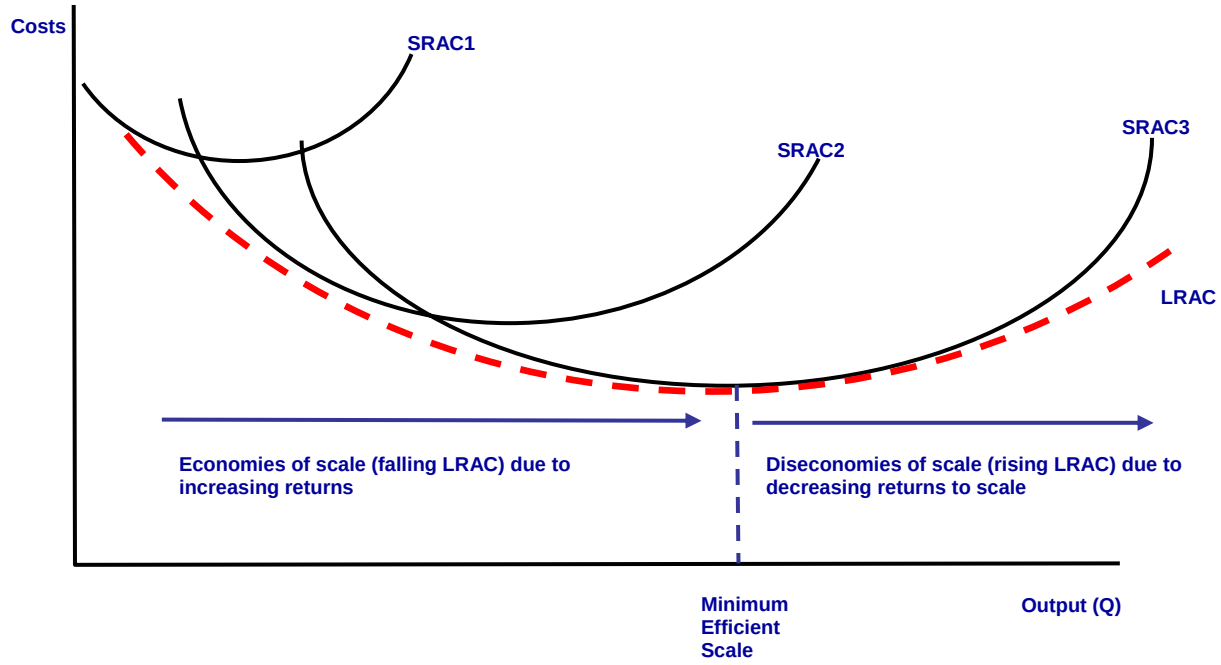
12.8 Diseconomies of Scale

There are nearly always limits to the potential to achieve economies of scale. Indeed when a business expands beyond a certain size, average costs per unit may start to increase. This is known as diseconomies of scale.

Diseconomies of scale arise mainly through **problems of management**. As a firm grows, management finds it more difficult to organize production efficiently. It is much easier to lose control of costs in a large organization than in a small business.

- **Control** - monitoring how productive each worker is within a large business is both imperfect and costly. This can lead to a loss of productive efficiency if worker shirking is common
- **Co-ordination** - it is difficult to co-ordinate complicated production processes and they may break down. Achieving efficient flows of information is expensive
- **Co-operation** - workers in big firms may feel a sense of alienation, perhaps perceiving that they don't really belong and this may affect their productivity adversely – this is particularly the case in routine jobs that are extremely repetitive

THE LONG RUN AVERAGE TOTAL COST CURVE



12.9 External Economies of Scale

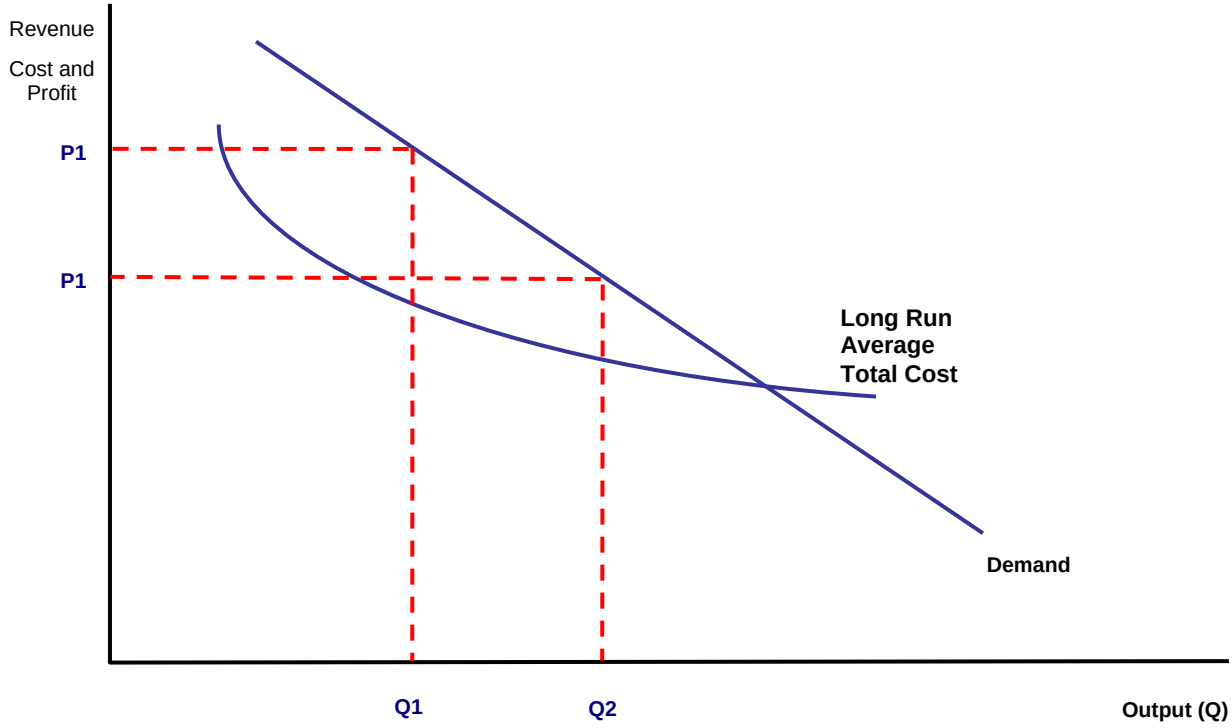
External Economies arise from the **growing size of an industry**. As the industry grows in size and there are more firms in the industry, these companies may enjoy lower average total costs for several reasons:

- **Labour costs may be reduced.** Firms will be able to draw on a pool of skilled labour, trained by firms and government, thus reducing their own training and living costs.
- **The necessary infrastructure is more likely to be present.** Roads, gas supplies, etc. are more likely to be laid on, if the industry is large. This helps reduce costs for individual firms.
- **Suppliers for the industry will emerge** - specialist firms that make or service machinery, or supply components. Because they specialize, these firms are able to produce goods and services far more cheaply than if the main company attempted to produce them on its own

12.10 Natural Monopoly

A **natural monopoly** exists when there is great scope for economies of scale to be exploited over a very large range of output. Indeed the scale of production that achieves productive efficiency may be a high percentage of the total market demand for the product.

Natural monopolies are associated with industries where there is a **high ratio of fixed to variable costs**. For example, the fixed costs of establishing a **national distribution network** for a product might be enormous, but the marginal (variable) cost of supplying extra units of output may be very small. In this case, the average total cost will continue to decline as the scale of production increase, because fixed (or overhead) costs are being spread over higher and higher levels of output. This is shown in the next diagram – with the long run average cost curve declining over a large range of output levels. With a pure natural monopoly, there may only be room for one firm to fully exploit the economies of scale that might be achievable in an industry in the long run.



The **telecommunications industry** has in the past been considered to be a natural monopoly. Like railways and water provision, the existence of several companies supplying the same area would result in an inefficient multiplication of cables, transformers, pipelines etc. However the perception of what constitutes a natural monopoly is now changing - in part because of the impact of **new technology** in reducing traditional barriers to entry within markets.

In the case of the telecommunications industry in the UK, British Telecom has faced increasing levels of competition from new telecommunications service providers - not least the rapid expansion of mobile and cable services. This has led to a change in the role of the industry regulator **(OFTEL** www.oftel.gov.uk). Its main role now a policing role to ensure fair competition between existing service providers as well as looking for opportunities to introduce new competition into the telecommunications industry when feasible.

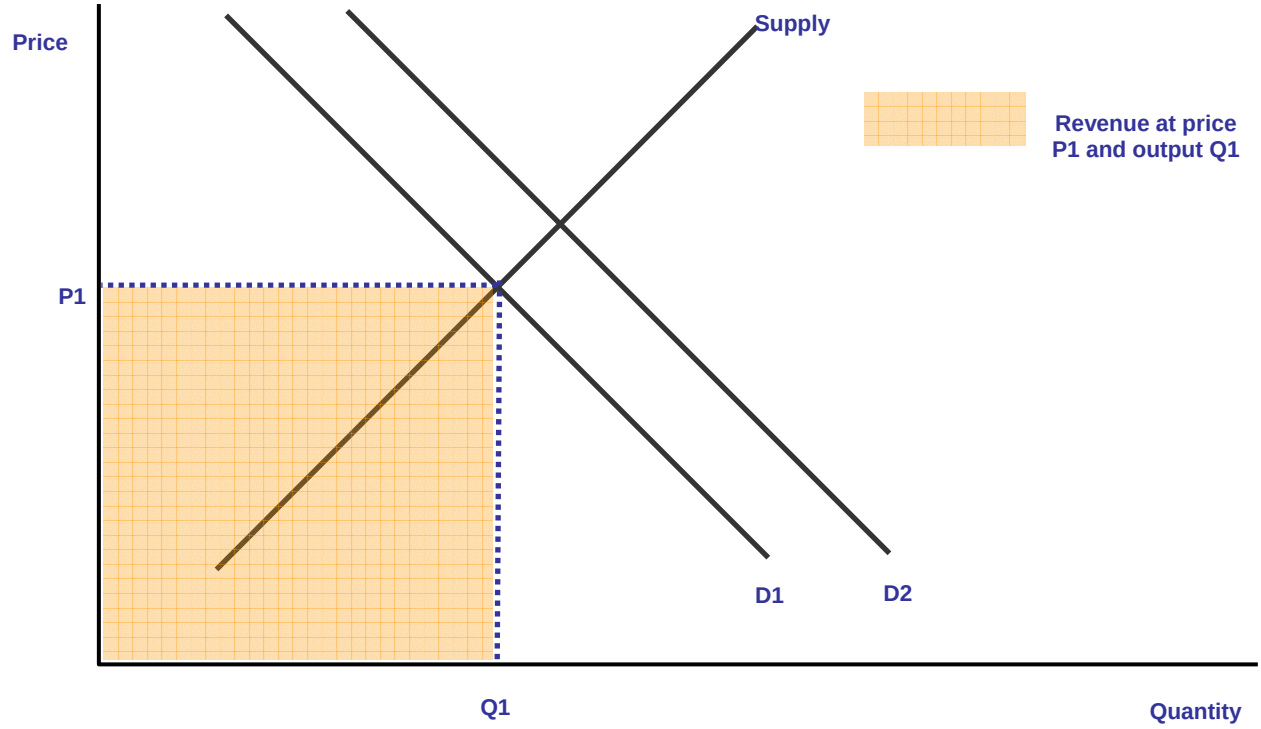
12.11 Do Economies of Scale always improve the Welfare of Consumers?

There are some disadvantages and limitations of the drive to exploit economies of scale.

- Mass production might lead to a **standardisation of products** – limiting the amount of effective consumer choice in the market
- Secondly, there are obvious **limits to economies of scale** because market demand may be insufficient for economies of scale to be fully exploited. Some businesses may be left with a substantial amount of **excess capacity** if they over-invest in new capital
- Businesses may use economies of scale to build up **monopoly power** in their own industry. A growing concentration of market share might lead to a reduction in consumer welfare and higher prices in the long run – leading to a loss of allocative inefficiency
- Economies of scale might be used as a form of **barrier to entry** – whereby existing firms have sufficient spare capacity to force prices down in the short run if there is a threat of the entry of new suppliers. These economies of scale might therefore make a **market less contestable** leading to a decline in overall economic efficiency and welfare.

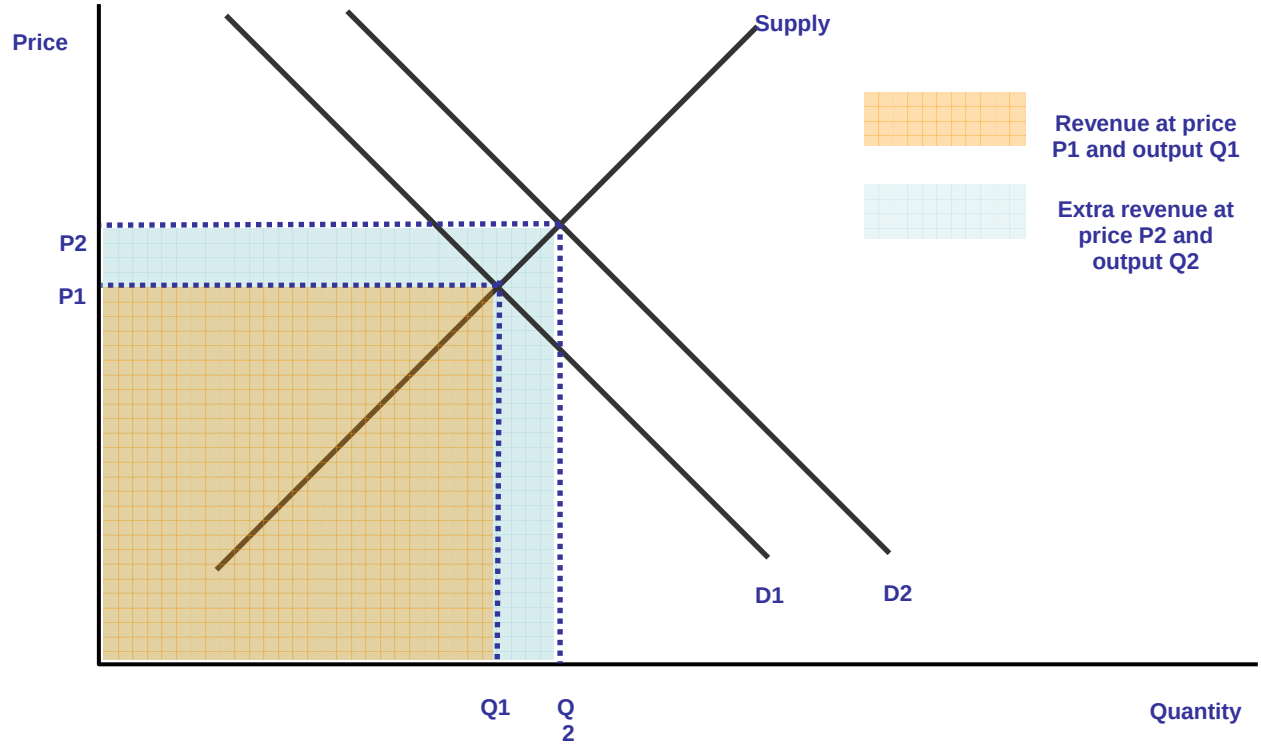
12.12 Sales Revenue

The total revenue a business generates from sales = price per unit x quantity sold (P x Q)



12.12.1 Sales Revenue Following a Shift in Demand

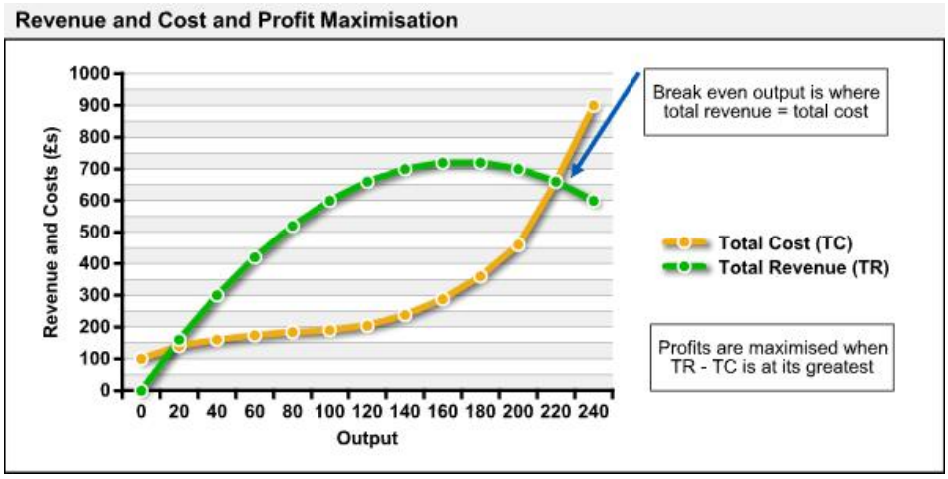
An outward shift in demand causes a rise in both the equilibrium market price and quantity traded – leading to an increase in total revenue for a business. The reverse effects occur in an economic recession when demand, prices and revenues often fall.



12.13 Profits

Profits are made when ***total revenue exceeds total cost***. Total profit = total revenue – total cost. **Profit per unit supplied** = price = average total cost. The standard assumption is that private sector businesses seek to make the highest profit possible from operating in a market. There are times when this assumption can be dropped – but the profit seeking firm or business remains a powerful component of standard economic analysis.

Output (units)	Total Cost	Average Total Cost	Marginal Cost	Price per unit (demand)	Total Revenue	Profit (loss)
0	100					
20	140	7	2	8	160	20
40	160	4	1	7.5	300	140
60	174	2.9	0.7	7	420	246
80	184	2.3	0.5	6.5	520	336
100	190	1.9	0.3	6	600	410
120	204	1.7	0.7	5.5	660	456
140	238	1.7	1.7	5	700	462
160	288	1.8	2.5	4.5	720	432
180	360	2	3.6	4	720	360
200	460	2.3	5	3.5	700	240
220	660	3	10	3	660	0


Revenue and Cost and Profit Maximisation
Revenue and Costs (£s)
1000
900
800
700
600
500
400
300
200
100
0
0 20 40 60 80 100 120 140 160 180 200 220 240
Output
Break even output is where total revenue = total cost
Total Cost (TC)
Total Revenue (TR)
Profits are maximised when TR - TC is at its greatest

13 COMPETITION AND MONOPOLY – MARKET STRUCTURES

13.1 Introduction - Britain's Largest Companies in 2003

Company	Market Value £m	Sector	Turnover £m
BP	92,085	Oil & gas	113,987
Vodafone	78,404	Telecommunication services	22,845
GlaxoSmithKline	68,303	Pharmaceuticals & biotechnology	21,212
HSBC	62,482	Banks	N/R
Royal Bank of Scotland	44,234	Banks	N/R
Shell Transport & Trading	38,361	Oil & gas	86,237
AstraZeneca	37,704	Pharmaceuticals & biotechnology	11,378
HBOS	25,520	Banks	N/R
Barclays	24,512	Banks	N/R
Diageo	20,817	Beverages	11,282
Lloyds TSB	18,619	Banks	N/R
Unilever	17,352	Food producers & processors	33,104
BT GROUP	14,393	Telecommunication services	20,559
Anglo American	13,480	Mining	9,659
Tesco	13,254	Food & drug retailers	23,653
British American Tobacco	12,916	Tobacco	10,600
Rio Tinto	12,828	Mining	5,629
British Sky Broadcasting	12,552	Media & entertainment	2,776
National Grid Transco	12,135	Utilities - other	4,401
BG	8,762	Oil & gas	2,610

13.2 Spectrum of Competition

Markets can be characterised according to how many **suppliers** are seeking the demand of consumers. The **spectrum of competition** ranges from **competitive markets** where there are many sellers, each of whom has little or no control over the market price - to a **pure monopoly** where a market or an industry is dominated by one single supplier.

In many sectors of the economy we see an **oligopoly** – where a just a few producers dominate the majority of the market. In a **duopoly** two firms dominate the market.

13.3 Monopoly

A pure monopolist is a **single seller** of a product in a given market or industry. In simple terms this means the firm has a **market share** of 100%.

The working definition of a monopolistic market relates to any firm with greater than 25% of the industries' total sales. Monopolies can develop in a variety of ways:

13.3.1 How Monopolies Can Develop

Method	How Monopoly Develops
Horizontal Integration	Where two firms join at the same stage of production in one industry. For example two car manufacturers may decide to merge, or a leading bank successfully takes-over another bank. The world's biggest contested takeover took place in 2000 when British business Vodafone mounted a successful bid for German telecoms firm Mannesmann
Vertical Integration	Where a firm develops market dominance by integrating with different stages of production in the industry e.g. by buying its suppliers or controlling the main retail outlets. A good example is the oil industry where many of the leading companies are both producers and refiners of crude oil. Forward vertical integration occurs when a business merges with another business further forward in the supply chain Backward vertical integration occurs when a firm merges with another business at a previous stage

Method	How Monopoly Develops
	of the supply chain
Creation of a Statutory Monopoly	When a policy of nationalisation was being pursued - key industries were taken into state ownership and run as public corporations with monopoly status. The Royal Mail has had a statutory monopoly in the delivery of letters for over one hundred and fifty years though this is set to end as the government seeks to promote competition in the industry. Rail Track was privatised in 1994 but in 2001 the company was taken back into state ownership (Network Rail) and is now run as a 'not-for-profit' business under the regulation of the Strategic Rail Authority
Franchises and Licences	Franchises and licences give a firm the right to operate in a market - and are usually open to renewal every few years. Examples include: Commercial television and radio licences Camelot - National Lottery (renewed for a further seven years in December 2000) Local taxi route licences Franchise holders to run regional rail services Licences awarded to successful bidders for the supply of 3rd generation mobile phone services. The government ran an auction for these licences in 2000 raising over £22 billion from the major mobile phone companies that bid for one of the 5 available licences
The Internal (Organic) Expansion of a Business	Firms can generate higher sales and increased market share by expanding their operations and exploiting possible economies of scale. This is internal rather than external growth (i.e. organic growth) and therefore tends to be a slower means of expansion contrasted to mergers and acquisitions

13.4 Barriers to Entry

For a high level of profits to be maintained in the long run, a monopolist must successfully prevent the entry of new suppliers into a market.

Barriers to entry are the mechanisms by which potential competitors are blocked. Monopolies can then enjoy higher profits in the long run as rivals have not diluted market share. There are several different types of entry barrier – these are summarised below:

- **Patents** - Patents are government enforced **property rights** to prevent the entry of rivals. They are generally valid for 17-20 years and give the owner an **exclusive right** to prevent others from using patented products, inventions, or processes.
- **Vertical Integration** - Control over supplies and distribution can be important. For example many major oil companies are fully vertically integrated. They control, oil extraction refining and retail outlets maintain their market power.
- **Predatory Pricing** - Firms may adopt **predatory pricing** policies by lowering prices to a level that would force any new entrants to operate at a loss. A high profile case came to a head in 1999 when the Office of Fair Trading found News International guilty of adopting predatory pricing policies in a bid to reduce competition in the market for broadsheet newspapers.
- **Advertising and Marketing** - Developing **consumer loyalty** by establishing branded products can make successful entry into the market by new firms much more expensive. Advertising can cause an outward shift of the demand curve and also make demand less sensitive to changes in price
- **Brand Proliferation** - In many industries multi-product firms engaging in **brand proliferation** can give a false appearance of competition to the consumer and disguises from consumers the actual degree of concentration within the industry. This is certainly true in markets such as detergents, confectionery and household goods – it is an essential part of non-price competition.

13.5 Economic Case against Monopoly

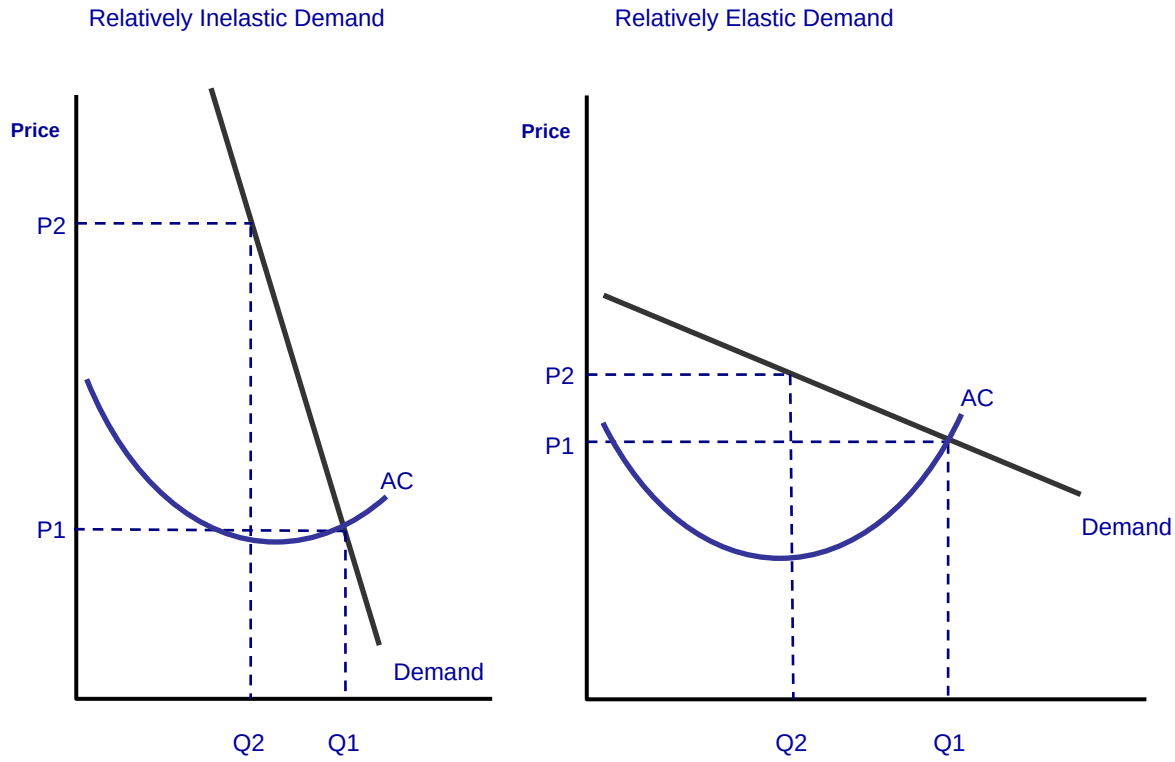
A monopolist is able to enjoy and exploit some power over the setting of prices or output. The monopolist cannot, however, charge a price that the consumers in the market will not bear! In this sense, the elasticity of the demand curve acts as a constraint on the pricing behaviour of the monopolist.

The main case against a monopoly is that these businesses can earn higher than average profits at the expense of allocative efficiency. The monopolist is seeking to extract a price from consumers that is above the cost of resources used in making the product. Consumers' needs and wants are not being

satisfied, as the product is being under-consumed. **Consumer sovereignty** has been replaced by **producer sovereignty.**

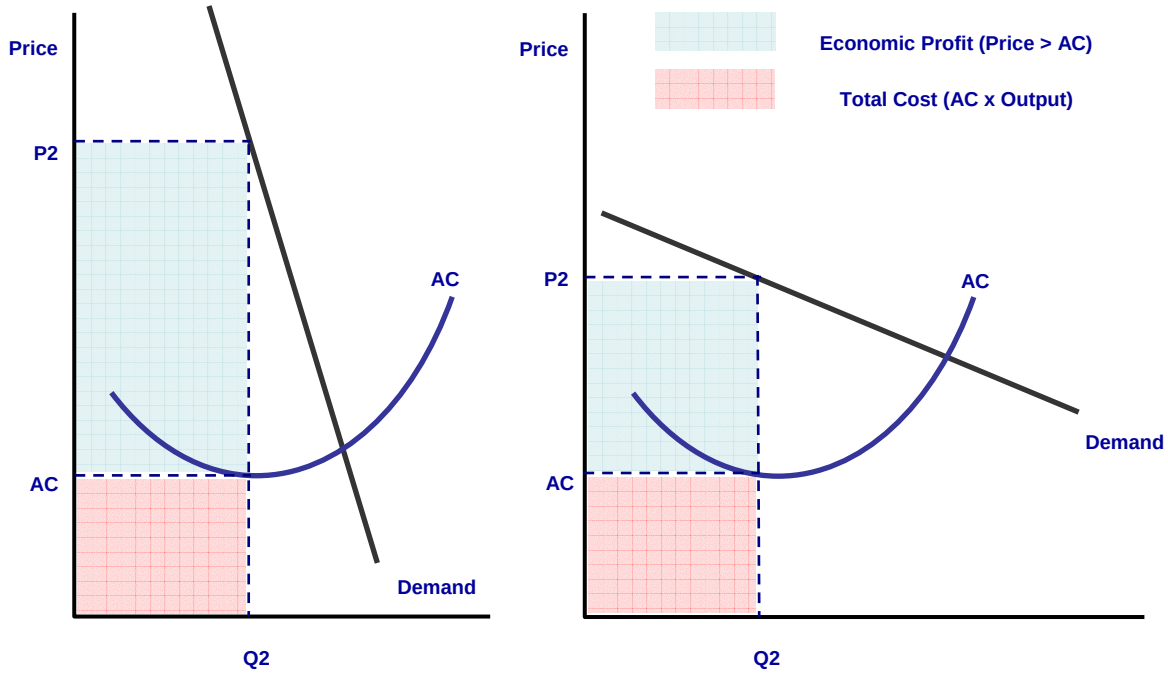
13.5.1 Monopoly Pricing Power and Price Elasticity of Demand

The diagrams below show how price elasticity of demand impacts on the ability of a business to raise price above the average costs and therefore earn a high rate of return.



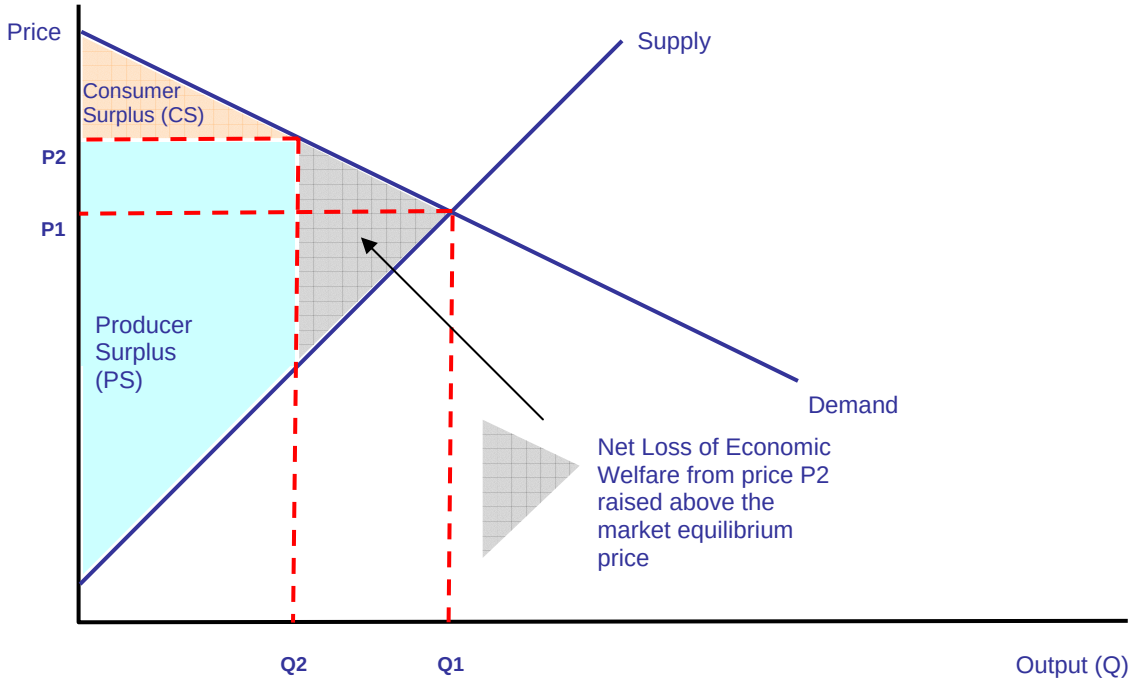
In the diagrams above we contrast a market where demand is price inelastic with one where demand is sensitive to price changes. The former is associated with a monopoly where consumers have few close substitutes to choose from.

When demand is inelastic, the level of consumer surplus is high, raising the possibility that the monopolist can squeeze output and raise price above cost thereby operating with a high **profit margin**. The left hand diagram below breaks down total spending by consumers (or total revenue for the supplier) into the profit and total cost (AC multiplied by output).



When demand is price elastic consumers can switch their demand easily between competing suppliers when relative prices change – the level of consumer surplus that might be extracted by the supplier is less, and we can see that with the same costs, the profit margin will be lower.

Monopoly and Allocative Inefficiency



One way of showing the potential loss of economic welfare that comes from monopolistic firms exploiting their market power is to use supply and demand analysis and the concepts of consumer and producer surplus that we introduced earlier. If a monopoly supplier reduces output from the equilibrium at Q1 to Q2 then it can sell this reduced output at the higher price P2. This results in a transfer of consumer surplus into extra producer surplus. But because price is now about the marginal cost of supplying extra units, there is a loss of allocative efficiency. This is shown in the diagram by the shaded area which is not transferred to the producer, merely lost completely because output is lower than it would otherwise be in a competitive market.

13.6 Controlling Monopoly Power

If the benefits of monopoly exceed the costs, then the monopoly may be condoned. Nevertheless, there is still the need for government intervention to regulate the firm in order to prevent it from abusing its market power and thereby causing **market failure**.

13.6.1 The Competition Commission

The Competition Commission carries out inquiries into matters referred to it by the other UK competition authorities concerning monopolies, mergers and the economic regulation of utility companies. The Appeal Tribunals hear appeals against decisions of the Director General of Fair Trading and the regulators of utilities in respect of infringements concerning anti-competitive agreements and abuse of a dominant position.

13.6.2 The Office of Fair Trading

The Office of Fair Trading plays a key role in protecting the **economic welfare of consumers**, and in helping to enforce UK competition policy. Its main roles are:

- To identify and put right trading practices which are against the consumer's interests;
- To regulate the provision of consumer credit;
- To investigate anti-competitive practices and abuses of market power and bringing about market structures, which encourage competitive behaviour?

The Office of Fair Trading reports on allegations of anti-competitive practices including claims of **collusive behaviour** where firms are thought to be engaging in **price-**fixing. Its Fair Trading Magazine provides interesting case studies on markets and industries where businesses have a significant amount of market power and the potential impact on consumers.

The views of the current Director General of Fair Trading, Professor John Vickers on the role of the OFT and the need for greater genuine competition in markets is emphasised in this quote from their mission statement available from their web site:

Promoting Competition – the Office of Fair Trading Mission Statement

> Competitive markets provide the best means of ensuring that the economy's resources are put to their best use by **encouraging enterprise and efficiency**, and **widening choice**. Where markets work well, they provide strong **incentives for good performance** - encouraging firms to improve productivity, to reduce prices and to innovate; whilst rewarding consumers with lower prices, higher quality, and wider choice.
>
> By encouraging efficiency, competition in the domestic market - whether between domestic firms alone or between those and overseas firms - also contributes to our **international competitiveness**.
>
> Where markets operate freely and effectively competition can be expected to bring all the benefits mentioned above. However, markets can and do fail. Competition policy is therefore used to ensure the efficient workings of markets and to avoid such market failures, most notably to prevent abuses of market power (that is less innovation, higher prices, lower choice, and lower quality than would result from efficient competition).

Recent Investigations by the Office of Fair Trading include the following:

- An investigation into new car prices
- The high cost of extended warranties on electrical goods
- Extent of choice and competition in the retail beer market
- Unfair terms in consumer contracts including penalty clauses in mortgage contracts, notice clauses in mobile phone contracts and the cancellation charges on holidays sold by major travel companies, and also for members of health clubs

13.6.3 Utility Regulators

With the **privatisation** of many former state-owned utilities – there was a fear that they might exploit their

monopoly power. Partly as a response to this, at the same time as each privatisation, the government also established a **utility regulator**. The regulators were given the power to introduce and periodically review **price capping** for each of the industries and over time, they have also **have sought to bring fresh competition** into markets by breaking down some of the statutory monopoly powers – although this has not been possible with the regional water companies.

Competition was introduced into the telecommunications in 1984; in Gas from 1996-98 and in Electricity from 1998.

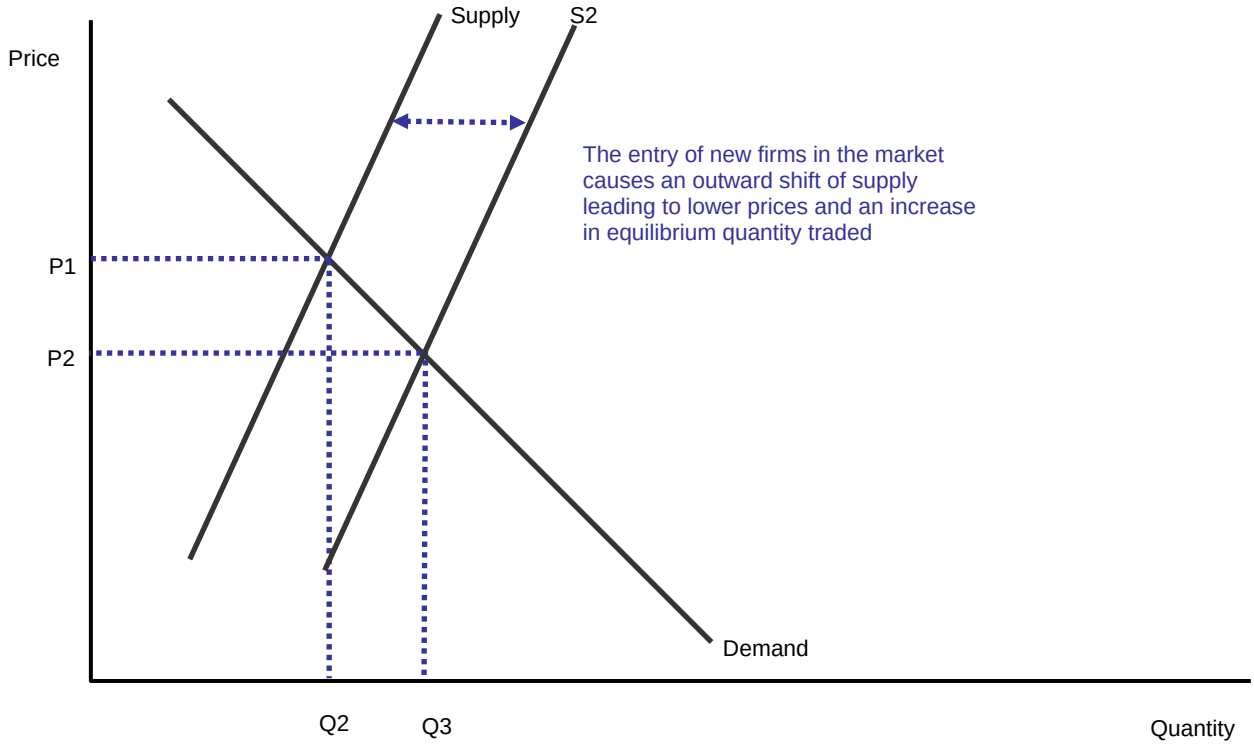
Another key role for the regulatory agencies is to **monitor the quality of service provision** and improve standards for consumers. The Office of General Energy Markets (OFGEM) announced in 2001 that it was lifting price controls on the electricity and gas industries because it believed that there was now sufficient competition within each markets for direct price controls to have passed their sell-by-dates.

13.7 Deregulation of Monopoly

Another policy is to **open up markets** and encourage the entry of new suppliers into a market where there was monopoly power in the past – a process called **de-regulation**.

Examples of this in the UK include the opening up of markets for household energy, the ending of the 150 year Post Office monopoly and also financial deregulation affecting both banks and building societies.

The expansion of the **European Single Market** has accelerated the process of **market liberalisation**. The Single Market seeks to promote four freedoms – namely the **free movement of goods, services, financial capital and labour**. In the long term we can expect to see the microeconomic effects of the EU Single Market working their way through many British markets and industries and the general expectation is that competitive pressures for all businesses working inside the European Union will continue to intensify.



When profits are below the level required to justify remaining in a market, then a business may decide to leave. Exiting from a market is rarely without cost, many expenses cannot be recovered – these are known as **sunk costs** and the longer term consequence is that the market power of the remaining suppliers increases, leading to a rise in the monopoly position enjoyed by the incumbent businesses.

13.8 Case Study: De-Regulation of the Retail Pharmaceutical Industry

In 2002, the Office of Fair Trading (OFT) announced that it would be allowing Britain's supermarkets to

open up to 500 new pharmacies. There are some 12,250 community pharmacies in the UK, providing NHS prescriptions and selling over-the-counter (OTC) medicines worth a combined total of £8.6bn. Though demand has grown steadily - and is set to grow further - entry restrictions have kept the number of pharmacies essentially static.

Amongst the potential benefits to consumers are:

- Lower prices because of increased competition in the market
- Increased accessibility of supplies – consumers can now purchase prescription drugs at the same time as doing their regular shopping – the convenience factor
- The total number of pharmacies will rise – a supply side improvement to the market
- Gains in allocative efficiency (lower prices) and dynamic efficiency if the quality of service improves as a result of new entrants to the market
- There will be a reduction in the costs of bureaucracy for the NHS – which allows more funds to be used elsewhere in providing health services to patients
- Evidence shows that when markets are deregulated the strongest player before deregulation usually remains the strongest player. Supermarkets have just 3.9% of pharmacy outlets

The main arguments against liberalising the market are as follows:

- Equity considerations – what will happen to smaller pharmacies that cannot compete on price with the national retailers / supermarkets because they cannot exploit economies of scale?
- Small rural pharmacies will find it difficult to compete (why are they less economically viable?) yet they often deliver far more to their local communities than just medicines – they create positive externalities? Deprived urban areas might also suffer from the emerging dominance of the supermarkets in the retail chemists market
- Should the government subsidise community pharmacies in urban and rural areas?
- The NHS still fixes the prices of prescription medicines – this will not change even if supermarkets open their own pharmacies. There is already competition in over-the-counter drugs
- The OFT hopes that opening up the market will have the same effect on prices as did a decision in 2001 to end the legal price fixing agreement which kept the prices of routine over-the-counter medicines at such a high level.

Less pain for the consumer – an end to drugs price fixing

Britain's last bit of government-sanctioned price-fixing was ruled illegal on May 15th, 2001. The Restrictive Practices Court decided that makers of over-the-counter remedies could no longer set minimum retail prices for their products. The Office of Fair Trading (OFT) brought the suit because of big gaps between prices for branded and unbranded drugs. In countries without price-fixing, such as America, prices for equivalent products are lower.

Supermarkets such as Asda, Sainsbury and Tesco announced straight away that they would cut prices by as much as 50% for popular medicines. Small pharmacists say this is a disaster for them. They cannot compete on price with the supermarkets, who get big discounts from the manufacturers. The pharmacists say that consumers will suffer too, because those who do not live within easy reach of a big supermarket will find it hard to buy medicines. Small pharmacies may have to change to survive.

Even if small pharmacies do disappear, that matters less to consumers than it might have a few years ago. The Internet has spawned a number of online drug sellers. So these days, anybody at the end of a phone can get their drug of choice.

13.9 Potential Economic Benefits of Monopoly

Market power can bring advantages both to the firms themselves and also to consumers and these should be included in any evaluation of a particular market or industry.

13.9.1 Research and Development Spending

Large corporations enjoying a high level of profits can use some of these to fund high-cost **capital investment spending** and research and development projects. The positive spill-over effects of research can be seen in a faster pace of innovation and the development of improved products for consumers. This is particularly the case in industries such as telecommunications and pharmaceuticals.

The classic example of a giant multinational business able to spend huge sums on research and development is Microsoft; consider this announcement by the company in July 2002

Software giant raises research investment

Microsoft, the world's largest software company announced its intention in July 2002 to increase its research and development spending by 20 per cent from $4.3bn to $5.2bn this fiscal year. The group believes that it will be spending more on R&D than all its rivals combined. Most IT companies have been forced by the downturn in global technology spending to cut R&D and slash staff.

13.9.2 Exploitation of Economies of Scale

Because monopoly producers are often supplying goods and services on a very large scale, they may be better placed to take advantage of economies of scale – leading to a fall in the average total costs of production. Lower costs will lead to an increase in **monopoly profits** but gains in **productive efficiency** might be passed onto consumers through lower prices. Economies of scale provide the opportunity for genuine gains in economic welfare for both producers and consumers.

13.9.3 Monopolies and International Competitiveness

One argument in support of businesses with monopoly power is that the British economy needs **multinational companies** operating on a scale large enough to compete effectively in global markets. Relatively few British firms appear in international rankings of the world's largest companies.

A firm may enjoy domestic monopoly power in the home economy, but still face competition in overseas markets. Two good examples of these are UK Coal and British Steel (now known as Corus) – both of which are competitive firms in the international markets in which they operate.

13.10 Oligopoly

An oligopoly is a market dominated by a few large suppliers. The degree of **market concentration** is high with typically the leading five firms taking over sixty per cent of total market sales.

An example of such an oligopoly is the UK bus service industry. Details of market share over recent years are shown in the table below. A decade ago, the leading five commercial bus operators had less than a quarter of market, most of the industry remained regulated by local authorities. Deregulation of the market and a series of mergers and takeovers have seen a rise in the **concentration ratio**. In 2001, the five-firm ratio had expanded to two-thirds of the market with Arriva and Stagecoach the leading players in the industry.

UK Bus Industry Market Share (by Turnover)

	1992	1995	1998	2001
Arriva	4	13.2	14	15.3
First Group	6.2	12.8	22.4	22
Go-Ahead Group	1.7	4.3	6.7	7.5
National Express	5.9	7.7	6.5	5.8
Stagecoach	4.9	13.4	15.8	15.9
5 Firm Concentration Ratio	22.7	51.4	65.4	66.5

13.10.1 Importance of Non Price Competition

Firms within an oligopoly produce **branded products** (advertising and marketing is an important feature of competition within such markets) and there are also barriers to entry.

Another important characteristic of an oligopoly is **interdependence between firms**. This means that

each firm must take into account the **likely reactions of other firms** in the market when making pricing and investment decisions. This creates uncertainty in such markets – which economists seek to model through the use of game theory. The ongoing interdependence between businesses can lead to implicit and explicit **collusion** between the major firms in the market. Collusion occurs when businesses agree to act as if they were in a monopoly position.

13.11 Anti-Competitive Practices

Anti-competitive practices are strategies operated by firms that are deliberately designed to **limit the degree of competition** in a market.

Such actions can be taken by one firm in isolation or a number of firms engaged in some form of explicit or implicit collusion. Where firms are found to be colluding it would be seen to be against the public interest)

The Office of Fair Trading in the UK and the EU Competition Commission under Mario Monti has been extremely pro-active in investigating allegations of cartel behaviour among businesses within the single market. Since 1998 there have been numerous investigations in industries such as chemicals, banks, airlines, beer, paper production and computer games.

13.12 Collusion in Markets

Collusion is any explicit or implicit agreement between suppliers in a market to avoid competition. Producers may decide to control market supply by entering into a collusive agreement and opt to fix prices rather than engage in competition. The main aim of this is to reduce market uncertainty and achieve a level of joint profits similar to that which might be achieved by a pure monopolist.

A cartel might limit supply through a **quota system**, whereby each firm agrees to limit production to keep the product scarce in the market and therefore keep prices artificially high.

Clearly there is a potential for a loss of welfare for consumers, and in recent years both the UK and European Competition Authorities have become much more vigorous in investigating and on occasions, fining cartels when sufficient evidence has become available. It can often be difficult to mount a convincing case that a cartel is operating, but the Office of Fair Trading is clear in its mission to destroy cartel behaviour!

The Case against Cartels

> "Cartels take money off their customers by rigging markets against them. The OFT will not hesitate to use its powers to unearth, stop and punish cartels. Firms that operate a cartel can now be fined up to 10% of their UK turnover for up to three years. We aim to uproot and deter all forms of anti-competitive behaviour, including cartels and the abuse of market power. We advise referral to the Competition Commission of all mergers that might substantially lessen competition and, where appropriate, we refer to the Competition Commission markets where competition may not be working well."

Office of Fair Trading Annual Report 2002

Price fixing agreements between businesses can often collapse in the long run as a cartel comes under increasing pressure but in the short run it is the job of the competition authorities to unearth examples of cartel behaviour and introduce fines and other penalties when appropriate.

Bus Companies Fined for Anti-Competitive Behaviour

> The first cartel to be penalised under the new Competition Act involved two national bus companies, Arriva and FirstGroup, whose Leeds and Wakefield subsidiaries entered into an unlawful agreement to share routes between them. The OFT set penalties for Arriva of £318,175 and for FirstGroup of £529,852

Another example of fines for price fixing within the European Single Market came in November 2001 when the EU Competition Commission fined some of the world's largest vitamin suppliers for rigging their market

Vitamin Cartel Busted

In November 2001, the European Competition Commission fined eight companies a total of €855 million for participating in eight secret market-sharing and price-fixing cartels affecting vitamin products.

The companies are thought to have cost shoppers millions of pounds, by carving up the market and "rigging prices" for vitamins included in everything from cereals, biscuits and drinks to animal feed, pharmaceuticals and cosmetics. Because Swiss-owned manufacturer Hoffman-La Roche was an instigator and participated in all the cartels it was given the highest cumulative fine of €462 million.

13.13 Characteristics of Competitive Markets

A **competitive market** is one where no one firm has a dominant position and where the consumer has plenty of choice when buying goods or services.

- Firms in a competitive market each have a **small market share**
- There are **few barriers to the entry of new firms** which allows new businesses to enter the market if they believe they can make sufficient profits
- **Lower prices for consumers** because of the higher degree of competition
- **Profit** (measured by the rate of return on capital) tends to be higher for those firms with monopoly power. When demand is inelastic, **monopoly suppliers** can raise prices and increase their total revenue. This leads to higher profits, but a **loss of consumer surplus**. Competition helps to curb monopoly power and prevent excessive levels of profit

Many markets have become more **contestable** because the barriers to the entry and exit of new firms are fairly low. The introduction of more competition can have quite dramatic effects. Much depends on how intensive the competition is and how consumers respond.

13.13.1 Possible Effects of Increased Competition:

- **Lower prices** for consumers which boosts their real incomes
- **A greater discipline on producers**/suppliers to keep their costs down
- **Improvements in technology** – with positive effects on production methods and costs
- **A faster pace of invention and innovation** and improvements to the quality of service
- **Better information for consumers** allowing people to make more informed choices

The Office of Fair Trading believes that greater competition in markets offers the opportunity for significant gains in consumer welfare. Consider this quote taken from their 2002 Annual Report

The Case for Increased Competition

When a market works competitively, then the interest of each producer is to serve consumers better than its rivals. This rivalry benefits consumers both directly in terms of better deals and as producers strive to increase their efficiency, coming up with new and better ways of doing things, as those that are better at serving consumer needs gain business from other consumers.

Freeing competition brings more than release from the dead-weight loss of non-competition. It opens the way for the dynamic benefits in terms of greater efficiency, innovation and choice.

(Adapted from the Office of Fair Trading web site)

13.13.2 Price and Non Price Competition in Markets

Firms compete for market share and the demand from consumers in lots of ways. We make an important distinction between price competition and non-price competition. **Price competition** can involve

discounting the price of a product to increase demand. **Non-price competition** focuses on other strategies for increasing market share. Consider the example of the UK supermarket sector where non-price competition has become important in the battle for sales:

- Traditional advertising / marketing
- Store Loyalty cards
- Banking and other Services (including travel insurance)
- In-store chemists and post offices
- Home delivery systems
- Discounted petrol at hypermarkets
- Extension of opening hours (24 hour shopping)
- Use of technology for shoppers e.g. self-scanning and internet shopping services

13.14 European Union Competition Policy

European Union competition policy is very important for UK businesses operating throughout the EU single market. There are four main areas of action of European competition policy:

- **Antitrust & Cartels -** this relates to the elimination of agreements which artificially restrict competition (e.g. price-fixing agreements, or cartels, between competitors) and of abuses by firms who hold a dominant position on the market.
- **Merger Control -** this pillar of policy controls mergers between firms (e.g. a merger between two large groups) which would result in the enlarged (post-merger) business dominating the market.
- **Market Liberalisation -** market liberalisation policy has been behind the introduction of fresh competition in several monopolistic industries in recent years. Good examples in the UK include energy supply, telecommunications and postal services together with the new block exemption arrangements for car retailers inside the single market.
- **State Aid Control -** This refers to the control of state aid measures by Member State governments to ensure that such measures do not distort competition in the Single Market (e.g. the prohibition of a state grant designed to keep a loss-making firm in business even though it has no prospect of recovery). Good examples to focus on are state aid for steel producers, the coal industry, farming and aviation – all of whom are industries suffering major long term problems and facing an uncertain future.

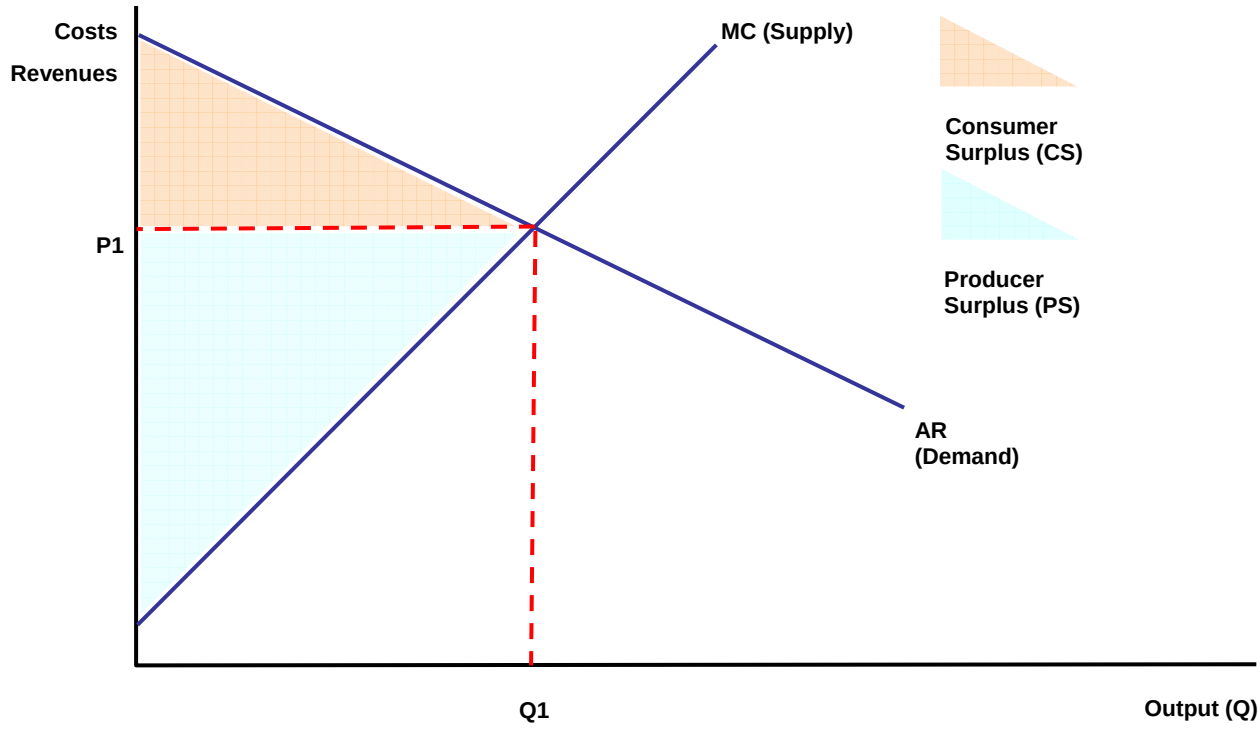
14 ECONOMIC EFFICIENCY

There are several meanings of the term economic **efficiency** but they generally relate to how well a market or the economy allocates scarce resources to satisfy consumers.

14.1 Static Efficiency

Static efficiency focuses on how much output can be produced now from given factor resources and whether producers are charging a price to consumers that reflects fairly the actual cost of the factors of production used to produce a good or a service. There are two main types of static efficiency:

14.1.1 Allocative Efficiency



Allocative efficiency occurs when the **value** that consumers place on a good or service (reflected in the price they are willing and able to pay) equals the **cost of the resources** used up in production. The technical condition required for allocative efficiency is that **price = marginal cost**. When this happens, total economic welfare is maximised.

In the diagram above, the market is in equilibrium at price P1 and output Q1. At this point, the total area of consumer and producer surplus is maximised. If for example, suppliers were able to restrict output to Q2 and hike the market price up to P2, sellers would gain extra producer surplus by widening their profit margins, but there also would be an even greater loss of consumer surplus. Thus P2 is not an allocative efficient allocation of resources for this market whereas P1, the market equilibrium price is deemed to be allocative efficient.

14.1.2 Using the Production Possibility Frontier to Show Allocative Efficiency

Pareto defined allocative efficiency as a position where no *one could be made better off without making someone else at least as worth off*. This can be illustrated using a **production possibility frontier** – all points that lie on the PPF can be said to be allocatively efficiency because we cannot produce more of one product without affecting the amount of all other products available. In the diagram on the next page, the combination of output shown by Point A is allocatively efficient – but at B we can increase production of both goods by making fuller use of existing resources or increasing the efficiency of production.

An allocation is Pareto-efficient for a given set of consumer tastes, resources and technology, if it is impossible to move to another allocation which would make some people better off and nobody worse off. If every market in the economy is a competitive free market, the resulting equilibrium throughout the economy will be Pareto-efficient.

14.1.3 Productive Efficiency

Productive efficiency refers to a firm's **costs of production** and can be applied both to the short and long run production time-span. It is achieved when the output is produced at **minimum average total cost** (ATC). For example we might consider whether a business is producing close to the low point of its long run average total cost curve. When this happens the firm is exploiting most of the available **economies of scale**. Productive efficiency exists when producers **minimise the wastage of resources** in their production processes.

14.2 Dynamic Efficiency

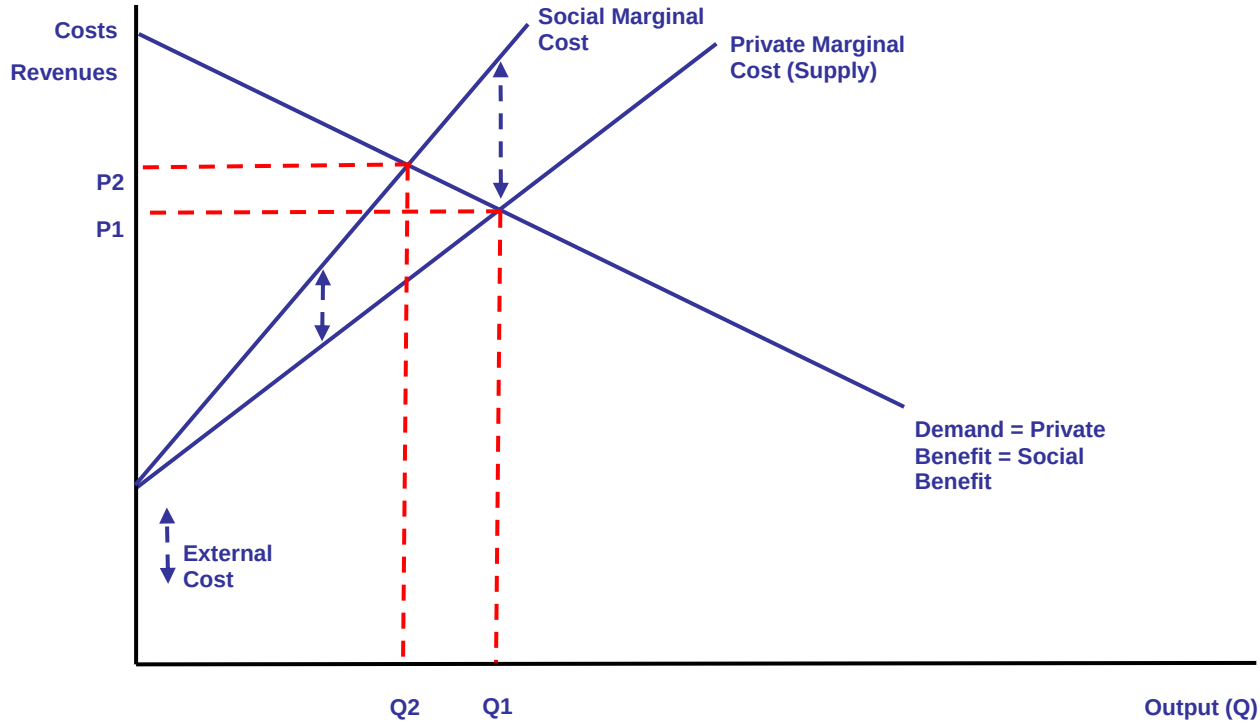
Dynamic efficiency focuses on changes in the amount of **consumer choice** available in markets together with the **quality of goods and services** available. For example – the opening up of the market for parcel deliveries has had an impact on price and output levels (these are changes in static efficiency). However we have also noticed the entry of **new suppliers into the market**, an increase in the level of capital **investment** allowing consumers to track precisely where their parcels are in the delivery chain and general improvements in the **quality and reliability of services** in local, regional, national and international parcel deliveries – this represents an improvement in dynamic efficiency.

At a macroeconomic level, a dynamically efficient economy is increasingly successful in improving existing products and also at developing new products. A faster pace of **invention**, **innovation** and **research and development** can lead to improvements in dynamic efficiency and this might translate into higher sales in key export markets which will boost national income and offer the potential for higher living standards.

14.3 Social Efficiency

The **socially efficient level of output** and or consumption occurs when **social marginal benefit = social marginal cost**. At this point we maximise **social economic welfare**. The existence of negative and positive externalities means that the private optimum level of consumption or production often differs from the social optimum leading to some form of market failure and a loss of social welfare.

In the diagram below the socially optimum level of output occurs where the social cost of production (i.e. the private cost of the producer plus the external costs arising from externality effects) equals demand (a reflection of private benefit from consumption. A private producer who opts to ignore the negative production externalities might choose to maximise their own profits at point A. This divergence between private and social costs of production can lead to market failure.



15 MARKET FAILURE AND GOVERNMENT INTERVENTION

15.1 An Introduction to Market Failure

Market failure is currently one of the most important topics in economic theory and real-world policy-making. It can manifest itself in a variety of ways – but the essential point is that the free market mechanism might **fail** to achieve a **socially efficient allocation of scarce resources**.

In theory, free and competitive markets produce the goods and services we want in the right quantities and at the lowest feasible cost. This is why markets are so powerful.

15.2 Defining Market Failure

Market failure occurs when freely functioning markets, operating without government intervention, fail to deliver an efficient or optimal allocation of resources - Therefore - economic and social welfare may not be maximised – leading to a loss of allocative and productive efficiency

When this happens there is market failure - In reality – all markets fail at some time or other

Market failure exists when the competitive outcome of markets is not efficient from the point of view of the economy as a whole. This is usually because the benefits that the market confers on individuals or firms carrying out a particular activity diverge from the benefits to society as a whole

Markets can also fail when the individual or firm does not have sufficient information to recognise the returns from undertaking an action

Markets fail when the private returns which an individual or firm receives from carrying out a particular action diverge from the returns to society as a whole – resulting in a sub-optimal amount of it being done

15.3 Main Causes of Market Failure

There are many potential causes of market failure: Markets can fail because of

- **The existence of externalities** causes private and social costs and/or benefits to diverge
- **Imperfect information** which means merit goods are under produced or under-consumed by the market while de-merit goods are over produced / over-consumed
- Freely functioning markets cannot make a profit from producing **pure public goods** and quasi-public goods
- **The concentration of power** in the hands of a few suppliers results in market dominance and can lead to an abuse of monopoly power which damages consumer welfare
- **Factor immobility** such as the geographical & occupational immobility of labour causes unemployment hence productive inefficiency
- **Equity (fairness) issues**. Markets can generate an 'unacceptable' distribution of income and social exclusion where people on low income – the relatively poor - are denied access to essential goods and opportunities considered 'normal' by a society e.g. food, clothing, housing, and education

15.4 How does the Government Intervene in Markets?

The government can use a range of policies to intervene in market to attempt to correct for what is considers being examples of market failure:

- **Government legislation** - Legislation includes laws passed by Parliament that prohibit (ban) the sale of cigarettes to children, laws to prevent price fixing cartels or which require compulsory school attendance up to the age of 16. Laws might also seek to protect workers by defining maximum working hours and minimum wages at the workplace.
- **Regulation of markets and industries** - There is a huge amount of regulation in both the UK and European Union. Regulation in the UK has included the creation of government appointed utility regulators who impose price controls on privatised monopolists e.g. electricity supply and telecommunications. Regulatory bodies in Britain act as a 'surrogate competitor' in the market. In recent years the regulator has set price caps – but as markets become more competitive (e.g. gas and electricity supply) then the price caps are gradually lifted and in some cases abolished completely. The European competition authorities have an important role to play

- **Direct State provision** - **State production** e.g. nationalised industries such as Consignia or **State funding** e.g. the government pays private sector health firms to carry out operations for NHS patients to reduce waiting lists
- **Fiscal measures** (financial intervention) - Fiscal policy can be used actively to correct for market failure. This includes making changes to the tax and welfare benefit system to alter market prices or affect the overall income distribution: **Indirect taxes** to raise the price of demerit goods and products with negative externalities
- **Subsides to consumers** to lower the price of merit goods (e.g. grants to students to reduce the private costs of education and also subsidies to companies employing workers on the New Deal programme) and products with positive externalities – a subsidy causes an increase in market supply and leads to a lower equilibrium price
- **Other forms of government financial assistance** such as tax credits and tax relief on investment in research and development
- **Direct taxes on the rich** and benefits in cash or kind for the poor to improve the distribution of income
- Universal benefits are available to people as of right (e.g. Child Benefit and the State Pension
- Means-tested benefits are provided to people according to the financial situation of a benefit claimant – the aim of means-tested benefits is to target welfare assistance on those people most in need

16 EXTERNALITIES

16.1 What are Externalities?

- Externalities are **third party effects** arising from production and consumption of goods and services for which no appropriate compensation is paid.
- Externalities occur in nearly every market and industry and can cause **market failure** if the price mechanism does not take into account the full social costs and benefits of production and consumption.
- Externalities **occur outside of the market** i.e. they affect economic agents *not directly involved* in the production and/or consumption of a particular good or service

16.2 The Importance of Property Rights

External costs and benefits are around us every day – the key point is that the market may fail to take them into account when pricing goods and services. Often this is because of the absence of clearly defined **property rights** – for example, who owns the air we breathe, or the natural resources available for extraction from seas and oceans around the world?

Property rights confer legal control or ownership of a good. For markets to operate efficiently, property rights must be clearly defined and protected – perhaps through government legislation and regulation.

If an asset is un-owned no one has an economic incentive to protect it from abuse. This can lead to what is known as the **Tragedy of the Commons** i.e. the over use of common land, fish stocks etc which leads to long term permanent damage to the stock of natural resources.

16.3 Negative Externalities

Negative externalities occur when production and/or consumption impose **external costs** on third parties outside of the market for which no appropriate compensation is paid. Some examples are given below together with links to relevant further reading via the Internet.

- Smokers ignore the unintended but harmful impact of 'passive smoking' on non-smokers – see this article published in July 2003 "Workers warned of passive smoking"
- Acid rain from power stations in the UK can damage the forests of Norway – see effects of acid rain on the natural environment
- Air pollution from road use – see "London fails to meet pollution targets"
- The social impact of drug abuse – see the Drugscope web site
- The environment damage caused by use of fertilisers in agriculture – see "The real costs of intensive farming"

16.4 Positive Externalities

Positive externalities exist when third parties benefit from the spill-over effects of production/consumption. For example:

- Social returns from investment in education & training
- Positive benefits from health care and medical research
- Improved social health outcomes arising from vaccination and immunisation programmes
- Provision of flood protection systems & fire safety equipment
- Restored historic buildings and monuments
- External benefits from people's usage of public libraries and museums
- Inoculations reduce incidence of meningitis

16.5 Difference between Private Costs and Social Costs

The existence of production and consumption externalities creates a divergence between **private and social costs of production** and also the private and social benefits of consumption.

- **Social Cost** = Private Cost + External Cost
- **Social Benefit** = Private Benefit + External Benefit

16.6 More on Negative Externalities

When negative production externalities exist, **social costs exceed private cost**. This leads to the private optimum level of output being greater than the social optimum level of production. The individual consumer or producer does not take the effects of externalities into their calculations.

16.6.1 External Costs from Production

Examples include noise pollution and atmospheric pollution from factories and the long-term environmental damage caused by depletion of our stock of natural resources

Consider this example drawn from a report published in July 2002 from the Environment Agency:

The Social Costs of Farming: Farmers cause £500m of environmental damage'

Farmers are increasingly escaping without penalty for environmental crimes despite causing unnecessary damage to the countryside put at £500m every year. The report estimated that the cost of damage to natural resources caused by agriculture was £1.2bn, offset by benefits of up to £0.9bn. It was estimated that in the short term £331m could be saved every year by adopting simple techniques and over a longer period savings could reach about £525m a year.

Farm chemicals are said to be poisoning some of the country's most valuable wildlife, including salmon, dragonflies and pearl mussels, and pose a serious threat to river environments.

16.6.2 External Costs from Consumption

Consumers can create externalities when they consume goods and services. Examples include pollution from cars and motorbikes and externalities created by smoking and alcohol abuse. Negative consumption externalities lead to a situation where the social benefit of consumption is less than the private benefit.

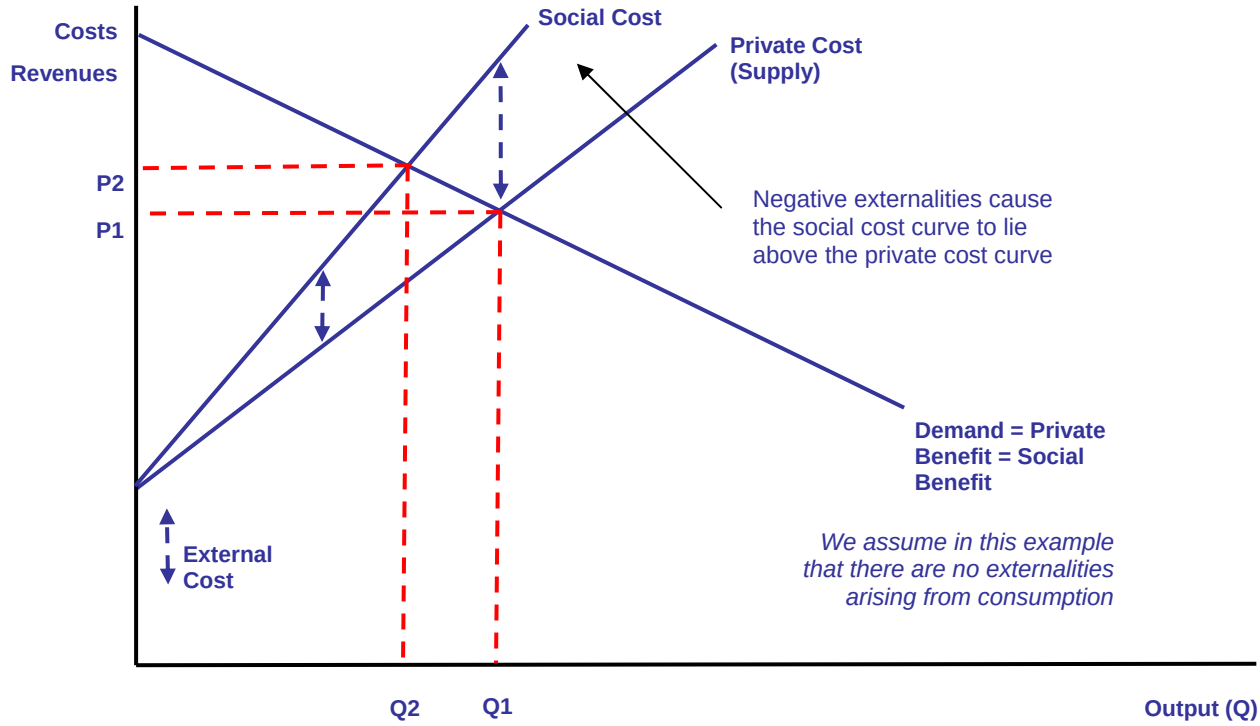
Consider this example of the estimated social costs arising from drug addiction in the UK. The report mentioned in the article was published in February 2002.

The Social Costs of Drug Dependency

Heroin and crack cocaine addicts are costing the country up to £19 billion a year, according to a study from experts at York University published in 2002. A hard core of problem drug abusers is running up a bill of £600 a week each in crime, police and court time, health care and unemployment benefits.

Last year, the NHS spent about £235 million on GP services, accident and emergency admissions and treatment linked to drug abuse. When social costs are added, the bill rises to between £10.9 billion and £18.8 billion. This figure is higher than earlier estimates. A Government White Paper outlining a 10-year drug strategy in 1998 said annual social costs were more than £4 billion.

There are at least 1.5 million recreational and regular users of Class A drugs. The average cost to society of all Class A drug users is £2,030 each a year, says the study.



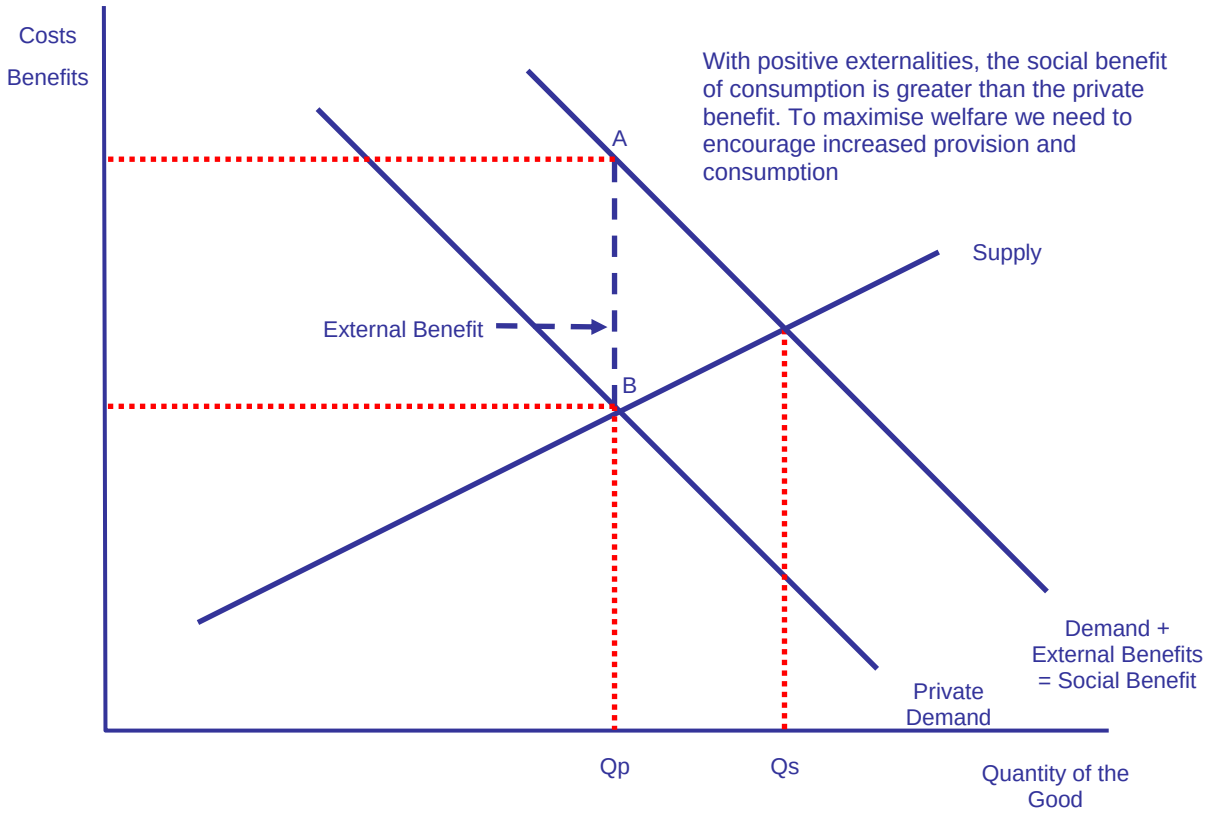
The diagram above refers to **negative externalities from production**. In the absence of externalities, the private costs of the supplier are the same as the costs for society. But if there are negative externalities, we must add the **external costs** to the firm's supply curve to find the **social cost** curve. This is shown in the diagram above.

If the market fails to include these external costs, then the equilibrium output will be Q2 and the price P2. From a **social welfare** viewpoint, we want less output from production activities that create an "**Economic-bad"** A socially-efficient output would be Q1 with a higher price P1.

16.7 More on Positive Externalities

Positive externalities create **external benefits** beyond the people directly consuming a good or service. This means that the **social benefits** will exceed **private benefits**. Examples include:

- **Industrial training by firms:** This can reduce the training costs faced by other firms, and has important effects on labour productivity and efficiency in the economy as a whole
- **Education:** A well-educated labour force can increase efficiency and contribute to rising long term economic growth and increased prosperity for all
- **Health provision:** Improved health provision and health care reduces absenteeism and creates a better quality of life and higher living standards. See the section on merit goods in the chapter on fiscal policy



Where **positive externalities** exist, the good or service may be **under consumed** or **under provided** since the free market may fail to value them correctly or take them into account when pricing the product.

In the diagram above, the normal market equilibrium is at P1 and Q1 – but if there are external benefits, the Q1 is an output below the level that maximises social welfare.

There is a case for **intervention** designed to increase consumption towards output level Q2 so as to increase economic welfare.

16.7.1 Problems of Identifying and Valuing Externalities

Valuing external costs and benefits is difficult and controversial. There are two methods:

- **Ex-ante** (before the fact) valuations estimate the amount of money consumers are prepared to pay to avoid an externality – for example the price people might be willing to pay for insurance against an event occurring
- **Ex-post** (after the fact) valuations estimate the cost of putting right the externality (e.g. the costs of cleaning up a beach following an oil spill, of the economic costs of a road or rail accident)

Economists seek to place a monetary value on the spill-over effect. In practice estimating time-savings, loss of life or limb; environmental damage, lost countryside or loss a species is highly problematic. How would you estimate harmful impact of 'passive smoking' on non-smokers?

How do we value the loss of natural habitat resulting from the huge spillage of oil near the Spanish coastline which created an ecological disaster in the autumn of 2002?

16.8 Case Study: the External Costs of Obesity

During the summer of 2003, there was interest in the UK about the economic and social consequences of rising levels of obesity among both adults and children. There is a growing weight of medical evidence that links obesity to the risk of heart disease, diabetes, strokes and cancer.

The World Health Organisation (www.who.org) has warned that more than one billion adults globally are considered overweight and at least 300 million of them are obese. This is measured using the body-mass index, or BMI - a calculation that divides a person's weight in kilograms by their height in metres squared. A BMI of more than 30 is considered obese.

Report of the Chief Medical Officer for the UK

> Obesity levels in England have tripled in the past two decades; around a fifth (21%) of men and a quarter of women are now obese whilst almost 24 million adults are now overweight or obese. Obesity is also rising among children - in the five years between 1996 and 2001, the proportion of obese children aged 6-15 years rose by some 3.5%.
>
> Obesity is responsible for 9,000 premature deaths each year in England, and reduces life expectancy by, on average, 9 years.
>
> Obesity costs the economy at least £2.5 billion a year - including costs to the NHS and cost to industry through sickness absence.

Obesity is a major cause of external costs - up to 8 per cent of healthcare costs in Western countries are linked to obesity and severe obesity is associated with a twelve-fold increase in premature mortality in people aged 25 to 35. The World Heart Federation has warning that obesity will overtake tobacco smoking as the biggest cause of heart disease unless the current trend of unhealthy lifestyles can be reversed.

The United States spends almost a tenth of its national healthcare budget on overweight patients, and in western countries as much as 2.8% of total sick care costs can be attributed to obesity. It is estimated that treating the side-effects of obesity costs the NHS in the UK £500 million a year but the wider cost to the economy is about £2 billion. But many of the external costs are extremely hard to value accurately

What can and should the Government do to respond to the social costs of obesity? Some economists are arguing that a new tax on high-fat foods will help to change relative prices in the marketplace and provide the right incentives for consumers to alter their spending behaviour. Other specialists are sceptical about the effectiveness of using taxation as a policy to control the problem. They believe that **imperfect information** lies at the root of the problem and that people need to become much better informed about the health consequences of obesity and should be encouraged to change their lifestyles through means other than taxation. There are threats that the major food company's may soon be the subject of legal action by some consumers over the long-term consequences of people eating high-fat processed foods.

Further background reading on this topic:

How do you really tackle obesity? http://news.bbc.co.uk/1/hi/health/3037738.stm

UK National Obesity Forum http://www.nationalobesityforum.org.uk/

Association for the Study of Obesity http://www.aso.org.uk/

Department of Health Annual Report of the Chief Medical Officer

http://www.doh.gov.uk/cmo/annualreport2002/

16.9 Government Intervention to Correct for Externalities and Market Failure

How can we take into account some of the third party effects that arise? Is there anything that the government can do?

The key is to "**internalise"** some or all of the external costs and benefits - i.e. to ensure that the businesses and consumers who create the externalities include them when making their decisions.

16.9.1 Pollution Taxes

Changing incentives by using the tax system

> Well designed environmental taxes and other economic instruments can play an important role in ensuring that prices reflect environmental cost – in line with the "polluter pays" principle – and discouraging behaviour that damages the environment. The climate change and aggregates levies, for example, have sent strong environmental signals.
>
> Environmental taxes can also be an efficient mechanism for improving the productivity of natural resources, in line with the wider productivity improvements the Government is seeking to make across the economy. Of course any Government intervention must be proportionate and well-targeted, and needs to take into account other factors such as distributional effects and business competitiveness.

Source: Government Pre-Budget Report, November 2002

One common approach to adjust for externalities is to tax those who create negative externalities. This is sometimes known as ***"making the polluter pay".*** Introducing a tax increases the private cost of consumption or production and ought to reduce demand and output for the good that is creating the externality. Taxes send a **signal** to polluters that our environment is valuable and is worth protecting.

Some economists argue that the flow of income from pollution taxes should be **ring-fenced** and allocated to projects that protect or enhance our environment. For example, the money raised from a congestion charge on vehicles entering busy urban roads, might be allocated towards improving mass transport services; higher taxes on cigarettes might be used to fund better health care programmes.

16.9.2 Examples of Environmental Taxes

- **The Landfill Tax** - this tax aims to encourage waste producers to produce less waste, recover more value from waste, for example through recycling or composting and to use more environmentally friendly methods of waste disposal. The tax applies to active and inert waste, disposed of at a licensed landfill site
- **The Climate Change Levy** - a tax on the use of energy in industry, commerce and the public sector, with offsetting cuts in employers' National Insurance Contributions and additional support for energy efficiency schemes and renewable sources of energy.

Energy intensive industry sectors have so far signed more than 50 agreements with formal targets for cutting carbon emissions and tackling climate change – this allows them an 80% reduction in their climate change levy payments

- **The Fuel Duty Escalator** – higher real duties on petroleum products designed to reduce the growth of demand for fuel arising from private transport
- **The Aggregates Tax** - the purpose of the levy is to reduce the environmental costs associated with quarrying operations (noise, dust, visual intrusion, loss of amenity and damage to biodiversity). It also aims to reduce demand for aggregate and encourage the use of alternative and recycled materials where possible
- **The Congestion Charge**: -designed to cut traffic congestion in inner-London by charging motorists £5 per day to enter the central charging zone
- **Plastic Bag Tax** - In Ireland a pioneering new 15 cent levy on plastic shopping bags was launched in March 2002. The levy is designed to encourage people to use reusable bags and has stimulated an increase in the availability of biodegradable bags. Payable in all sales outlets 15 cents are charged for each bag issued and itemized separately on receipts. Proceeds from the tax go to the Environment Fund and are used to fund various waste management and other environmental initiatives.

16.9.3 Problems with Environmental Taxes to Curb Pollution

- **Efficient policies:** i.e. does a particular policy result in a better use of scarce resources among competing ends? E.g. does it improve allocative, productive and/or static efficiency and therefore lead to an improvement in economic welfare. For example: Will higher indirect taxes on aircraft fuel be an efficient way of reducing the external costs linked to the rapid growth of aviation transport?

- **Effectiveness:** i.e. which environmental policy is most likely to meet a specific objective? For example which policies are likely to be most effective in reducing road congestion? Can government policies reduce carbon emissions at lowest feasible cost? Evaluation can also consider which policies are likely to have an impact in the short term when a quick response from consumers and producers is desired. And which policies are likely to prove most cost-effective in the longer term?
- **Equitable policies:** i.e. is a policy fair or does one group in society gain more than another? Consider for example some of the equity issues involved in the government imposing higher taxes on household waste collection; cigarettes; domestic fuel or introducing a new tax on aviation fuel.
- **Sustainable policies:** i.e. does a policy reduce the ability of future generations to engage in economic activity and share the benefits of a rising standard of living? The government is committed to sustainable economic development and many environmental taxes and other policies are geared towards meeting objectives linked to this

Although environmental taxes are used with increasing frequency by governments to deal with environmental externalities, we must evaluate the difficulties in relying on taxation to correcting for market failure.

Many economists argue that explicit pollution taxes can create further problems which lead to government failure and little sustainable improvement in environmental conditions. The main problems are as follows:

- **Assigning the right level of taxation:** There are problems in setting tax so that private marginal cost will exactly equate with the social marginal cost. The government cannot accurately value the private benefits and cost of firms let alone put a monetary value on externalities such as the cost to natural habitat, the long-term effects if resource depletion and the value of human life
- **Imperfect information:** Without accurate information setting the tax at the correct level is virtually impossible. In reality, therefore, all that governments and regulatory agencies can hope to achieve is a movement towards the optimum level of output.
- **Consumer welfare effects (important issue of equity):** Taxes reduce output and raise prices, and this might have an adverse effect on consumer welfare. Producers may be able to pass on the tax to the consumers if the demand for the good is inelastic and, as result, the tax may only have a marginal effect in reducing demand and final output

Taxes on some de-merit goods (for example cigarettes) may have a regressive effect on lower-income consumers and leader to a widening of inequalities in the distribution of income.

Having said this, it should be possible for authorities to develop “smart tariffs or taxes” where account is taken of the economic impact of pollution taxes on vulnerable households such as low income consumers.

The current Labour government has reduced the rate of VAT on domestic fuel to the EU minimum rate of 5%, but the government has no plans to introduce a domestic energy tax (which would be an explicit environmental tax) because of the huge numbers of low-income households that currently live in fuel poverty.

The government could readily increase VAT on fuel and other forms of energy but use the welfare benefits system to compensate those lower-income households that were most affected – the political will to go down this route appears to be absent with the Government at the present time

- **Employment and investment consequences:** If pollution taxes are raised in one country, producers may shift production to countries with lower taxes. This will not reduce global pollution, and may create problems such as structural unemployment and a loss of international competitiveness. Similarly higher taxation might lead to a decline in profits and a fall in the volume of investment projects that in the long term might have beneficial spill-over effects in reducing the energy intensity of an industry or might lead to innovation which enhance the environment.

“Eco-tax” reformers often argue that the introduction of pollution taxes should be revenue neutral – e.g. an increase in environmental taxation might be accompanied by reductions in employment taxes such as national insurance contributions so that the employment consequences of higher taxation are minimised

It might be more cost effective for governments to switch away from pollution taxation to direct subsidies

to encourage greater innovation in designing cleaner production technologies

The impact of green taxes depends crucially on what is done with the revenues. If they are balanced by reducing other taxes through 'revenue recycling', research suggests that green taxes could result in an overall economic improvement

- **Limitations to international pollution taxation:** Introducing global environmental taxation is virtually impossible because we are not even close to achieving global government – but a European-wide system of pollution taxes might be a way forward (as part of European fiscal harmonisation)

16.10 Case Study: Evaluation of the Arguments for and against Higher Fuel on Petrol and Aviation Fuel

Government intervention in a market is normally justified on the grounds of market failure – i.e. the failure of the market mechanism to achieve a socially optimum allocation of resources.

Taxation is often introduced when production and consumption generates negative externalities so that the social cost exceeds the private cost. If motorists and aviation companies fail to take into account the externalities that result from their activities, there is a strong danger that the free market will fail to adequately account and compensate for the externalities caused. There are numerous examples of externalities that arise from both motor and air transport (including noise and air pollution) although the extent of the external costs will vary according to the volume and location of the traffic on roads and in the skies.

The case for higher fuel taxes

A pollution tax both on motor and aviation fuel would increase private costs and help to internalize some of the externalities thereby reducing demand and taking output closer towards a social optimum and reducing the incidence of pollution and loss of social welfare. This is shown in the diagram below. Such taxes are not designed to curb output to zero – but to control production and consumption and also provide an incentive for producers and consumers to find more environmentally friendly alternatives – in this case modes of transport that create less pollution. Emissions from aircraft are a major contributor to global warming. According to a recent study from the Royal Commission on Environmental Pollution

Royal Commission on Environmental Pollution (2002)

> "Short-haul passenger flights, such as UK domestic and European journeys, make a disproportionately large contribution to the global environmental impacts of air transport and these impacts are very much larger than those from rail transport over the same point-to-point journey."

Higher taxes will promote alternative and more environmentally sustainable modes of transport (i.e. high-speed rail links between major cities)

Revenue from pollution taxes can be earmarked (hypothecated) to compensated those affected or invested in research to develop alternative fuels and new engine designs

Not taxing the aviation industry is equivalent to the industry receiving a "hidden subsidy" which distorts the working of the market and has contributed to a huge surge in demand for air travel which is leading to increased congestion. Without a tax on aviation fuel, the demand for new runways and airports will continue to grow threatening environmental resources

Arguments against higher motor and aviation fuel taxes

The aviation and motor industries create social benefits as well as social costs – for example the aviation industry has brought many benefits to society in both economic and social terms. The relative affordability and speed of air transport today have made international travel accessible to many people who would never previously have had the time or financial means to enable them to travel overseas.

Nobody can agree on the precise environmental costs of motoring and aviation. The "estimated" annual environmental cost of aviation in the UK might be anywhere from £2 billion to £10 billion – which makes it virtually impossible to find an optimum tax level for the industry. Estimates for the cost of the CO2, nitrogen and sulphur oxides, hydrocarbons, water vapour and other gunk spewed out by airplanes ranges from £1 billion to £6 billion a year

There is a danger that a UK-only tax would have a damaging effect on UK aviation companies such as EasyJet and British Airways British airlines unless a new fuel tax was imposed internationally

Aviation companies would not be able to pass on most of the tax to their customers because demand is more elastic (due to high levels of market competition). The tax would lead to reduced demand, lower profit margins and fewer routes flown and a fall in investment and employment could have severe consequences not just for the aviation industry but the economy as a whole

Aviation contributes £10 billion ($16 billion) to the British economy annually and supports, directly or indirectly, more than 700,000 jobs according to a recent article in the Economist

Would a new aviation tax differentiate between short-haul flights and long-distance flights? The environmental effects are different for each. So too are the pollution effects arising from freight aviation and air passenger transport

What are the Alternatives to Higher fuel taxes?

Congestion charging and other forms of road pricing might be mentioned with regard to motor fuel and changes to landing charges and tighter government regulations on aircraft noise and engine technology might also be introduced. The airline companies argue against higher fuel duties and some are lobbying instead for the development of a traded pollution permits system similar to that raised at the Kyoto summit. The Royal Commission proposes an emissions charge rather than blanket increases in fuel duty

Emissions Charging – A More Effective Flight Path

> Instead of a fuel tax, therefore, a better way of addressing the market distortion would be a Europe-wide emissions charge, which airports would be required to levy on all aircraft, passenger or freight, taking-off from or landing at European airports. The charge would be differentiated between aircraft types and loads and the distance travelled over Europe, or over the ocean to the point mid-way to the nearest country in the direction of the flight, to reflect their estimated emissions.
>
> Royal Commission Report, November 2002

Equity considerations should also be given a mention. One of the standard arguments against higher motor fuel duties is that they have a regressive effect on low-income households who struggle to finance the ownership and use of a car and that higher fuel duties affect people in rural areas who create little or no congestion but whose use of a car in areas not served by public transport links is absolutely necessary. Are equity considerations as strong with aviation taxes? Probably not because of the higher incomes of those who travel by air regularly although the low cost airline expansion is changing this.

16.11 Command and Control Techniques – Regulation of Pollution

Laws can be used. For example, the Health and Safety at Work Act covers all public and private sector businesses. Local Councils can take action against noisy, unruly neighbours and can pass by-laws preventing the public consumption of alcohol. Cigarette smoking can be banned in public places.

In the United States the state of California is the only state empowered to set its own pollution standards. Laws are passed that restrict the emissions of carbon dioxide and other greenhouse gases from cars and trucks.

16.12 Emissions Trading – The Expansion of Marketable Pollution Permits

Some countries have moved toward market-based incentives to achieve pollution reduction. This new approach involves the creation of a limited volume of pollution rights, distributed among firms that pollute, and allows them to be traded in a secondary market. The intent is to encourage lowest-cost pollution reduction measures to be utilized, in exchange for revenues from selling surplus pollution rights. Companies that are efficient at cutting pollution will have spare permits that they can then sell to other businesses. As long as the total bank (or stock) of permits is reduced year by year by the government or an agency, cuts in total pollution can be achieved most efficiently.

Quite simply, limiting emissions makes polluting a scarce resource, and scarcity brings economic value.

Emissions' trading is a central feature of the Kyoto Protocol and the European Commission has proposed that EU-wide trading at company level will start in 2005. In short trading is designed to reduce the cost of achieving sustainable cuts in greenhouse gas emissions and secondly to extend the principle of property

rights as a means of meeting environmental objectives.

The UK emissions-trading scheme is best described as ‘voluntary cap and trade’

The British Government launched in August 2001 a £215 million Emissions Trading Scheme which aims to cut up to two million tonnes of carbon a year from the atmosphere by 2010 and generate new job and investment opportunities for industry. The maximum that any one company can receive is 20% of the total £215m amount or £43million.

Some of the participants include Barclays, British Airways, BP, Caterpillar, General Domestic Appliances, Rolls-Royce, Sainsbury's, Somerfield, Shell, TotalFinaElf and Whitbread Hotels.

The UK emissions trading scheme is the world's first greenhouse gas emissions trading scheme. 34 organisations have voluntarily taken on a legally binding obligation to make absolute reductions against their (baseline) pollution emission levels in 1998-2000 in exchange for an incentive payment. The targets (which are 11% on average from baseline) and the price per tonne (£53.37) was established in a March 2002 auction

Under the scheme firms sign up to delivering emission reduction targets which can either be made by cuts in-house or by buying and selling emission 'allowances' on the market to meet those targets. If firms can reduce emissions cheaply and beat their targets, they can sell the surplus allowances or bank them for future use. The government has pledged up to £215m over five years from 2003-04 to provide incentive payments for companies to join the scheme. This will be allocated through an auction – the auction in 2002 saw the maximum number of pollution permits being sold among the 34 participating companies.

Across the whole pollution trading scheme, those companies with lowest cost emission reduction opportunities (i.e. those who can achieve cuts in pollution most efficiently) will tend to sell allowances to those with higher cost options thus reducing the overall cost of delivering the environmental benefits

The Emissions Trading Scheme is a part of the UK Climate Change Programme, which sets out how the UK intends to meet its Kyoto Protocol Commitment of a 12.5% reduction on 1990 levels of all greenhouse gases by 2008-2012, and move towards a domestic goal of a 20% reduction in carbon dioxide, the main greenhouse gas

16.12.1 Is Emissions Trading the Future?

More and more companies are likely to join the scheme because it is seen as a fore-runner for a European-wide system of emissions trading

It does not matter who emits carbon – what matters is reducing the aggregate amount of carbon emissions and finding the most efficient means of achieving this

Efficiency emerges from free trading – i.e. a market-determined, lowest-cost ‘price of carbon’ emerges from the trading market

Many more companies are now measuring carbon emissions and the number of socially responsible investment trusts is widening – pollution reductions may well become an indicator of corporate performance and have some impact on share prices

Power generators currently excluded from the voluntary trading platform

Emissions trading is only part of the solution – consumer behaviour also needs to change

16.12.2 Subsidising Positive Externalities

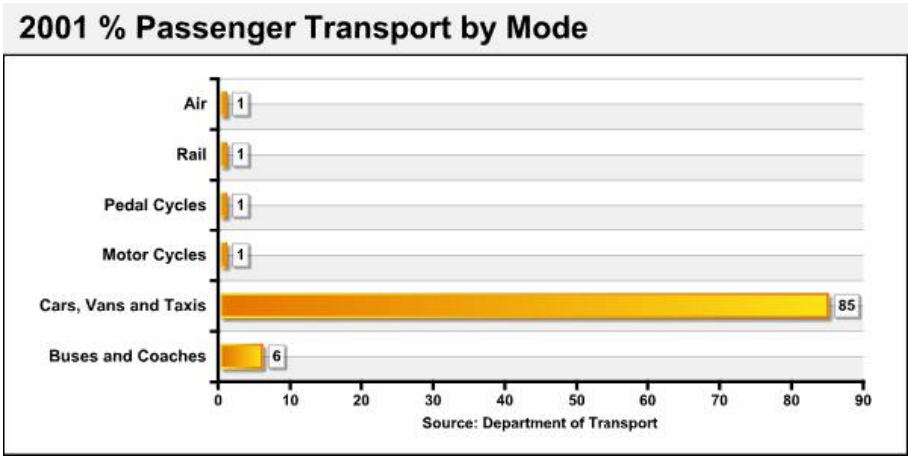
Activities that lead to positive externalities can be **subsidised**. This reduces the costs of production for suppliers and encourages a higher output. For example the Government may subsidise state health care; public transport or investment in new technology for schools and colleges to help spread knowledge and understanding. There is also a case for subsidies to encourage higher levels of training as a means to raise labour productivity and improve our international competitiveness.

More than one policy needed to control pollution

Achieving reductions in environmental pollution will never be based on a clear choice between policy levers – emissions trading or pollution taxation, building regulations or voluntary agreements – but on pulling multiple levers simultaneously – trading and taxation regulations and voluntary agreements – investment grants and allowances and research support.

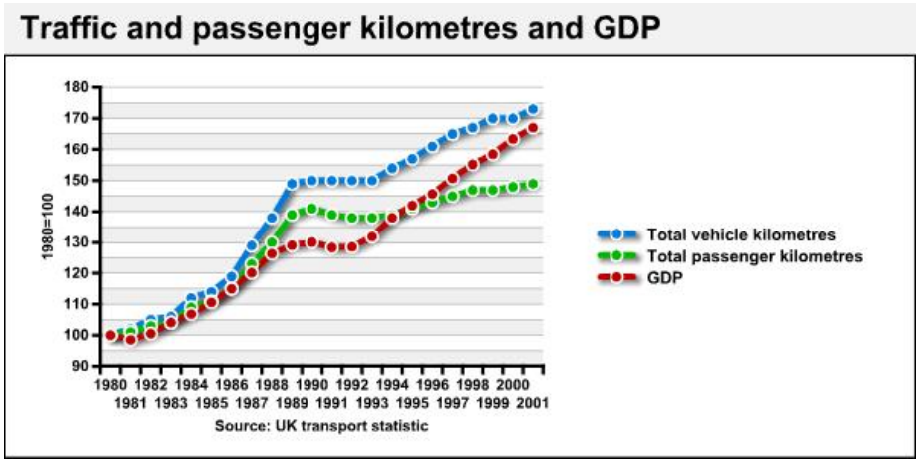
(Adair Turner, speech to the Carbon Trust May 2003)

17 MARKET FAILURE – ECONOMICS OF TRANSPORT CONGESTION



17.1 Characteristics of Transport

Transport is a service which has a **derived demand** because as the economy grows there is increased demand for transport from households, commerce and industry. The chart below provides evidence for this – notice how the annual estimated quantity of total vehicle kilometres has surged over the last decade, in tune with ten years of sustained economic growth.



Another important characteristic of transport as a service is that each single journey taken is unique in time and space and uses up scarce road or air space either on the road network or on trains and aeroplanes. This becomes critical when we consider how for example **road space** is allocated and the potential market failures arising from the problem of **road congestion** in our major towns and cities.

- Should we **ration** the use of road space through use of the price mechanism?
- How much are motorists willing and able to pay for making a particular journey?
- Should we continue to provide road space essentially as a **public good** made available to motorists free at the point of use?
- Is there an economic case for turning road space into a private good by introducing a **congestion charge** such as the charge introduced in London in the spring of 2003?

Road Traffic: by type of vehicle: 1991-2001			
Billion vehicle kilometers	1991	1995	2001
Cars and taxis	335.2	353.2	383.7
Motor cycles etc	5.4	4.1	4.8
Larger buses and	4.8	4.7	4.9
Light vans	41.7	43.8	51.1
All Goods Vehicles	24.5	25.1	29.2
Pedal cycles	5.2	4.5	4.0

Source: UK Transport Statistics 2002

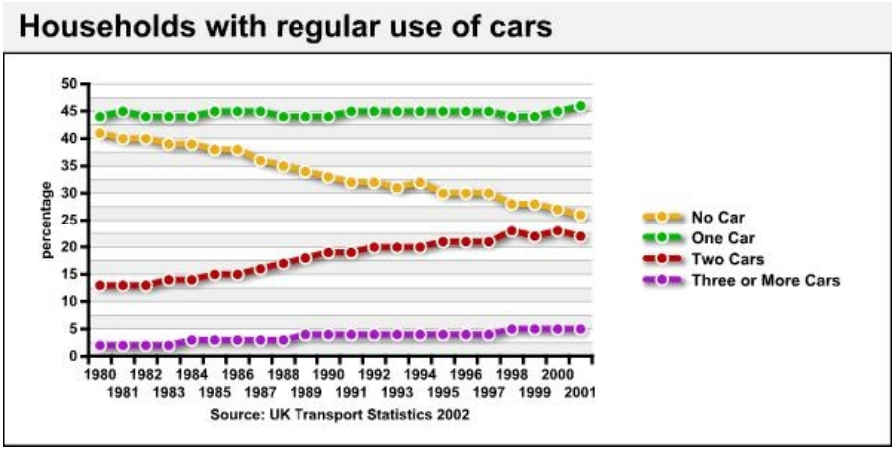
17.2 The Demand for Transport

Many factors can influence both the level of and pattern of demand for transport within the economy. These are summarised below:

- **The price of a journey** e.g. cost of petrol, or rail fare
- **Price of substitutes** e.g. coach or rail fare from Oxford to London compared with the costs and convenience of making the same journey in a car
- **Price of complements** e.g. price of new cars and petrol and costs such as insurance
- **Income** e.g. many lower income households cannot afford a car and are increasingly dependent on public transport services
- **Consumer tastes** e.g. is public transport uncomfortable and unreliable?
- **Time** - how long will journey take? Each individual will value the time factor differently

17.3 Growing Demand for Private Motoring

Recent decades have seen a sustained growth in both the demand for private motor vehicles and also the use of cars. Several economic factors explain the increase in car ownership and use:



- **Rising real incomes:** The demand for new cars has a strong relationship with the growth of real disposable incomes (i.e. demand is income elastic). In contrast, the data suggests that there is a negative income elasticity of demand for bus transport. So as society becomes richer, so the pattern of demand for different types (modes) of travel starts to change
- **Social changes:** There are many social factors at work leading to a steady expansion of demand from private motor use. One is the long-term increase in multiple car households in part driven by an increase in average travel to work distances and the expansion of out of town shopping centres. In addition, millions of children are now transported to school via the school run which is a major cause of congestion in local areas at peak times
- **Long term under-investment in mass transport system**: This is perhaps one of the key causes of the growth of car ownership and car use. Under-investment in mass transport means that millions of travelers have lost faith in the reliability, cleanliness and cost-effectiveness of the train and bus network. A transport system that is under great pressure inevitably suffers in terms of reliability and efficiency.
- **A fall in the relative costs of car ownership** as new and second hand car prices have fallen matched with an increase in relative prices of alternative forms of transport

17.4 Market Failure from Road Congestion

Market failure occurs when the private decisions made by producers and consumers fail to bring about a socially optimum allocation of resources. The root cause of market failure from transport comes from the externalities associated with car use and road congestion. These externalities lead to a divergence

between the private and social costs and benefits of car use.

17.4.1 Private Costs of Motoring

The private costs of motoring can be broken down into the fixed and variable costs faced by a motorist when deciding to use his/her car for particular journeys:

Fixed Costs (i.e. costs not linked to mileage – which must be paid even if the car is not used)

- Car purchase / replacement
- Interest on loans / hire purchase agreements
- Depreciation of vehicle due to age
- Car Insurance
- Annual MOT

Variable Costs (linked directly to mileage and frequency of car use)

- Fuel, Servicing and Cleaning
- Depreciation of the value of the car due to wear and tear and mileage
- Private costs also include the time cost of a journey (essentially the opportunity cost of using a car)

17.4.2 Private Benefits of Motoring

The private benefit derived from owning and using a car includes the freedom, flexibility and convenience that a car provides. Each journey generates a **private benefit** be it a short hop to the shops, delivering and collecting children from school, or a journey into work or on holiday. The issue of **convenience** is important here given that the system of mass transport rarely gives travelers the option of a clear route from A to B without having to change services or utilise secondary forms of transport at various points of the journey which can often add greatly to the time cost of getting to a destination.

17.4.3 External Costs from Increasing Road Use

Congestion brings external costs

> Britain is too fond of the car - traffic has grown by 80% over 20 years. The government predicts that between 2000 and 2010 congestion will grow by 28% on inter-urban roads and 15% within big cities. According to a poll by the Commission for Integrated Transport, 54% of car users already experience regular congestion in towns, while 34% routinely spend time in jams on motorways. Gridlock is becoming a way of life in Britain. Most organisations agree that doing nothing is not an option

Adapted from the Guardian

Congestion adds to costs and prices – for example, the slower average speed of vehicles on congested roads increases the costs of transporting goods which translates itself into higher prices for industry and commerce and more expensive products in the shops for consumers. Road congestion adversely affects the competitiveness of British businesses transporting their goods to the rest of the European Union

- The longer-term negative impact of road congestion on **foreign investment** inflows into the UK, on our tourist industry and also on the geographical mobility of labour
- Increased **delays for emergency services** when attending incidents
- The **environmental impact** of congested roads and motorways including increased incidence of air and noise pollution. At a time when pollution emissions from other industries are in decline, the British transport sector is calculated to be the 3rd largest source of greenhouse emissions and road transport is said to contribute 94% of all CO2 emissions from transport
- Congestion leads to a **reduction in fuel efficiency** which means a less efficient use of a scarce resource
- **Health effects** – recent studies have attributed thousands of premature deaths each year to the pollution effects of congested roads. Environmental pollution from road traffic is also a

major cause of asthma and other respiratory illnesses

- The **loss of land and natural habitat** to allow new roads to meet demand for car use
- External costs arising from **road accidents** including the costs of treatment of injuries and the resources used up by the emergency services
- Increased **wear and tear on roads** leading to higher maintenance charges

17.5 Road Transport Strategies: Policies to Correct for Market Failure from Road Congestion

The existence of market failure provides a justification for government intervention to influence both the level and pattern of demand for transport so that some of the external costs arising from road transport can be reduced.

There are three main policy options available for a government or other authority that wants to curb road congestion and the externalities that are associated with it:

- **Economic Instruments** – including use of taxation and subsidies and other forms of charges
- **Command and Control** measures
- The third option is to rely on **market forces** reduce congestion of its own volition. This argument is based on the idea that eventually roads will become so congested that the private costs of motoring will increase and the pattern of demand will alter naturally towards mass transport systems as people's willingness to pay increases and so supply responds. But is a tolerance for total gridlock the best approach? Most transport economists believe that an effective and efficient **integrated transport network** provides the best solution to our growing transport problems.

17.5.1 Using the Tax System to Control Congestion

For most of the 1990s, the British Government increased the **excise duty** on fuel each year by a rate significantly above the annual rate of inflation. The so-called **Fuel Duty Escalator** from 1993-99 saw a sustained increase in the real price of fuel for motorists and left Britain at the end of the decade with the highest fuel taxes within the European Union. The main justification for these higher taxes was to encourage motorists to avoid unnecessary journeys and also to encourage vehicle manufacturers to design and produce cars with greater fuel efficiency.

The main problem with simply raising fuel duty was simple – demand for car use was found to be highly **inelastic** with respect to changes in the price of fuel. Motorists did not respond to higher prices by curbing their demand for road space. Indeed there was some evidence that many motorists treated the cost of fuel as a fixed cost – and tolerated the higher duty without any significant change in **market behaviour**.

That tolerance was stretched to the limit when the world price of oil surged during the summer of 2000 and retail petrol prices jumped higher. The **fuel duty protests** in September 2000 were mainly led by the **road haulage industry** complaining about what they claimed was an excessive level of duty compared to overseas competitors. The government decided to abandon the fuel-duty escalator and it has since announced that any extra revenue from future real increases in fuel duty will be **ring-fenced** for modernising Britain's road network and improving mass transport

Instead of raising taxes to reduce the demand for motor vehicles, an alternative would be to increase government spending on **mass transport infrastructure** and also to increase the **subsidy** offered to some rail operators. Clearly every policy has its own cost and subsidies are thought to be an expensive way of changing the relative prices of different modes of travel.

Another option for the government might be to introduce **tax relief** on people who buy season-tickets for mass transport services. This would increase the demand for bus and rail services, although there are doubts about whether Britain's mass transport system has the **supply-side capacity** to cope with an increase in demand. These **"incentive measures"** will only be effective in the long run if the mass transport system can deliver people efficiently and reliably from A to B at reasonable cost.

17.5.2 Command and Control to Improve Traffic Flow

There are plenty of good examples of how **command and control** regulations can be used to encourage a reduction in congestion in particular areas. Some of these are summarised below:

- **Regulations** including tighter emission standards (e.g. the tests for carbon monoxide as part of the annual MOT) and the introduction of mandatory catalytic converters

- **Traffic Management Schemes** including bus lanes (e.g. the M4 Bus Lane), high occupancy vehicle lanes and the banning of motor vehicles from certain city centre areas
- **Expansion of parking restrictions**, increased parking fines and the widespread use of clamping
- Speed cameras, speed humps and other traffic calming initiatives

17.5.3 Electronic Road Pricing – Congestion Charges

Prices change behaviour

> Elsewhere the use of the price mechanism to prevent congestion is standard. You pay more to use the telephone at peak hours on a weekday than you do at night or at the weekend.

Larry Elliott in the Guardian, March 2003

A third policy option is to use the price mechanism to ration scarce road space through the introduction of **road pricing** or **congestion charges**. Remember at the moment in Britain, road space although an increasingly scarce resource is normally available to motorists free at the point of use. Even though drivers pay high levels of vehicle excise duty, fuel duty and VAT when they use their vehicles, they make no direct contribution to the external costs that their decision to use road space invariably involves.

17.5.4 Justification for Road Pricing

No alternative to road tolls

> Roads are a commodity, just like roofing tiles and roller-skates, and to have an efficient economy, and most especially to avoid the wasteful queues of socialist countries, commodities need prices. There is no alternative to road tolls. The demand for travel will continue to grow. Doing nothing will leave our grandchildren stuck fast in fumes and concrete.

Professor Andrew Oswald, University of Warwick, March 2002

Road pricing changes the **relative price** of using a car on roads in certain areas at specific times of the day. Supporters of congestion charges claim that it is a more targeted and effective approach to reducing congestion than higher fuel duties or changes to vehicle excise duty. They argue that road space should be rationed directly through the **price mechanism** rather than the current system which rations road space through the arbitrary method of vehicles queuing! Because road users benefit directly from a good road system, they ought to be willing to pay a price for this.

Another argument is that congestion charges will help to **improve traffic flow**, leading to gains in efficiency and that the extra revenue from road pricing can be used to finance long-term improvements in the road system and promote alternative means of transport. Affordable and reliable technologies for Electronic Road Pricing are now in place and although the fixed costs of introducing road pricing are sizeable, the costs of operating the system would be low.

Supporters point to the successful use of congestion charging in other countries, notably in places such as Singapore. The London congestion charge was introduced in February 2003 and within a few months it is seen as having had a substantial impact on congestion levels within the congestion zone.

17.5.5 Case against Road Pricing

Critics of road pricing argue that the costs of running such a system are much higher than supporters claim and that no system is totally reliable in enforcing charges and making motorists pay. A second argument is that although congestion charges can lead to the diversion or displacement of traffic to routes not covered by road pricing schemes.

Many people have expressed concern about the **distributional impact of road pricing** on low-income groups unless a system of allowances was in place (this raises additional questions about which groups of motorists might have a valid claim for some form of lower charge or total exemption). Households might also opt to run older cars which are more damaging to the environment in response to the increased costs of using a vehicle.

A wider question relates to doubts as to whether mass transport systems would cope with increased demand following introduction of ERP schemes?

17.6 Case Study: London's Congestion Charge

Ration demand

All over the world, governments are trying to deal with the creeping paralysis of road congestion. Simply building more roads no longer works because voters almost everywhere object. Demand for road space is therefore bound to outstrip supply, which means that either the jams must grow, or road space must be rationed. Congestion will always be a problem, but it can be managed sensibly. There is no reason why man should not be able to get to Mars and across town.

(Adapted from the Economist, February 2003)

Road pricing came to London in the spring of 2003. Ken Livingstone, the mayor of London set a flat £5 fee for driving in the centre of the capital on weekdays between 7am and 6.30pm. To be a true congestion charge, the price should vary according to the level of traffic – but for London the fee is a flat rate one and does not take into account prevailing traffic conditions.

Drivers pay to drive into or inside the charge zone – an area roughly 10 square miles around the City and West End districts. The zone is policed by hundreds of fixed and mobile cameras that automatically pick up vehicles' number plates. Computers match the registrations with a database of drivers who have paid in advance. There are £80 fines for motorists who do not pay the fee before midnight.

The congestion charge appears to have changed the behaviour of motorists in a fairly quick time. Some early estimates of its impact have found that traffic within the charge zone has been reduced by 20% and delays cut by nearly 30%. Speeds have increased from 9.5mph to 20mph. and delays to buses caused by congestion are down by half. As a result, bus passenger numbers are up by over ten per cent.

17.7 Further Reading on Transport Congestion

Association of British Drivers	http://www.abd.org.uk/
Call for National Congestion Charge	http://news.bbc.co.uk/1/hi/uk_politics/2992580.stm
Commission for Integrated Transport	http://www.cfit.gov.uk/ - in particular see http://www.cfit.gov.uk/congestioncharging/index.htm for detailed coverage of the congestion charge
Congestion Charging in London (BBC)	http://www.bbc.co.uk/london/congestion/
Georgina Santos	(Expert in the Economics of Road Pricing)
Green Party	Green Party
Independent Transport Commission	http://www.trg.soton.ac.uk/itc/
Road Haulage Association	Road Haulage Association
Royal Automobile Club (RAC)	http://www.rac.co.uk/
Sustrans	The Pressure Group campaigning for reductions in car use
Transport 2000	http://www.transport2000.org.uk/
Transport for London	Transport for London
Urban Transport Pricing	Urban Transport Pricing in Europe

18 PUBLIC GOODS

18.1 Private and Public Goods

18.1.1 Private Goods and Services

A private good or service has three main characteristics:

- **Excludability:** Consumers of private goods can be excluded from consuming the product if they are not willing or able to pay for it (for example - a ticket to the theatre or a sports event or a meal in a restaurant)
- **Rivalry:** With a private good, one person's consumption of a product reduces the amount left for others to consume - because scarce resources are used up in producing and supplying the good or service. If you order and then enjoy a pizza from Pizza Hut, that pizza is no longer available to someone else. Likewise driving your car on a road uses up road space that is no longer available at that time to another motorist
- **Rejectable Goods**: Private goods and services can be rejected - if you don't like the soup on the college menu, you can use your money to buy something else. You can choose not to travel on Virgin Rail on a journey to the north west

18.1.2 Characteristics of Public Goods

The characteristics of pure public goods are the opposite of private goods:

- **Non-excludability**: The benefits of public goods cannot be confined to only those who have paid for it. In this sense, non-payers can enjoy the benefits of consumption for no financial cost
- **Non-rivalry in consumption**: Consumption of a public good by one person does not reduce the availability of a good to others – we all consume the same amount of public goods even though our tastes for these goods (and therefore our valuation of the benefit we derive from them) might differ

18.1.3 Examples of Public Goods

Examples of public goods include flood control systems, pure public water supplies, street lighting for roads and motorways and also national defence services.

Policing – a public good?

Some (but not all) aspects of policing might also qualify as public goods. The general protection that the police services provide in deterring crime and investigating criminal acts serves as a type of public good. But resources used up in providing specific police services mean that fewer resources are available elsewhere. For example the use of police at sporting events or demonstrations and protests means that police resources have to be diverted from other policing duties.

Private protection services (including private security guards and detectives) are clearly private goods – the service is excludable, rejectable and rival in consumption and people and businesses are often prepared to pay a high price for such exclusive services.

Public goods are not normally provided by the private sector because they would be unlikely to be able to supply them for a profit (mainly through non-excludability). It is up to the Government to *decide* what output of public goods is appropriate for society. To do this, it must estimate the **social benefit** from the consumption of public goods. Putting a monetary value on the benefit derived from street lighting and defence systems is problematic.

The air waves – a public good?

The airwaves are essentially owned by the government of a particular country. Do they count as a pure public good? Normally the answer would be yes. One person's use of the airwaves rarely reduces the extent to which other people can benefit from using them. But when demand for mobile phone services is very high at peak times, the airwaves become crowded and access to the networks provided by the main mobile phone companies can become slow. In this sense the airwaves can be treated a crowded non-pure public good.

The government controls the issue of licences needed to operate mobile phone services using the airwaves in the UK. In 2000, they auctioned off five licences for 3rd generation mobile phone services and raised £22 billion in doing so. The government was using the auction process to ration the airwaves

through a licence system. Although the government has monopoly control in the sense that it controls the issue of licences, it did not set the market price. This was determined by the auction process, and the fact that at the end of a bidding war, the major mobile phone companies were prepared to pay such a high price for a licence to allow them to operate in the market, is evidence of the private benefit (anticipated future profit) that the companies expected to make from selling 3rd generation contracts to customers.

The electoral system provides an opportunity to see the **public choices of voters** but elections are rarely won and lost purely on the grounds of government spending plans.

18.1.4 The Free Rider Problem

Public goods are non-excludable. Once the product is provided, other consumers cannot be excluded from benefiting from the good. This means some consumers may avoid payment and become **free riders** i.e. benefit without contributing to the cost of provision.

If sufficient consumers decide to take a free-ride then the product will not be provided through the market. Consider the case of the provision of an army of traffic wardens and safety signs on roads. One person's benefit from these services is not unique - other motorists benefit from the service as well - but they cannot be stopped and asked to pay for the benefits they derive.

18.1.5 Public Goods and Market Failure

Why is there market failure with public goods?

The main reason is that private sector producers will not supply public goods because they cannot be sure of making an **economic profit**. Consumers can take a free ride without having to pay directly. The obvious solution is that these goods are **provided collectively** by the government, and **financed through taxation** of individual households and businesses. A cost-benefit analysis helps the government to establish the extent to which public goods should be provided.

18.1.6 Quasi-Public Goods

A quasi-public good is a near-public good i.e. it has many but not all the characteristics of a public good. Quasi public goods are:

- **Semi-non-rival:** up to a point extra consumers using a park, beach or road do not reduce the amount of the product available to other consumers. Eventually additional consumers reduce the benefits to other users.
- **Semi-non-excludable:** it is possible but often difficult or expensive to exclude non-paying consumers. E.g. fencing a park or beach and charging an entrance fee; building toll booths to charge for road usage on congested routes

19 MERIT GOODS AND DE-MERIT GOODS

19.1 What are Merit Goods?

Merit Goods are those goods and services that the government feels that people will under-consume, and which ought to be subsidised or provided free at the point of use.

Both the public and private sector provide **merit goods & services**. Consumption of merit goods is widely believed to generate positive externality effects - where the social benefit from consumption exceeds the private benefit.

A merit good is a product that **society values** and judges that everyone should have regardless of whether an individual wants them. In this sense, the government (or state) is acting **paternally** in providing merit goods and services. They believe that individuals may not act in their own best interests in part because of **imperfect information** about the benefits that can be derived.

Good examples of merit goods include health services, education, work training programmes, public libraries, Citizen's Advice Bureaux and inoculations for children and students.

19.2 Financing Merit Goods

The government often provides merit goods **"free at the point of use",** financed through taxation. Examples include primary health care available to people through the National Health Service, and books borrowed from local authority libraries.

There is growing evidence of a widening in health inequalities in Britain – partly arising from an increase in relative poverty. Spending on the National Health Service is an important vehicle for reducing inequalities – but there will always be a divide between those who can afford prompt, good quality health care and millions of people who are wholly dependent on state provided health services.

19.3 Merit goods – the Importance of Value Judgements

When defining a "merit good" we are inevitably use **value judgements**. Who is to say for example that consumers in a free market undervalue products because of 'information failure'?

Free market economists argue views are on what is 'good' or 'bad' for consumers and producers involves value judgements and a hefty slice of state (government) paternalism.

Others argue that only the government has sufficient information to place an accurate and complete value on socially desirable (beneficial) goods such as health and education

For 'goods' such as contraception, it is not clear whether the externality is positive or negative. Is contraception a merit good or demerit good? It depends upon the value judgement of the person making the decision. This provides an important example of the distinction between positive and normative statements

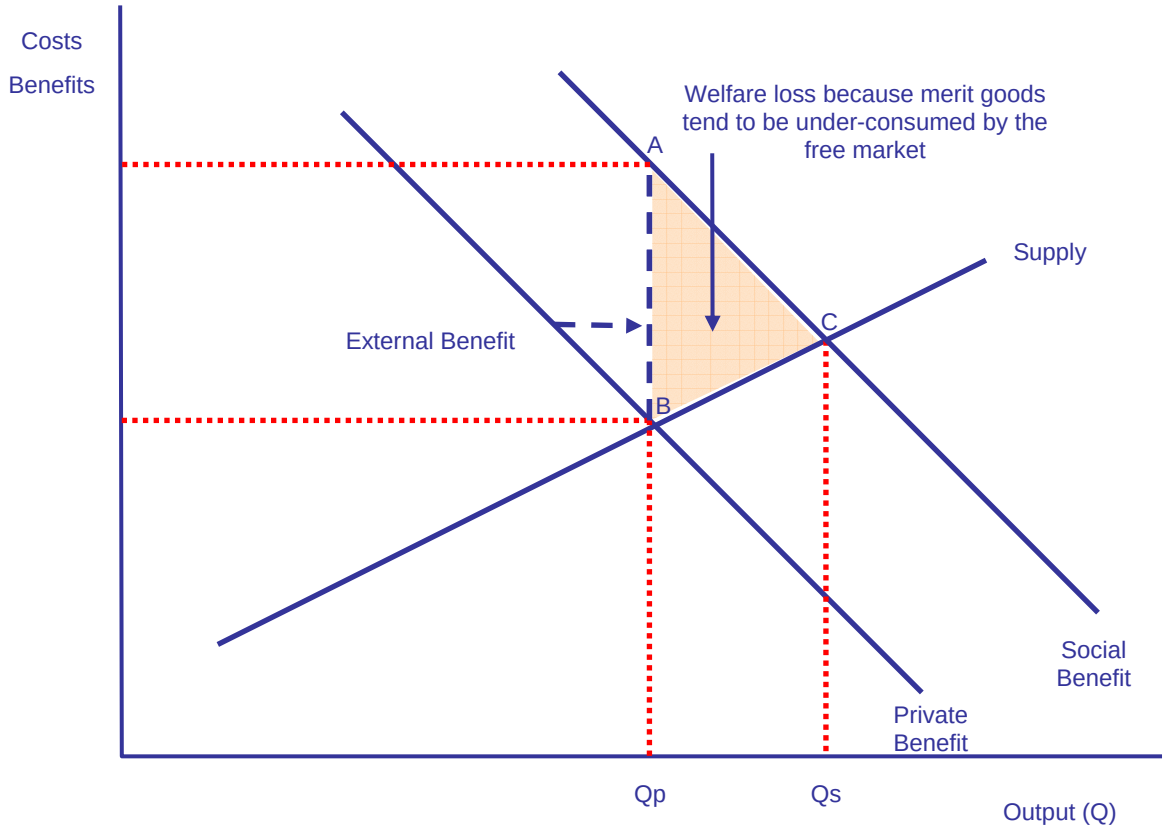
19.3.1 The Private Finance Initiative (PFI)

The need for extra finance of merit goods has brought to the top of the political agenda the debate about public versus private sector funding. The current Labour government is committed to using **public private partnerships (PPPs)** to inject extra finance for capital spending in education, health and transport.

The private finance initiative gives the private sector responsibility for building and managing projects like roads and hospitals in return for a yearly fee. PPPs have been used by Labour to build large numbers of schools, hospitals and roads. More controversially, it is also the chosen route for part-privatisation of the London Underground and the air traffic control system

19.4 Merit Goods and Market Failure

Merit goods provide positive externalities but if left wholly to the private sector, it is likely that merit goods will be under-consumed because individuals do not understand or appreciate the social benefits that can result from consumption of education and health services to name just two examples.



The argument concerning **imperfect information** is an important one. Parents with relatively poor educational qualifications may be unaware of the full longer-term benefits that their children might derive from a proper education. Because the knowledge of these private benefits is an ongoing learning process, children themselves will tend to underestimate the long term gains from a proper education.

Education is a complex long-term investment decision. The private costs must be paid now but the private benefits (including for example a higher earnings potential over one's working life) take time to emerge.

Education should provide a number of **external benefits** that might not be taken into account by the free market. These include rising incomes and productivity for current and future generations; an increase in the occupational flexibility of the labour force which should help to reduce unemployment and therefore reduce welfare spending.

Increased spending on education should also provide a stimulus for higher-level research which can add to the economy's potential output and long run trend rate of growth. Other external benefits might include the encouragement of a more enlightened and cultured society, less prone to political instabilities and one which manages to achieve a greater degree of social as well as economic cohesion.

Providing that the education system provides a sufficiently good education across all regions and sections of society, increased education and training spending should also open up a higher level of equality of opportunity.

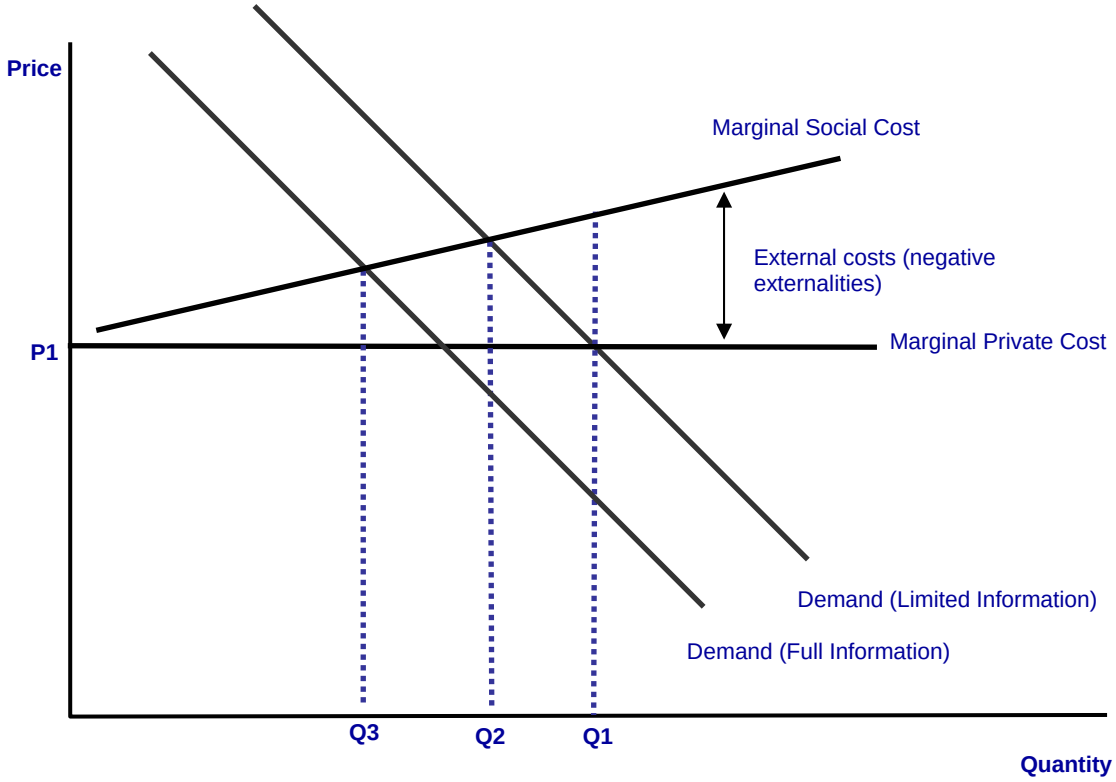
We return to education issues a little later on in this study companion when we consider the arguments for and against tuition fees

19.5 De-merit goods

Merit goods are 'good' for you. **De-merit goods are thought to be 'bad' for you.**

Examples include alcohol, cigarettes and various drugs. The consumption of de-merit goods can lead to **negative externalities** which causes a fall in **social welfare**. The government normally seeks to reduce consumption of de-merit goods. Consumers may be unaware of the negative externalities that these goods create – they have imperfect information.

Should cannabis be regarded as a de-merit good? Should it be legalised and then subjected to taxation in a similar way to alcohol and tobacco? Background reading on this issue is available here.



19.6 De-Merit Goods and Market Failure

The government may decide to intervene in the market for de-merit goods and impose taxes on producers and / or consumers. Higher taxes cause prices to rise and should lead to a fall in demand. (See the revision notes in the previous section on applications of price theory). But many economists argue that taxation is an ineffective way of curbing consumption of drugs such as cigarettes and alcohol.

What of harder drugs? Should they be prohibited at all costs by the government in a bid to control demand by restricting supply? Regulation has been the route chosen by most governments in developed countries over recent years – but economists are once again divided on the issue.

Some believe that legalisation and taxation of harder class drugs is a more appropriate policy to pursue, arguing that regulation is both ineffective and also very costly. Another approach would be to divert resources away from regulation towards giving better information to drug users about the longer term health implications of their consumption decisions.

Reduce demand by improving information

Drugs are harmful - but so is prohibition. The right approach, argues the utilitarian, is to reduce the total harm to a minimum. Along with restricting supply, policy should aim at reducing demand, educating potential users on the dangers, treating drug abusers and minimising the harmful consequences for public health.

Adapted from Martin Wolf "The folly of prohibiting drugs", Financial Times 2002

19.7 Economics of Tobacco and Government Intervention

19.7.1 The Tobacco Market

Tobacco is grown in more than 100 countries world-wide, mostly in developing countries. China is the world's largest producer, followed by the USA, India, Brazil and Turkey. These five countries produce nearly two-thirds of global output. About 13 million adults in the UK smoke cigarettes - 29% of men and 25% of women. Smoking is highest among those aged 20-34: 35% of men and women in this age group smoke. The two principal UK tobacco companies - Imperial Tobacco and Gallaher together control around 80% of the UK market. In 2000, 5,043 people were employed in tobacco manufacturing, with a

further 8,262 employed in the wholesale trade.

19.7.2 Private Costs of Smoking

The **private costs** of smoking cigarettes are include the cost of purchasing cigarettes and also the increased health insurance premiums that smokers have to pay. The table below is based on estimates from Action on Smoking and Health and calculates the purchase costs of different levels of cigarette consumption over the long term based on prices and tax levels in the spring of 2002.

The Private Cost of Smoking

Based on cigarette prices and taxation after the April 2002 Budget (UK)

Per day	Years of smoking				
	1	5	10	20	50
5	£402	£2,008	£4,015	£8,030	£20,075
10	£803	£4,015	£8,030	£16,060	£40,150
20	£1,606	£8,030	£16,060	£32,120	£80,300
40	£3,212	£16,060	£32,120	£64,240	£160,600

19.7.3 External Costs of Smoking

The smoking of tobacco creates negative externalities which lead to a divergence between private and social costs. It is unlikely that individual smokers consider the external costs they are creating when they light up.

Smokers may also suffer from **information failure** – so that they are not fully aware of the long term damage created by their smoking habit (i.e. they are over-estimating the private benefit they get from smoking). If smokers fail to consider the externalities they generate through consumption, then market failure will occur – leading to a loss of social welfare. Because of the impact on human life, many of these externalities are impossible to value accurately in monetary terms.

The external costs of smoking include the **extra costs to the NHS** of treating smoking-related diseases. Recent research by the Centre for Health Economics at York University has shown that the cost to the NHS of treating diseases caused by smoking is approximately £1.5 billion a year. Health costs incurred from the prevalence of **passive smoking** - 42% of British children live in a household where at least one person smokes.

Statistics from the Department for Health show that 17,000 children under the age of five are admitted to hospital every year with illnesses resulting from passive smoking. Smoking itself is regarded as a major source of **health inequalities**.

Additional external costs arise from the **lost national output** and **lower productivity** from working days lost and absenteeism caused by smoking related illnesses. In the long term there is **increased pressure on the welfare state** to finance those unable to work because of long term illness, plus the benefits paid to dependents of those who die young.

External costs are also created by **household fires** linked to smoking and cigarettes are a major source of **street litter** - every day, UK smokers throw away about 200 million butts and 20 million packets.

19.7.4 Government Policies to Control Cigarette Consumption

In the case of tobacco, there are several forms of intervention possible these are outlined below. What matters most when evaluating these policies is (a) how effective they are in changing consumer behaviour so that market failure is addressed and (b) whether market failure is corrected whilst minimising distortions and disincentives in other markets and (c) a concern for the distributional consequences of particular policies.

There are four main approaches to curbing the consumption of cigarettes:

- **Taxation** of cigarette products
- **Command and Control** through Regulation of producers and consumers
- **Education & Health Awareness** to alter patterns of demand
- **Increased government spending** on behavioural treatments and pharmacotherapy (nicotine

replacement and non-nicotine medications) in order to reduce tobacco dependence

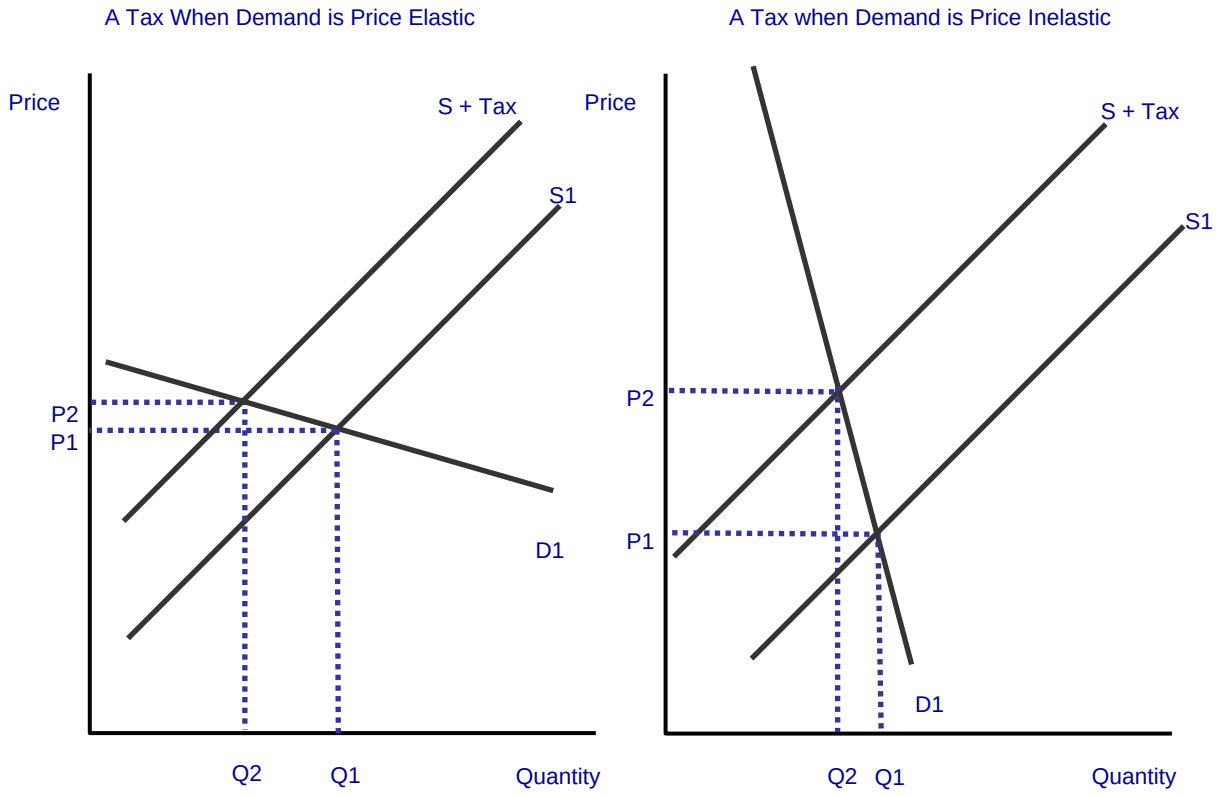
19.7.5 Cigarette Taxation

The UK currently has the highest tobacco taxes in the EU. Successive governments have increased the excise duty on cigarettes at each budget, often by more than inflation so that the real value of cigarette duty has grown substantially.

The main aim of higher taxation is to increase the real cost of purchasing and consumer cigarettes. Economic theory suggests that higher prices should control demand – by reducing the real incomes of cigarette smokers and increasing the opportunity cost of continuing to smoke. Lower consumption rates then reduce output towards the social optimum – reducing the extent of market failure.

Higher taxes might also be justified on the grounds of 'making the polluter pay' for the external costs that are created. Another benefit is that revenue from higher indirect taxation can be used to fund improvements in health care including greater resources for treatments on offer to smokers who want to kick the habit.

The **demand for cigarettes tends to be price inelastic** as many smokers have a habitual pattern of consumption which is not sensitive to price changes. The effect of a tax is shown in the diagram below. When demand is price elastic, a tax is effective in reducing the equilibrium quantity bought and sold (the left hand diagram below) but if demand is unresponsive to price then high rates of taxation have little direct impact on the quantity demanded.



19.7.6 Criticisms of Higher Cigarette Taxation

Critics of heavier cigarette taxation argue that taxes are a fairly **ineffective** way of curbing consumption and that as the real value of excise duty continues to rise, so too does the **incentive to smuggle** in cheaper imports which has the effect of negating the tax. Over £3.7 billion pounds worth of cheaper cigarettes were imported into the UK in 2002, a large slice of them illegally.

A second criticism of higher indirect taxes on tobacco concerns the potential impact on the **distribution of income**. Cigarette consumption is greatest among low-income families and as a result the burden of higher taxes falls proportionately higher on people towards the bottom of the income distribution.

The Tobacco Manufacturers' Association are critical of the trend towards higher taxation (as one might expect!). Tobacco producers point to the many thousands of jobs at risk in tobacco manufacturing,

distribution and retailing that might be lost if taxation reaches a penal rate.

19.7.7 Command and Control Measures to Control Consumption

Numerous regulatory devices have been tried over the years in an attempt to reduce the demand for cigarettes and reduce the scale of nicotine addiction. These are summarized below:

- **Legal restrictions on consumption** - it is Illegal to sell tobacco products to children under the age of 1 and Shopkeepers are liable to a fine of up to £2500
- **Bans on cigarette advertising** on television and radio - Cigarette advertising has not been allowed on television since 1965
- **Prohibition of smoking** on most transport services
- **Legal bans on the importation of cigarettes** in the UK
- **The Health and Safety at Work Act** - the latest health and safety legislation in the UK includes an obligation on employers to protect employees from passive smoking
- **Regulations on tobacco products labeling** - Each warning has to cover 6% of the relevant pack face. One side of the cigarette packet also has to give the brand's tar and nicotine levels
- **The new European Union Directive** (implemented from September 2002) - sets a maximum upper limit of tar, nicotine and carbon monoxide for tobacco. Health warnings must occupy 30% of the front surface of the pack and 40% of the rear. The EU Directive also bans words such as 'light' or 'mild' as part of a brand name Finally Taxes on cigarettes should represent a minimum of 70% of the final retail price

19.7.8 Further Background Reading on the Tobacco Taxation Debate

Action of Smoking and Health – Group campaigning for higher taxes on cigarettes

British Heart Foundation – The Risks of Smoking

Customs and Excise

Department of Health

Forest: group promoting equal rights for smokers

Roy Castle Lung Cancer Foundation

Tobacco Manufacturers Association

Wired For Health

20 IMMOBILITY OF FACTORS OF PRODUCTION

Another cause of market failure is the **immobility of factors of production**. There are two main types of factor immobility, occupational and geographical immobility.

20.1 Occupational Immobility

Occupational immobility occurs when there are **barriers to the mobility** of factors of production between different sectors of the economy which leads to these factors remaining unemployed, or being used in ways that are not economically efficient.

20.1.1 Occupational Mobility of Land and Capital:

Some capital inputs are occupationally mobile – a computer can be put to use in many different industries. Commercial buildings can be altered to provide a base for many businesses. However some units of capital are specific to the industry they have been designed for.

20.1.2 Occupational Mobility of Labour

Labour often experiences occupational immobility. For example, workers made redundant in the sheet metal industry or in heavy engineering may find it difficult to gain re-employment in the near term. They may have **job-specific skills** that are not necessarily needed in growing industries. This implies that there is a **mismatch** between the skills on offer from the unemployed and those required by employers looking for extra workers. This is also called structural unemployment and explains why there is a core of workers in the UK who find it difficult to find paid work. Clearly this leads to a **waste of scarce resources** and represents market failure.

20.2 Geographical Immobility

People may also experience geographical immobility – meaning that there are barriers to them moving from one area to another to find work. There are good reasons why geographical immobility might exist:

- Family and other social ties
- The financial costs involved in moving home including the costs of selling a house, removal expenses and other associated expenditure
- Regional variations in house prices
- Differences in the general cost of living between regions

The growing ***regional divide in house prices*** is a major contributor to geographical immobility. The widening gap in average prices can make it virtually impossible for people from the North to consider moving south because they cannot afford to maintain their standard of living in the South East. Both occupational and geographical immobility mean that the economy is no allocating its resources to maximum efficiency.

Variations in Regional House Prices

Period	North	Yorks &	East	Greater	South	South	West	Wales	Scotland	Northern	UK
£		Humber	Anglia	London	East	West	Midlands			Ireland	
1990	48,500	54,000	67,100	96,900	89,900	71,000	63,100	54,500	51,700	37,000	69,500
1996	52,900	56,500	62,100	91,600	84,800	67,700	64,000	55,900	62,300	53,000	69,000
2001	69,500	73,700	105,200	194,500	160,100	119,500	96,800	78,900	76,500	87,400	115,700

20.3 Policies to Improve the Mobility of Labour

To reduce occupational immobility the government might:

- Invest in increased provision of **training schemes** for the unemployed – particularly those workers experiencing structural unemployment. See the New Deal programme in the chapter on unemployment
- Subsidise the provision of industrial training by private sector firms
- Raise total spending on education and move towards increased investment in vocational

training for students

To reduce geographical immobility:

- Reforms to the housing market designed to improve the supply and reduce the cost of rented properties
- Specific subsidies for people moving into areas where there are shortages of labour

21 IMPERFECT INFORMATION

Consumers and producers require complete information if they are to make efficient choices.

In perfectly competitive markets we assume that all agents in the market have perfect information about the availability of goods and services and also the prices charged by suppliers. Consumers can make purchasing decisions on the basis of full and free information on the products that they are buying.

21.1 What is Information Failure?

In reality of course, all of us experience **information deficits** which can lead to a misallocation of resources. **Information failure** occurs when people have inaccurate, incomplete, uncertain or misunderstood data and so make potentially 'wrong' choices.

Consumers can never be expected to have a full-informed view about the products they are faced with in each and every market. Searching for information is time consuming and carries an obvious opportunity cost.

Likewise, producers do not have full information about the products and prices being charged by their competitors.

Consumers might also under or over-estimate the private benefit from consuming a particular good or service. The classic case of this is the demand for health or education – where consumers may underestimate the long term private benefit from investing in extra education or buying a specific form of health treatment.

With **de-merit goods** consumers may suffer from further information failure, in particular the long term health costs of smoking or the possible consequences of dependency on alcohol.

21.2 Examples of information failure

Imperfect information can be caused by

- **Misunderstanding the true costs or benefits of a product**: E.g. the social costs and benefits of different classes of drugs and the private and social benefits from higher education when there are so many universities and courses to choose from
- **Uncertainty about costs and benefits** e.g. should younger workers be buying into pension schemes when we can only guess at economic conditions in 40 years time?
- **Complex information** e.g. choosing between makes of computers requires specialist knowledge of hardware. Do I buy an Apple or PC computer? The problems of choosing a quality second hand car or when deciding whether or not to buy a property
- **Inaccurate or misleading information** e.g. persuasive advertising may 'oversell' the benefits of a product leading to a higher demand and consumption than is optimal
- **Addiction** e.g. drug addicts may be unable to stop consumption of harmful substances

21.3 The Effects of Asymmetric Information

Asymmetric information occurs when somebody knows more than somebody else in the market. Such asymmetric information can make it difficult for the two people to do business together

Examples of asymmetric information include the following:

- A government selling mobile phone or broadcasting licences does not know what buyers are prepared to pay for them (an auction is usually the preferred solution to this)
- A mortgage lender does not know how likely a borrower is to repay
- A used-car seller knows more about the quality of the car being sold than do potential buyers

Asymmetric information can distort people's incentives to buy and sell goods and services at the right prices and as a result can lead to inefficiencies and market failure. One of the classic examples of asymmetric information comes from research on the used car market by the Nobel Prize winning economist George Akerlof.

The Market for Lemons

Take problem of buying a used car. Assume that used cars come in two types: those that are in good repair, and duds (or “lemons” as Americans and most economists call them). Suppose further that used-car shoppers would be prepared to pay $20,000 for a good one and $10,000 for a lemon. As for the sellers, lemon-owners require $8,000 to part with their old banger, while the one-owner, careful-driver old lady with the well-maintained estate won't part with hers for less than $17,000. If buyers had the information to tell wheat from chaff, they could strike fair trades with the sellers, the old lady getting a high price and the lemon-owner rather less.

If buyers cannot spot the quality difference, though, as is often the case in the real world, there will be only one market for all used cars, and buyers will be ready to pay only the average price of a good car and a lemon, or $15,000. This is below the $17,000 that good-car owners require; so they will exit the market, leaving only bad cars. This result, when bad quality pushes good quality from the market because of an information gap, is known as “adverse selection”. This was the simple but powerful insight of one of this year's laureates, George Akerlof, now a professor at Berkeley, in a seminal 1970 paper.

A great many markets, including those for shares, labour, insurance and banking, often resemble a used-car sale more closely than a McDonald's restaurant.

Adapted from the Economist, October 2001

22 GOVERNMENT FAILURE

22.1 What is Government Failure?

Normally, a failure of the free market is an economic justification for some form of government intervention. This intervention is designed to correct for market failure and thereby achieve an improvement in economic and social welfare.

Likewise, a government may choose to intervene to achieve a more equitable distribution of income and wealth. For example the government might seek to regulate the activities of firms with monopoly power, subsidise the provision of merit and public goods, or introduce pollution taxes to compensate for the effects of environmental pollution.

But what if intervention leads to further inefficiencies? What if government policy decisions prove to be costly to implement but ineffective in the final event? When this happens, government failure can exist.

Some economists believe that even with good intentions governments seldom get their policy application correct. They can tax, control and regulate but the eventual outcome will be a deepening of the market failure or even worse a new failure may arise.

22.2 Government Failure in a Non-Market Economy

The collapse of the Soviet Union marked the failure of command or state-run economies as a means of allocating resources. The essence of a command economy was that the government planning mechanism would decide what to produce and how to produce it and for whom to produce – 3 fundamental questions.

Government failure occurred when the central planners produced products that were not wanted by consumers – a clear loss of allocative efficiency, since there was no price mechanism to signal changes in consumer preferences and demand. Another fundamental failing of the pure command economy was that there was little incentive for workers to raise productivity; poor quality control; and little innovation by firms as no profit motive existed. Command economies also suffered massive environmental degradation.

All of these economies are now moving towards the western mixed economy, though at varying speeds and with varying success. They are known as “transition economies”. Ten countries have been accepted as new members of the European Union in 2004, some of them former state-run economies in the Eastern Block. Countries such as Hungary, the Czech Republic and Poland are all moving towards a market based system for the allocation of resources for example through programmes of privatisation.

22.3 Possible Causes of Government Failure

The following factors are important causes of government failure:

- **The pursuit of self-interest** amongst both politicians and civil servants rather than operating on behalf of citizens which leads to a misallocation of resources (for example decisions about where to build new roads, by-passes, schools and hospitals, inappropriate tariffs and other forms of import control and also decisions as to which industries and markets to offer government subsidies)
- **Electoral pressures leading to inappropriate government spending and tax decisions** - e.g. boosting state welfare spending in the run up to an election, or decisions to bring forward major items of government capital spending on infrastructural projects ahead of an election without the projects being subjected to a full and proper cost-benefit analysis
- **A tendency to look for short term solutions to economic problems** rather than making considered analysis of long term considerations (examples might include important decisions about transport policy or extra funding for the National Health Service). The risk is that **myopic decision-making** will only provide short term relief to particular problems but does little to address **structural problems**. A decision for example to build more roads, widen existing roads and build new by-passes might simply add to the problems of traffic congestion in the long run encouraging an increase in the total number of cars on the roads. Short term financial subsidies to the steel industry or to coal producers to keep open loss-making steel plants and coal pits might eventually prove to be a waste of scarce resources if the industries concerned have little realistic prospect of achieving an economic rate of return in the long run
- **Regulatory capture**. This is when the industries under the control of a regulatory body begin to move policy options so as their outcome is in their favour. Some economists argue that

regulators can prevent the ability of the market to operate freely. We might find examples of this in agriculture, telecommunications and the other utilities and also in environmental protection.

- **Disincentive effects** created by measures designed to reduce income inequalities (including the poverty trap) or the loss of business competitiveness caused by the introduction of the National Minimum Wage or the Working Families Tax Credit – thousands of small & medium sized enterprises have faced higher costs because of the increasing levels of red tape brought about by new government regulations. Equally a decision by the government to raise taxes on de-merit goods (such as cigarettes) might lead to an increase in tax evasion, smuggling and the development of grey markets where trade takes place between consumers and suppliers without paying tax. Equally a decision to legalize and then tax some drugs might lead to a rapid expansion of the supply of drugs and a substantial loss of social welfare arising from over consumption.
- **The Environmental impact of government price support for farmers** (including the long term impact of exemptions from taxation for farmers selling land to developers, the externalities arising from increasing use of subsidized fertilizers, and the long running issue of structural excess supply arising from guaranteed intervention prices for farmers within the CAP)
- **Imperfect information** - How does the government establish what citizens want it to do? Our electoral system is not an ideal way to discover this! Proponents of government failure argue that the free market mechanism is the best way of finding out (a) what consumer preferences are and (b) aggregating these preferences based on the number of people that are willing and able to pay for particular goods and services. Government failure may range from the trivial, when intervention is ineffective, but where harm is restricted to the cost of resources used up and wasted by the intervention, to cases where intervention produces new and more serious problems that did not exist before.
- **Conflicting policy objectives** – governments of all political persuasions face conflicts and trade-offs when trying to achieve their macro and microeconomic objectives, e.g. attempting to redistribute income by taxing high income earners may reduce work incentives, worsening other economic targets.

23 ECONOMICS OF EDUCATION

In this section of the study companion we consider the market failure that can arise from education and the issue of tuition fees for students in higher education

23.1 The Private and Social Benefits of Education

Private Benefits of Education	Social Benefits of Education
The fun and enjoyment of learning	A more literate and intelligent society
The satisfaction / benefit from enjoying a student lifestyle at university	Contributes to international competitiveness of economy – not least because of the growing importance of high-knowledge sectors in international trade
Higher expected earnings in work – a degree is a signalling mechanism for employers + higher productivity and reduced risk of unemployment for well qualified graduates	Higher tax revenues – can be used to fund other socially beneficial government spending programmes
Evidence from the UK suggests that the private returns (benefits) of a degree are substantial: for example, Blundell (2000) estimated that the average return to completion of a first degree for a cohort of 33-year-olds in 1991 was around 17% for men and 37% for women compared with people with A levels as their highest qualification	Social benefits from having more doctors and teachers and scientists to provide public services
	Improvements in the occupational mobility of labour leading to lower structural unemployment

23.2 The Debate over Tuition Fees

The government has set a target of getting "towards 50%" of people under the age of 30 into higher education by 2010. Under its plans, annual tuition fees, currently set at £1,100, would rise to a maximum of £3,000 from 2006. But families earning less than £30,000 would still get help with the first £1,100 of fees

From 2004, students with family incomes of less than £20,000 will get an annual maintenance grant, calculated on a sliding scale (i.e. it is means-tested). Students whose families earn under £10,000 will receive £1,000 a year

23.3 The Loans and Tuition System

Under the new system, students will get a grant of £1,000 a year if their parents earn less than £10,000. About 60% of students will be exempt from fees. There will be no increase on interest on loan repayments. Interest will increase only by the level of inflation. Payback of tuition fees will be deferred and will start when the graduate earns more than at £15,000. Repayments will be waived for some public sector workers –raising some interesting questions of equity.

Over past two decades ratio of students to staff in UK universities has doubled, real resources per student have halved, real academic pay has stagnated. The UK spends 1.1% of GDP on higher education compared with 1.6% in the OECD and2.3% in the USA (even the public sector in the US spends more than the UK.

23.4 Arguments For and Against Tuition Fees

Arguments for introducing tuition fees	Arguments against tuition fees
The 'benefit-pay-principle'	A tax on learning? Equity and the educational divide
University is a valuable and expensive privilege. Why should something that is rewarding be free?	Only 7% of children from families in the lowest social class currently go to university – tuition fees will make it harder for relatively poor families to fund a degree. This will widen **educational inequality** and create a **widening of the two-tier education system**
It is equitable for students to make a financial contribution to their degree teaching – they stand to gain from a degree education is an investment and it is rational for students to borrow to finance such investment	Top up tuition fees or a graduate tax will raise extra revenue – but they are not an alternative for a higher level of government funding designed to increase education spending as a share of GDP
Education can be viewed as a form of investment by students, under which they forgo current earnings in return for higher future earnings	

Arguments for introducing tuition fees	Arguments against tuition fees
Extra funding for facilities, teaching and research	Student debt
Tuition fees will provide extra finance that will allow the government to fund an expansion of the number of students able to enter higher education	Tuition fees will lead to a huge **surge in student debt** and hardship which in turn will have negative economic and social consequences
	Means-testing is costly to monitor and can create disincentive effects for many students
Means testing to protect access for poorer students	Social benefits (externalities) argument
Access to higher education to people from less privileged backgrounds can be protected. Tuition fees can be means-tested to offset the danger that fees will hit lower income students hardest (see details below)	The benefits to participation in higher education accrue not only to the individual graduate but also to society at large. However, these `external benefits' to HE may not be considered by the individual when they are deciding whether or not to go to university; instead, they concern themselves only with their private costs and benefits (market failure can result)
Improvements in dynamic efficiency	Limits to the market – tuition fees no answer
Fees will encourage students to be more selective in the courses they choose and will stimulate an improvement in teaching quality if universities are to keep student numbers high and remain viable - tuition fees make parents and students ask hard questions about the purposes of higher education	A graduate tax exhibits no relationship between the cost of the course attended and the amount repaid by the student. It therefore introduces no `market-based' element into the HE sector in terms of students choosing between courses and institutions based on the various prices of attending them
Research and economic competitiveness	Uncertain flow of tax revenue
Extra funding is needed for universities to maintain high levels of research – long term macroeconomic benefits for the economy	The amount that graduate taxes / tuition fees will raise is uncertain because it depends on the future earnings of graduates once they enter employment
Progressive system of tuition fee repayment	Education as a basic economic and social right
Repayment is through the income tax system - higher income earners will repay their debt more quickly.	Belief that access to university should be available to people who qualify independent of their ability to pay (a value judgement) – i.e. education as a right
	Impact on demand for certain degrees
	It is feared science and engineering - among the most expensive courses to run because of equipment costs and specialist staff – will see a fall in demand – long term damage to our manufacturing competitiveness

24 ECONOMICS OF HEALTH CARE

24.1 Introduction

The issue of health provision in the UK is nearly always at the top of the political agenda. Millions of people buy health-care products every week – most of them including over-the-counter pharmaceutical products such as painkillers and first aid equipment are bought and sold freely through the market mechanism. Likewise a sizeable and growing percentage of nursing care is provided by the private sector. But the bulk of major health services, including primary and secondary care is provided through the National Health Service and the NHS receives a huge amount of government spending funded through general taxation every year. Are we getting value for money from our state provided health service? How best can the NHS or the private sector meet our changing health needs and wants in the coming years? These are hugely important economic as well as political questions.

24.2 Equity and Efficiency in Health Care

24.2.1 Economic Efficiency

Consider two main types of efficiency – allocative and productive:

- Does the health care provided in Britain meet people's changing needs and wants (i.e. do we achieve allocative efficiency?)
- Is health care provided at the lowest possible cost per treatment (i.e. do we achieve productive efficiency?) or could improvements be made in the efficiency with which health services are provided for millions of people?

24.2.2 Equity

Are people's health needs met by health treatments on the basis mainly of clinical need or alternatively based on an ability to pay for health services? Are health outcomes reasonably equal across localities, regions, ethnic groups, age groups and by gender? The issue of equitable provision of health is a very important ongoing issue

24.3 Market Failure in Health Care

What might cause market failure in the provision of health services?

- **Imperfect information** among health care providers and consumers - Consumers may under-value the longer term private benefits of health care – due to information failure (or 'patient ignorance'). Health providers (doctors, consultants etc) have more specialised information than consumers – an example of asymmetric information.
- **Lack of adequate insurance:** A second cause of information failure is that it is virtually impossible for people to predict their future health needs. Sudden illness or injury may require extensive and expensive medical care for which most people are unlikely to have adequate health care insurance. Indeed the insurance market will not provide cover for all groups of people. High risk individuals may find it impossible or extremely expensive to get appropriate medical insurance if the market was the only provider of health care. The 'failure' of health insurance companies to provide cover for high risk groups is an example of '**missing markets' –** another cause of market failure
- **Externalities arising from health care provision**: Health services are normally assumed to be merit goods providing a private benefit for people who consume them and additional external benefits for society as a whole. The private sector may under-provide and under-consume health care services because producers only focus on their own private benefits and costs and likewise individual consumers of health care services.
- **Inequalities in access to basic health care**: There are large and deep-rooted regional and local differences in the quality and quantity of health care available (i.e. so-called "postcode prescribing"). Millions of people are wholly dependent on the NHS for health care– they have no hope of being able to fund private health insurance. If people were required to pay for more treatments they would often be unable to afford them. It is argued that on simple grounds of **equity**, most health care treatments should be made available 'free at the point of need' rather than based on whether people have the financial resources to pay for them directly.
- **Monopoly power among health care suppliers:** if there was a wholly free market in providing

health care, it is likely that in the long run, several dominant health care providers would emerge raising concerns about increasing market concentration and the opportunities for these firms to exploit their monopoly power. Health care is not something that is easy and cheap for consumers to shop around for searching for the best service at the right price.

24.4 How should Health Care in Britain be Funded?

The fundamental policy question regarding health care in the UK is this: Should it remain essentially funded by the tax system and provided mainly free at the point of need?

The NHS will always face the problem of **resource scarcity** because **demand for health care exceeds the available supply**. The Labour government is committed to significant increases in real spending on health + share of health in total GDP.

The main issues are:

- The ways to improve the efficiency of health service delivery
- Policies to reduce obvious health inequalities in the UK
- The funding options for health care in the long run – should health care continue to be tax funded or should user charges be extended?

24.5 NHS Spending – Long Term Trends

Between 1975 and 2000 health care expenditure as a % of GDP rose from 5.2% to 7.1%. But the UK remains one of the lowest spenders on health care among the major industrialised countries.

24.5.1 Fundamental Principles of the National Health Service

The main aim of the NHS is to provide a comprehensive, high quality service available on the basis of clinical need and not ability to pay. The Fundamental building blocks of the NHS are as follows:

- Providing a national universal (comprehensive) service
- Health care free at the point of use
- Medical care is not based on ability to pay

24.5.2 The Economic and Social Importance of Health Care

- **Quality of Life and Poverty**: Health and well-being in childhood affect educational attainment with consequences for people throughout their lives. Ill health in adulthood is associated with poverty and long periods out of work
- **Employment**: The NHS is the largest employer in UK. After social security payments, health is the biggest single component of government expenditure. 15 per cent of tax and National Insurance Contributions (NICs) go to pay for the health service.
- **Productivity**: The health service also affects the productivity of business with almost half of all NHS spending allocated to people of working age. Ill health imposes a restriction on the productive potential of the economy. Around 2 per cent of working days are lost due to short-term sickness, while more than 7 per cent of the working age population is unable to work due to long-term sickness or disability costing over £12 billion a year in welfare benefits. Workplace absence cost British business over £10 billion in 1999
- **Higher GDP/Economic Growth and Standard of Living**: If average life expectancy could be increased by five years (i.e. to Japanese levels) then UK real GDP could be between £3 billion and £5 billion a year higher.

24.5.3 Fundamental Problems Facing the NHS

- **Persistent resource crises**: Resource problems are the inevitable consequence of under-funding and under-investment in the health service over many years – affecting the quality and quantity of the capital stock available to health providers
- **Hospital waiting lists**: There are persistent delays in people receiving appointments to see consultants and delays in receiving emergency treatment
- **Problems in recruiting sufficient well qualified staff** which leads to long hours for NHS staff and contributes to wide disparities in the quality of care and range of care from region to region

and between local health authorities.

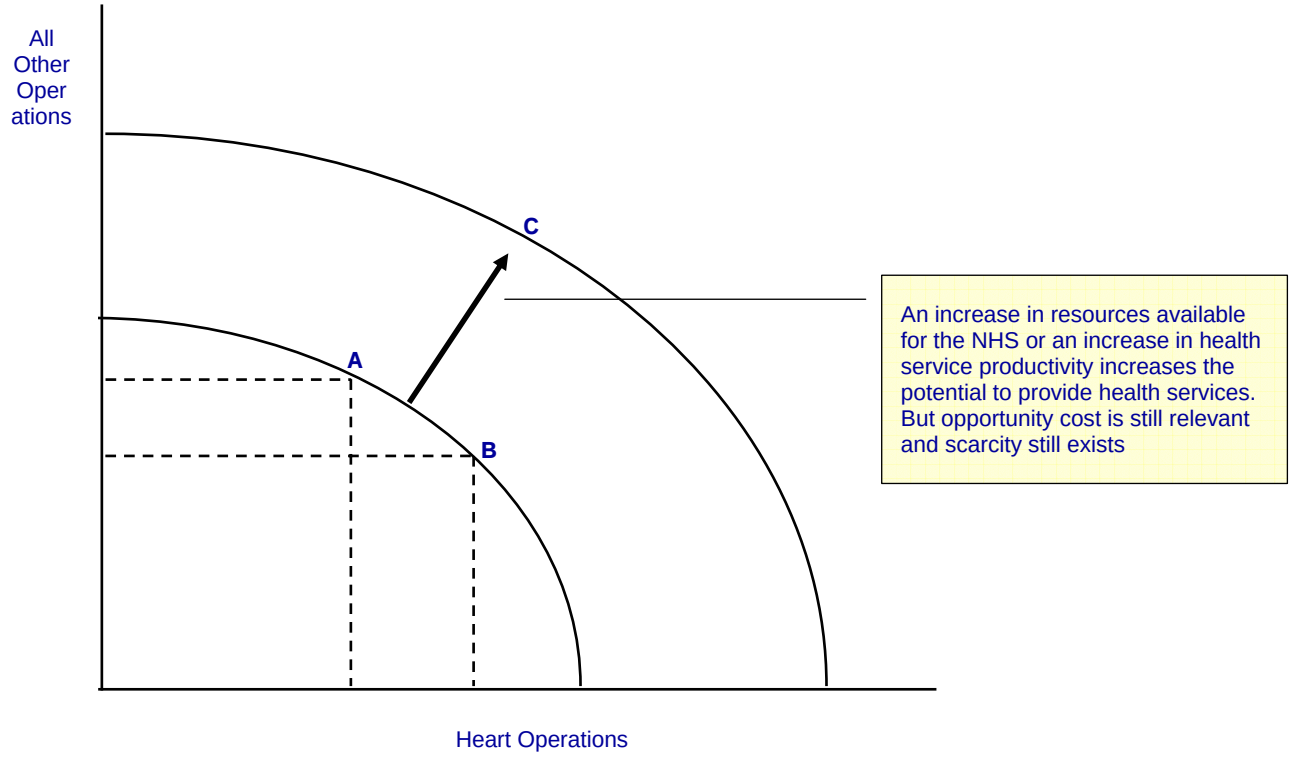
- **Meeting the Demand for Health Care**: There are growing doubts as to whether the NHS is meeting changing consumer preferences and growing health needs

24.5.4 Health Care Rationing – An Inevitable Process

Health rationing occurs because **demand for health care always outweighs supply**. In a free market, markets match supply and demand by altering price. This form of rationing relies on the simply fact that post-tax incomes are unequal and that those households on relatively low incomes will be the first to be priced out of the market.

Rationing in the NHS is inevitable - no amount of resources from the Government funded by taxation could possibly meet all of our demands for health care when the NHS system remains based on the fundamental principle of most health services being free at the point of need.

In the diagram below, even if the government invests higher levels of money into the NHS system permitting an outward shift in the PPF for health care services, there is still an issue of scarcity to resolve even though the total "output" of the NHS can rise as a result.



The NHS currently rations health resources in a variety of ways

- **Government rationing**: Ministers and Parliament decide on the overall size of the NHS budget thus dictating the type and volume of care the NHS can provide
- **The National Institute for Clinical Excellence (NICE)** contributes to rationing decisions by advising the NHS on clinical and economic benefits and costs of certain health care interventions
- **Health authorities and primary care groups** allocate money to particular disease/treatment areas. Treatment decisions for individuals are made at the clinical level by health care professionals

24.5.5 Key Factors Putting Increased Financial Pressures on the NHS

- Developments in medical technology and new treatments
- **New drugs** (often very expensive) including drugs that reduce the "risk" of disease rather than the symptoms of illness – e.g. statins to lower cholesterol or anti-hypertensives to reduce the likelihood of strokes. Pharmaceutical spending is now 13% of total spending on health care in

the UK

- **New surgery options** + cost of after care
- **The increased costs of staffing in the NHS** (the NHS is a highly labour intensive industry)
- **Growing health problems** including increased incidence of diseases associated with affluence and the health issues following an increase in relative poverty – for example the costs of treating smoking related diseases and the costs of treating illness associated with rising levels of obesity
- **Long term change in age structure of the population** - The cost of health care rises dramatically for older patients and the UK population along with that of many other countries is becoming older as average life expectancy continues to grow
- **Increasing expectations** of patients and their families – in part the result of politicians promising to achieve improved health outcomes from extra funding

Hospital and Community Health Service Expenditure: By Age of Recipient, 1999-2000

England	£ per head of population				
	0-4	5-15	16-44	45-64	65 and over
1999-00	1084.81	183.68	376.06	463.86	1371.35

Source: Department of Health

24.5.6 Demographic Change and the NHS

The UK population is growing slowly and it is ageing. The medical conditions that account for the majority of the burden of disease in the UK are primarily related to old age – e.g. cancer and coronary heart disease (CHD). Spending on health varies significantly with age. The beginning and end of life are the most expensive.

On average, around a quarter of all the health care someone consumes in their lifetime is consumed in the last year of their life. Just over a third of all spending on hospital and community health services is for people who are over the age of 65. Over the next 20 years, the UK population is projected to increase by around 5 million. The number and proportion of elderly people will rise as the baby boom generations reach older age and mortality rates fall.

24.6 Main Funding Options for Health Care

24.6.1 The Case for Maintaining a Tax Funded Health Care System

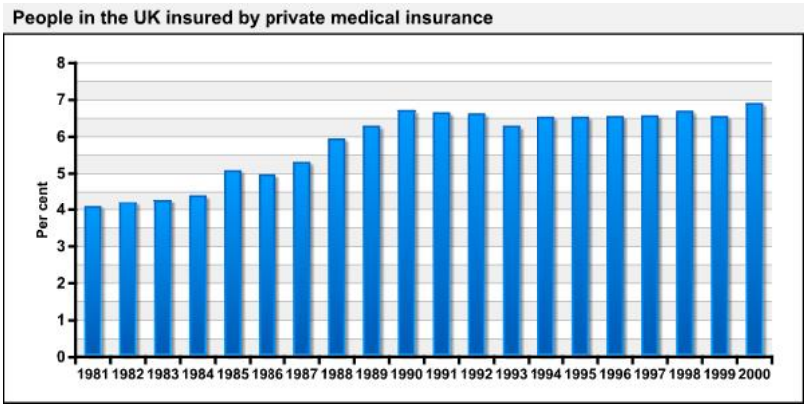
The current Government is committed to maintaining a National Health Service funded mainly through general taxation. In the March 2002 Budget, Chancellor Brown announced huge increases in real spending on health financed in part by a rise in National Insurance Contributions from 10% to 11% (effectively an increase in direct taxation).

24.6.2 Justifications for having a state funded National health Service

- The NHS can exploit huge **economies of scale** and therefore provide health services for millions of people at an efficient cost – these scale economies include the benefits of specialization and significant buying power in the purchasing of drugs from pharmaceutical companies
- Revenue to fund the NHS is drawn from a millions of taxpayers who pay mainly through a progressive system of direct taxation- satisfying the principle of **vertical equity**
- Higher income taxpayers are therefore paying more towards the general provision of health care – the NHS is a means towards greater **equality of opportunity** within society
- Basing health care treatments on being able to pay might discourage people from seeking important treatments
- The need for health care cannot always be planned – making private provision difficult to predict and insure against

24.6.3 Case for using the market mechanism / charging for some forms of health care

What are the arguments for extending the market mechanism to providing health care in the UK?



- With **user charges**, households would freely choose their own **pattern of consumption** and the **supply of health care** would then adjust to the pattern of preferences and level of demand for different treatments
- Some economists believe that the **price mechanism** is a better way of rationing health care than the current arbitrary system of queuing / waiting lists
- The demand for health treatments would be linked to the private benefit to the patient – so a wider system of charging / private sector provision would lead to a lower demand for non-essential treatments and free up resources for more urgent treatments
- Some user charges already exist within the NHS such as those for dental treatment, eye examinations and prescriptions – the principle of user charges could be extended without challenging the fundamental principles upon which the NHS is based

24.7 Further Background Reading on the NHS Debate

Centre for Health Economics (York University)

Department of Health – the NHS Plan

International Health Economics Association

Kings Fund

NHS Quality and Performance (The Guardian)

Office for National Statistics (Health and Care Information)

Office of Health Economics

Private Health Care (The Guardian)

Wanless Report into the Future of the NHS

25 DISTRIBUTION OF INCOME AND WEALTH AND POVERTY

UK has high rate of child poverty

The UK has the second highest child poverty rates in the EU. Italy has the highest rates of children living below the poverty line at 19.5%, compared to 16.2% in Britain and 2.4% in Sweden. The highest child poverty rate was in Russia, which had 23%, where the researchers found that child nutrition was often poor and more like parts of sub-Saharan Africa

Adapted from a BBC News Report, February 2001

25.1 Poverty and Market Failure

In a market economy an individual's ability to consume goods & services depends upon his/her income. An unequal distribution of income and wealth may result in an unsatisfactory allocation of resources. The relatively poor do not have access to the range of goods and service consumed by 'average' citizens resulting in social exclusion. High inequality creates social exclusion and may generate alienation, encourage crime etc – the market will not respond to the needs and wants of those with insufficient economic votes to have any impact on market demand

When we are discussing inequality and poverty, we cannot escape having to make value judgements (i.e. normative statements). Ultimately, what constitutes an 'unacceptable' distribution of income and what if anything the government should do about this is a value judgement (opinion) and as such a political issue beyond the remit of economics.

25.2 Absolute and Relative Poverty

25.2.1 Absolute Poverty

Absolute poverty measures the number of people living below a certain income threshold or the number of households unable to afford certain basic goods and services.

25.2.2 Relative Poverty

Relative poverty measures the extent to which a household's financial resources falls below an average income threshold for the economy. Although living standards and real incomes have grown because of higher employment and sustained economic growth over recent years, the gains in income and wealth have been unevenly distributed across the population.

There is little doubt that Britain has become a more unequal society over the last 20-25 years. Indeed a report published in July 2001 found that inequality had continued to grow during the first four years of the Labour Government, with as many as one children in six in Britain living in poverty.

For background research on poverty and inequality, the Child Poverty Action Group web site is highly recommended. See also the Guardian Special Report on Child Poverty in Britain.

25.3 Evidence of the Scale of Poverty in the UK

The most commonly used threshold of low income in Britain is 60% of median household income after deducting housing costs. This is a relative measure, which rises each year as average income rises. The headline figures showed that the number of people in households below the most commonly used 'low income threshold' fell by 1 million between 1996/7 and 2000/1, from 14 million to 13 million.

25.4 The Poverty Trap

The poverty trap affects people on low incomes. It creates a **disincentive** to look for work or work longer hours because of the effects of the tax and benefits system. For example, a worker might be given the opportunity to earn an extra £50 a week by working ten additional hours. This boost to his/her gross income is reduced by an increase in **income tax** and **national insurance contributions**. The individual may also lose some **income-related state benefits**. The combined effects of this might be to take away over 70% of a rise in income, leaving little in the way of extra **net** or **disposable income**.

25.5 Main Causes of Poverty

25.5.1 Disparities in Wages and Earnings Growth

Wages and earnings in some jobs have grown much faster than others. Workers in industries enjoying fast growth and high profits have benefited from above-average increases in pay and earnings. Examples include business services, the financial sector and information, communication and technology. In contrast many public sector service jobs have seen a decline in relative pay levels.

Real earnings growth is fastest for those workers with **high-level skills** whose jobs are in demand. The situation is worse for workers in traditional manufacturing where employment has declined and real wages have fallen behind other jobs. The worst paid jobs are still found in low-skill service sector industries - often where there is little trade union protection.

25.5.2 Falling Relative Incomes of those Dependent on State Benefits

State welfare benefits tend to rise in line with prices (they are index linked) rather than in line with the growth of earnings of those in work. Therefore, households dependent on welfare assistance see their relative incomes fall over time. The problem of **pensioner poverty** is particularly acute for those totally dependent on the basic state pension. Several pressure groups including Age Concern are lobbying for a restoration of the link between average earnings of people in work and the basic state retirement pension. The Labour Government has not as yet acceded to their demands – the financial cost of doing so is potentially huge.

25.5.3 Higher Levels of Unemployment

Unemployment is a key cause of poverty. Twice in the last twenty years we have seen mass unemployment in Britain and a large rise in relative poverty - the two trends are connected. A related problem is the increase in the number of workless households - households where no one is in paid employment and where members of the family are dependent on state welfare aid to survive.

25.5.4 Tax Changes of the 1980s & 1990s

Changes to direct and indirect taxes may have contributed to and increase in relative poverty. Income tax rates have fallen over the last twenty years. The top marginal rate of tax fell from 83% in 1979 to 40% in 1988 (it has remained at this level for the last twelve years). The basic rate has come down from 33% in 1979 to 22% today. These tax reductions allow people to keep a higher proportion of their earned income. The benefits from lower taxes have flowed disproportionately to people on above-average incomes.

There has been a shift towards indirect taxes in recent years including higher rates of value added tax and higher excise duties on petrol, alcohol and cigarettes. Some economists argue that these tax changes have also worsened relative poverty. In particular the widening of the coverage of value added tax to household energy supplies and the hike in tobacco duties is thought to have had a regressive effect on the distribution of income.

25.6 Government Policies to Reduce Poverty

The Labour government has said on many occasions that it wants to reduce poverty in the UK. Policies to reduce relative poverty normally focus on (a) changes to the tax and benefits system and (b) policies designed to increase employment and reduce unemployment.

When evaluating different government policies to reduce poverty consider some of these related issues:

- **The cost of schemes** such as an increase in welfare benefits or the New Deal
- **The effectiveness of policies** – e.g. the possible low "take-up" of means tested benefits by the poorest households
- Whether introducing a more progressive welfare system might damages towards wealth creation in other parts of the economy
- **Some policies might increase poverty** – e.g. disincentives to earn extra income because of poverty trap

25.6.1 Changes to the Tax and Benefits System

Increases in higher rates of income tax would make the British tax system more progressive and reduce the post-tax incomes of people at the top of the income scale. The risk is that higher rates of direct taxation may act as a disincentive for people to earn extra income and might damage enterprise and

productivity. At the 2001 General Election, both Labour and Conservative parties committed themselves to maintaining the top rate of income tax at 40%. The Liberal Democrats proposed a higher rate of 50% for people with annual earnings exceeding £100,000.

Lower "starting rates" of tax would help to reduce the poverty trap and encourage people to look for paid employment. One of the problems with this is that all taxpayers would benefit from lower starting rates of tax and increased tax allowances. Therefore it is an expensive way of alleviating relative poverty.

25.6.2 A Switch towards Greater Means-tested Benefits

Means testing allows benefits to go to those in greatest need. This would help the welfare system to target help for those households on the lowest incomes. However means tested benefits are often unpopular with the recipients. And if benefits are withdrawn at a high rate as earned income increases, there is a risk that households on low incomes will be stuck in the poverty trap and will opt to remain out of work and in receipt of welfare payments.

25.6.3 Linking the State Retirement Pension to Average Earnings Rather than Prices

This policy would help to relieve relative poverty among low-income pensioner households. Their pension would rise in line with the growth of average earnings each year. However given the demographic pressures on the welfare state (not least the long run increase in the number of people of pension age) such a strategy would be extremely expensive and put great pressure on total government spending. Other areas of spending might suffer a reduction in funding. Or the overall burden of taxation might have to increase to fund a substantial increase in spending on state pensions.

25.6.4 Special Employment Measures (including New Deal and Welfare to Work)

Government employment schemes seek to raise employment levels and improve the employment prospects of the long-term unemployed. Many schemes have been tried in the past - the latest of which is Labour's **New Deal** strategy that focuses on reducing long-term unemployment among youth and older workers. The New Deal includes employment subsidies and employment training for participants on the scheme.

25.6.5 Regional Policy Assistance

Relative poverty is often worse in areas of below average economic performance - where unemployment rates are well above the national average. The debate over the North-South divide has stayed high on the political agenda in recent years. The government may allocate increase funds for **regional policy initiatives** to attract new businesses into depressed areas and to improve the infrastructure of these regions. There are doubts though about the cost-effectiveness of regional policy funding.

25.6.6 Increased spending on education and training

The changing nature of the labour market makes it essential for workers to have the relevant **skills** to maintain their employability and increase their earnings potential. Unemployment is a major cause of poverty and structural unemployment makes the problem much worse.

25.7 The National Minimum Wage

The National Minimum Wage (NMW) was introduced in April 1999 at a level of £3.60 for adult workers. It is a **statutory pay floor** - employers cannot legally undercut the NMW. In March 2001 the government announced an increase in the NMW to £4.10 per hour for adult workers.

A minimum wage will help to reduce relative poverty for people who earn very low wages. But only a small percentage of the employed labour force is directly affected by the minimum wage.

Since 1999, the beneficial impact of the minimum wage has been concentrated on the lowest paid workers in service sector jobs where there is little or no trade union protection. Female workers have been affected more than males – thus the NMW is making some contribution to closing the long-term gender pay gap in the British economy. The NMW may help to improve the incentives for people to actively **search for work** and prompt an increase in investment in worker training by businesses affected.

There is an argument that workers in all jobs deserve a fair rate of pay for the job they do and that a minimum wage should reduce **exploitation of lower-paid workers** by some employers. The trade union Unison is campaigning for a substantial increase in the NMW to £5 per hour (or even higher)

However there are several well-rehearsed arguments against the minimum wage as a strategy for reducing relative poverty. Firstly a minimum wage may **cost jobs** in some industries. To the extent that this worsens the living standards of those affected it has a negative impact on poverty.

Secondly there is evidence that the minimum wage boosts the incomes of middle-income households where more than one household member is in work. The greatest risk of relative poverty is among the unemployed, the elderly and among single parent families where the parent is no employed. These groups do not benefit directly from a minimum wage. It might be more efficient to introduce a guaranteed minimum income (for example through a negative income tax system or the Working Families Tax Credits) to boost the disposable incomes of the poorest households.

Some people argue that relative poverty is a fact of life - indeed no government policies can hope to eliminate it - merely to reduce the scale of relative poverty and inequality. The changing nature of our labour market, cyclical fluctuations within the economy and structural changes in employment mean that there will always be "winners and losers". Indeed attempts to reduce inequality may serve to penalise enterprise and distort incentives in the labour market.

25.7.1 Evidence on the Effects of the Minimum Wage

Effects on overall employment are small / inconclusive

- Most businesses anticipated the introduction of NMW in 1999
- Productivity enhancements have kept labour costs under control
- The NMW was set at a fairly low level – even with the increase to £4.70, the NMW is less than 50% of median male hourly earnings – limiting the effects on employment
- Sustained economic growth has kept the aggregate demand for labour at a high level
- Some sectors/industries are more sensitive to a NMW than others
- Low value-added textiles, clothing and footwear facing low labour cost competition from overseas
- Leisure industry and Hotels and catering where labour costs are high as % of total costs
- Minimum wage has not had a decisive effect on relative poverty – only a small percentage of the labour force has been directly affected. But it must be seen in conjunction with the other parts of the Government's strategy to boost work incentives and incomes for low-income households

25.8 Case Study: Growing Divide between Rich and Poor

A quarter of Britain's population is living below the breadline, according to the most comprehensive study ever undertaken into poverty and social exclusion in Britain undertaken by the Joseph Rowntree Foundation. In 1983, 14% of households lacked three or more necessities because they could not afford them; by 1999 this had increased to more than 24%.

A disturbing trend is the fact that poverty rates rose at a time when the majority of people were getting richer. According to figures from the Office for National Statistics, the gap between rich and poor is now at its highest level for 10 years. This has led to a polarisation in society and created an underclass characterised by poor education, unemployment, bad health and a lack of access to services many of us take for granted, such as banking. In more than one-sixth of British households no one works and about 20% of British adults have problems reading and writing and are innumerate.

According to a recent report by the Organisation for Economic Co-operation and Development, Britain has one of the lowest levels of adult literacy in the industrialised world, with one in three young people leaving school at 16 with inadequate basic skills. Oxfam describes Britain as 'one of the most poverty-stricken developed countries in the world'.

The Government argues that statistics do not take into account the working family credit, minimum wage, a new 10% tax band and improving literacy rates in primary-school pupils. Yet it believes that poverty and social exclusion will only be eliminated with the active involvement of community organisations and business.

25.8.1 Further Background Reading on Poverty and Income Inequality

Can a Minimum Wage increase employment?

Centre for Economic Performance (Has the Minimum Wage Reduced Inequality?)

Child Poverty Action Group

Oxfam (UK)

Scottish Poverty Information Unit

Social Inequalities (Office of National Statistics)

Trades Union Congress (Inequality Research)