# A Level Economics for Edexcel

## Introduction

*A-Level Economics for Edexcel* is a comprehensive study guide to Economics at A Level.

## What can I expect?

- Clear **definitions** of key terms.
- Detailed **explanations** of key economic concepts, principles and theories.
- Fully integrated **diagrams** for each key topic area.
- End of section exam-style **questions** and exercises.
- **Answers** to all the questions can be found using the special AI chatbot on www.learn-economics.co.uk – just type in the question and AI will find the **recommended A Level answer**. The AI bot is at the bottom right of all pages on the site.
- All content has been **specially written** by A Level examiners to get you fully prepared for your external exams and in-course questions.
- The eBook follows the **Edexcel specification**, covering Themes 1, 2, 3 and 4.

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Here is a selection of Chapters

# 1.1 Nature of economics

## 1.1.1 Economics as a social science

### Economics as a social science

The word *economics* is derived from the **Ancient Greek** word *oikonomia* which translates to:

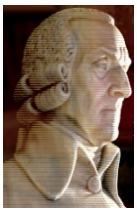
'.the study of how people manage their household - how they earn and spend their income and use resources to purchase 'necessities, comforts, and luxuries'. (Commonly attributed to Aristotle)




While modern economics includes much more than this, the fundamental basis remains the same – economics looks at how resources are best managed.

Since the early 19th Century, economics has been classified as a **social science**, along with sociology, psychology and political science. Social sciences attempt to apply the **methods of science** to analysing and explaining aspects of **human behaviour**.

An interest in 'economics' can be traced back to the poets and philosophers of Ancient Greece, including Aristotle, who wrote about Ancient Greek society and how resources were used.



However, it was not until the 18th Century that the first systematic attempt to understand economic behaviour emerged in Europe out of what was called 'political philosophy', with Scottish philosopher, *Adam Smith*, widely acknowledged as the founding father of economics. By the early 20th Century, the social sciences had become distinct subjects, with *economics* emerging as a separate and increasingly popular and influential subject.

### What do economists' study?

Economists study '**economic systems**', and the connections that exist between **economic agents** interacting within these systems. The economic agents are individuals, businesses and organisations, and governments. The role of the economist is to study and explain how these agents make best use of available resources to achieve their objectives, and how they choose between alternative uses of those resources. The term *economics* is, therefore, derived from the idea of 'making best use' of limited, or 'scarce' resources.

### Classification of economics

Modern economics is broken down into two main categories:

1. **Micro**economics - which looks at how individuals, households and businesses interact to 'solve' the economic problems they face, and how they make decisions in allocating their own resources; and:
2. **Macro**economics - which considers how whole systems are organised and how decision-makers try to achieve 'large scale' (**macroeconomic) objectives**. Macroeconomic objectives include maximising employment, keeping average process under control, and balancing payments relating to international trade.

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## How do economists work – thinking like an economist?

Economists attempt to observe and explain the behaviour of economic agents through the application of **scientific methods**.

Adam Smith is recognised as much for **his method** of work as for his interest in developing theories when he recognised the importance of being an **impartial spectator** – just like any other scientist.

## Hypotheses, models and assumptions

Pure science employs a method based on continuous **observation**, creating a **hypothesis** about something, gathering data (**evidence**) from the 'field' or through experiments to **test** the hypothesis, and then supporting or rejecting the hypothesis.

A hypothesis is a proposition about identifying the **cause** of 'something' or about its possible **effects.** Once hypotheses are **tested** they can help develop a '**theory**' of 'something'.

*Variables*

A variable is a distinct element, phenomenon or event that can change, and has an effect on something else. The **independent variable** is the cause of an event or a reaction and the **dependent variable** is the resulting effect.



***Example – chemistry***

In chemistry, a chemical can be tested to see the effects of heat or the effects of combining two chemicals. From this experiment chemists can develop and test a hypothesis about the precise reaction observed.

In the chemistry experiment, heat is the independent variable, and the reaction is the dependent variable. If a chemical reacts to heat, the cause - the independent variable - is the heat, the effect is the reaction is the dependent variable. This can be stated as *'a change in heat causes chemical X to change its chemical structure'*.

In economics, a single element can be both an independent **and** a dependent variable. For example, a change in the **price** of a good – such as a change in the price of a brand of smartphone (e.g. Apple) – can be dependent on a change in consumer incomes, and the change in the price can alter the demand for an alternative smartphone (such as one produced by Samsung).

In economics, the factors that affect a variable are called **determinants**.

## Economics is not a pure science

While social sciences do not claim to be pure sciences, the approach adopted in economics shares many of the same steps and methods.

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Let's compare a pure science with economics.

| | *Pure science* | *Economics* |
|---|---|---|
| 1. Impartial approach | ✓ | ✓ |
| 2. Something of 'interest' is observed | ✓ | ✓ |
| 3. A hypothesis is made to start the process | ✓ | ✓ |
| 4. Possible causes (and effects) are identified | ✓ | ✓ |
| 5. Independent and dependent variables are identified | ✓ | ✓ |
| 6. Assumptions are made | ✓ | ✓ |
| 7. Experiments are undertaken, and repeated | ✓ | ✗ |
| 8. Evidence is gathered | ✓ | ✓ |
| 9. Models are built and tested | ✓ | ✓ |
| 10. Theories are developed | ✓ | ✓ |
| 11. Predictions are made | ✓ | ✓ |
| 12. Assessment - Can new events or evidence be explained by exiting theories, or are new ones needed? | ✓ | ✓ |

So, as a social science, economics 'ticks' most of the boxes, but, like other social sciences it is limited in the methods it can use – especially as economists cannot easily conduct experiments, and they must rely on building simple models and using reasoning.

## Why experiments are difficult

For ethical and practical reasons experimentation with people is generally not how economists gather information and generate theories. For example, it would not be possible, acceptable, ethical or lawful to conduct a controlled experiment in which individuals are subjected to price increases of a particular food just to observe the effects. The economist cannot say *'let's raise the price of bread to test how consumers deal with that price rise'*.

## What about 'behavioural' economics?

Over the last 20 years economic theory has successfully used methods first developed in psychology to understand consumer behaviour. For example, human behaviour is often influenced by biases towards particular choices – called *'cognitive biases'*.






Examples include the *status quo bias* – if I have bought and used *product X* I'll carry on buying it (even if, rationally, it is not the most suitable); or the *anchoring bias*, such as relying on the first piece of information were receive, which is the anchor to judge other information.

These biases can be tested through experimentation; hence economists can use experiments in limited situations.

## How do economists use models?

Economists have developed ways of working to test hypotheses which do not rely on experiments. They do this by building representations of the world - called '**models**' - which can be tested without experimentation. For this to happen, economists substitute **assumptions** for controlled experiments.

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For example, an economist might have an interest in **mobile phone prices** and starts with a hypothesis that an increase in the price of Apple phones by 5% will reduce demand by only 2%, on average and in all geographical regions.



The economist will then **gather data** from a variety of sources (retail outlets from a range of countries, from online suppliers, research organisations, and the manufacturers themselves) to see how true this is.

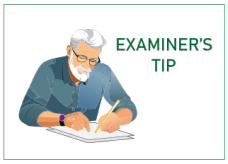
The economist can then draw up another **hypothesis about the cause** of the relationship discovered, and so on. Different **variables can be tested** to see how important they are – for example, a person's income, their general preferences, the alternatives and, of course, the price, can all be tested to see how significant each variable is.

Eventually, the results of the **testing and verification** can help build a picture which can lead to the development of a **model** of what determines demand. The model can then be applied to other products, which can then lead to a **theory** of demand.

Any hypothesis will have to include **assumptions** about these other factors (determinants) – namely, the assumption that there is no change to other factors, such as consumer incomes. This is referred to as the ceteris paribus rule.

## The ceteris paribus rule

The ceteris paribus rule states *that all other things remain the same*. This is used whenever attempting to demonstrate the link between economic variables. Without this assumption it is impossible to develop and test a hypothesis.




Use the ceteris paribus rule when explaining the effects of any change in an economic variable

Economists are always making and testing assumptions in order to develop models to explain connections.

All economic theory relies upon assumptions – commonly called *'if…then'* assumptions.

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## Test Yourself

# Questions Set 1/1

### The nature of economics

1) Define the following key terms:
   a) Economics (according to Ancient Greeks)
   b) Economic agents
   c) Hypothesis
   d) Social science
   e) Ceteris Paribus

2) Explain the difference between:
   Independent and dependent variables used in economics (support your answer with examples).

3) To what extent is economics a science?

4) Assess the role of experiments in economic research.

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## 1.1.2 Positive and normative economic statements

### Positive statements

The scientific approach adopted by economists involves making **positive statements** that can be tested.

Positive statements are those that can be verified or rejected. For example, stating that ".. house prices have risen in London by 6% over the last year.." is a statement that can be tested.

The most 'useful' positive statements contain variables that can be **measured** (or quantified). This is because quantifying is the way that statements can be tested and verified.

### Normative statements

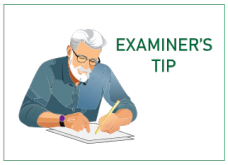
In contrast, normative statements are based on **value judgements** which cannot be verified or falsified. A value judgement is a judgement based on what a person believes to be true, or should happen. For example, statements suggesting that something 'ought to' happen, or that something is 'unfair', are normative because they are based on value judgements.

For example, stating that '..the recent rise in house prices is unfair to the poorest..'. is a normative one.

This statement cannot be tested because it is not based on anything testable. If there is an agreed definition of fairness, and it can be measured, then it might be possible to test a statement about 'fairness'. For example, a rise in house prices might alter the distribution of income between different income groups. However, as it stands, this statement is normative, because it is impossible to verify and based on a value judgment.

Unlike positive statements, normative statements do not tend to contain any reference to the possibility of measurement.

Like all sciences, economics can only move forward by adopting a positive approach and by generating hypotheses that can be tested and scrutinised.




Do not say that normative statements are 'matters of opinion' – this will earn no marks. Saying they are based on a 'value judgement' will earn marks.

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## Test Yourself

# Questions Set 1/2

### Positive and normative economics

1) Define the following key terms:
   a) Value judgement
   b) Verification
   c) Evidence

2) Explain the difference between: Positive and normative statements (support your answer with examples).

3) To what extent are normative statements simply a matter of opinion?

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## 1.1.4 Production possibility frontiers

A production possibility frontier, or PPF, (also known as a production possibility curve or boundary) shows the **maximum possible combination** of two goods that can be produced using all an economy's resources. These goods can be combined in multiple ways, and PPFs are an effective way to show these combinations.

PPFs are used to explain several economic concepts, including efficiency, choice and opportunity cost.

***Example***

The following table (called a schedule) show the choices that can be made in a hypothetical island economy where only two commodities can be produced from the available land - in this case, coffee beans and sugarcane. Production is measured in tonnes.

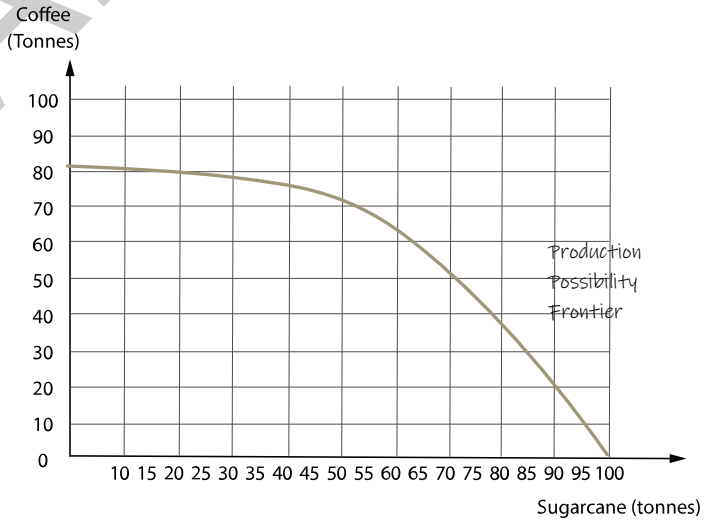
The schedule below shows all the possible combinations when the economy uses all its scarce factors of production – land, labour, capital and enterprise.

When it produces no sugarcane, it can produce 80 tonnes of coffee. When it produces 10 tonnes of sugar cane it must sacrifice 1 tonne of coffee beans (80 to 79). The possible combinations are shown in the schedule and illustrated through the production possibility frontier (PPF) diagram.

Production possibility schedule for sugarcane and coffee




| Coffee (Tonnes) | Sugarcane (Tonnes) |
|---|---|
| 80 | 0 |
| 79 | 10 |
| 77 | 20 |
| 74 | 30 |
| 70 | 40 |
| 65 | 50 |
| 58 | 60 |
| 50 | 70 |
| 40 | 80 |
| 25 | 90 |
| 0 | 100 |




We can see that, as **more sugarcane is produced**, increasing amounts of the economy's resources must be converted from the production of coffee. As this happens, **fewer and fewer coffee beans** can be produced, to the point where all the island's resources are producing 100 tonnes of sugarcane, and no coffee beans are being produced.

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The **'rate'** at which coffee beans must be sacrificed **increases**. At first, those resources, including land and labour, which are best suited to sugarcane production (and least suited to coffee production) will be transferred. Hence, the lost output of coffee from producing the first quantities of sugarcane is very small – just 1 tonne of coffee is lost to produce 10 tonnes of sugarcane.

This sacrifice is more correctly called the opportunity cost of the decision.

## How we can show opportunity cost with PPFs

Opportunity cost is commonly defined as:

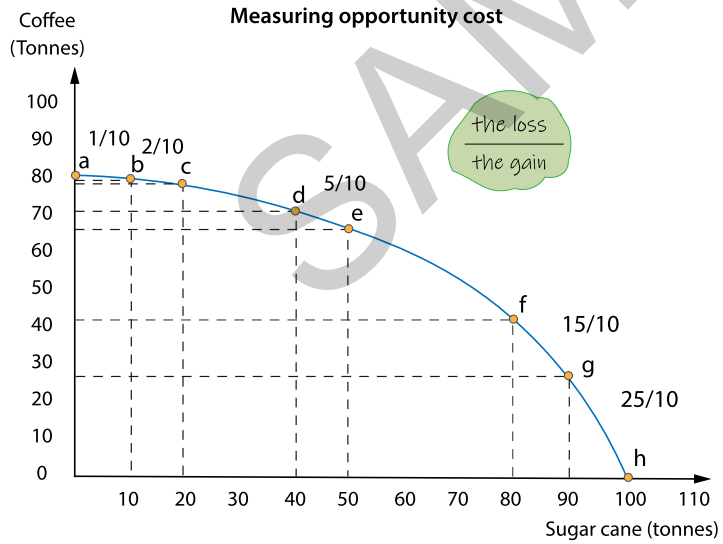
> *the 'next best' alternative that is given up as a result of the decision.*

Let's look at the 'starting point' – where no sugarcane is produced and 80 tonnes of coffee beans are produced and then increase sugarcane production by 10 tonnes.

In this case, the 'next best' is not reducing coffee by 1 tonne at all and not producing 10 tonnes of sugarcane. So, if the island does produce its first 10 tonnes of sugarcane, the opportunity cost is 1 tonne of coffee.

> *But opportunity cost is always defined in terms of what is sacrificed to **gain one extra unit** of something. So, we need to find the **opportunity cost of 1 tonne** of sugarcane (and not 10) - if we **divide the loss by the gain,** we get the **opportunity cost per unit**. Which is:*
>
> *1/10, or 0.1.*

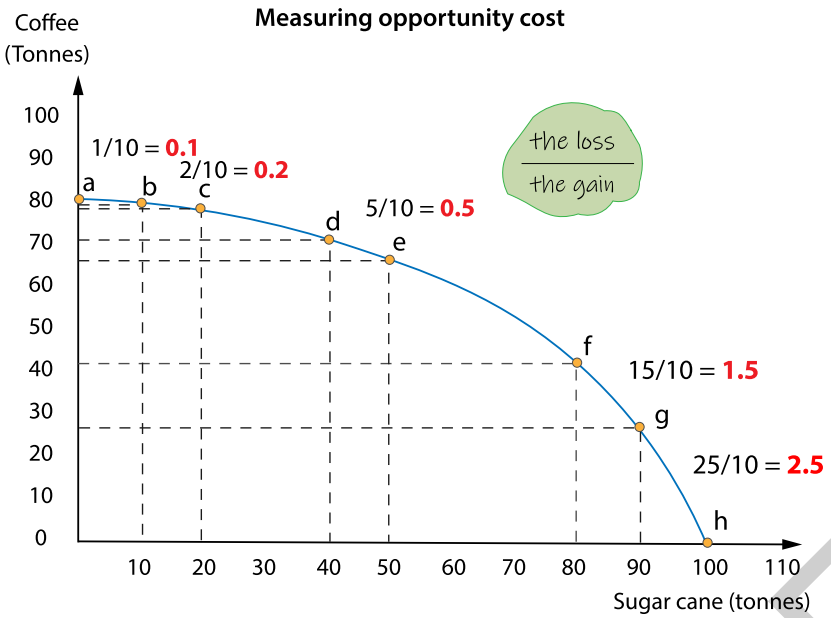
We can now express the opportunity cost of producing the first tonne of sugarcane as 0.1 tonnes of coffee.




Given that opportunity cost is already a negative concept, it is simply expressed as a number. Hence, the opportunity cost is 0.1 tonne of coffee.

If we look further at the figures and the graph, we can see that the opportunity cost increases as more sugarcane is produced.

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## Analysis of the diagram

Between point 'a' and 'b' the sacrifice is a **loss of 1 tonne of coffee to gain 10** tonnes of sugarcane – hence, the ratio is 1/10, or **0.1**. This figure increases as we move to the range, 'b' to 'c', with a ratio of 2/10, or **0.2** and to 'd' to 'e' where the ratio increases to 5/10, or **0.5**. Diagrammatically, the gradient of the PPF becomes steeper as we increase the production of sugarcane, with last ratio, where the PPF is steepest, and where 25 tonnes of coffee are sacrificed to produce 10 tonnes of sugarcane, with an opportunity cost of **2.5**.

### Diminishing returns and opportunity cost

There is an underlying principle that economists assume affects all situations when resources are allocated and reallocated between competing uses.

> *Assuming the quantity of resources is fixed, as more resources are added to production, the marginal (additional) gain (or 'return') will eventually diminish.*

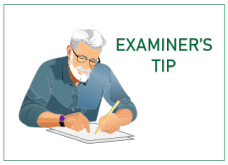
The principle of **diminishing marginal returns** suggests that, at first, the movement of resources sees a rapid increase in the production of another good from just a small transfer of resources - the resources most suitable to be transferred are redeployed first. But, more and more resources must be transferred from one good (good Y) to the see the same marginal gain in the production of another good (good X.)

It is the diminishing returns that increase the opportunity cost of producing goods.

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### So, what does the principle of diminishing returns tell us?

While the island example is a highly simplistic one, the principle of diminishing returns is a powerful one, and is widely used across many topics in microeconomics.

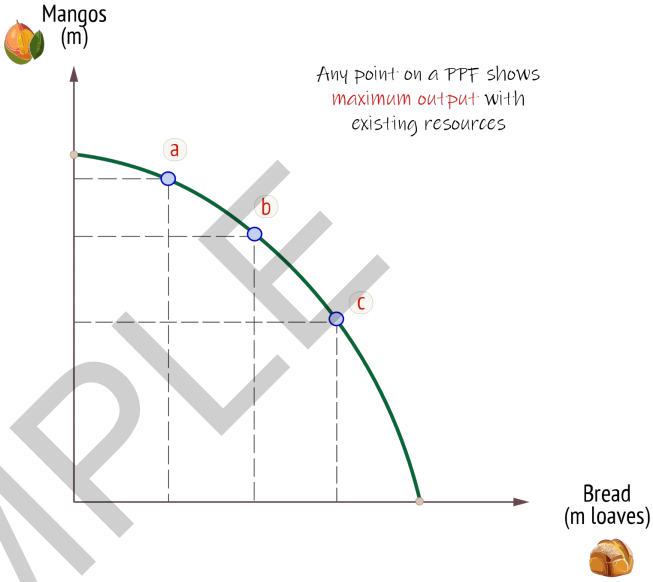



The law of diminishing marginal returns is a central concept that you can use in many topics and exam questions. However, you rarely need to prove it numerically.

## Applications of PPFs

### Maximum output

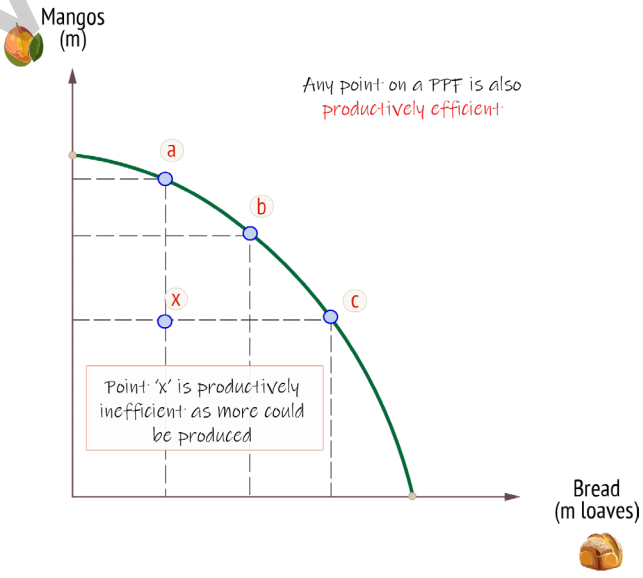
PPFs can be used to show the maximum output that is possible when an economy uses all its scarce resources. In this example, the two goods are mangos and bread.




### Showing efficiency

Taking the same example of mangos and bread, the use of scarce resources to produce these goods is the most productively efficient when the economy is operating on the edge of the PPF.

Any point inside the frontier is productively inefficient because more could be produced, of one or both goods.




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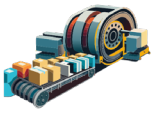
### Capital goods, consumer goods and economic growth

Consider another example of an economy that can produce either consumer goods or services, and capital goods and services.

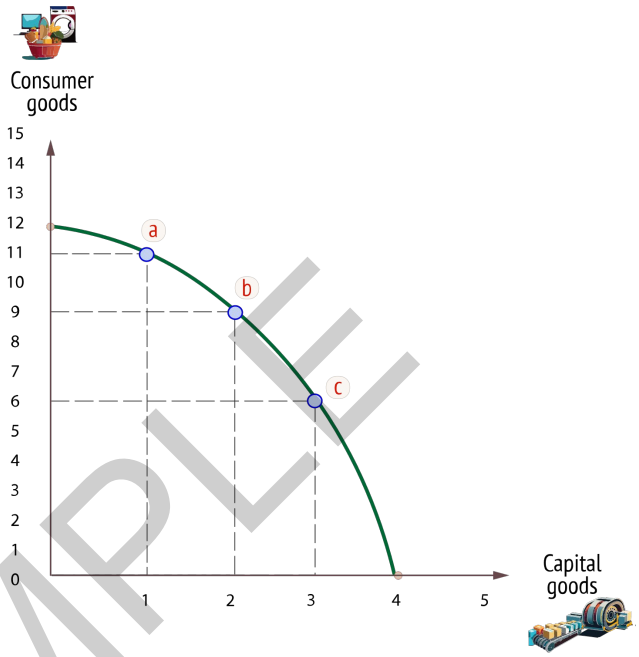
**Consumer goods** and services are those consumed directly by households, such as foods, beverages, electrical goods, transport and energy. Consumer goods can be durable (last a long time) such as cars and computers, or non-durable, such a food.

Production possibilities for consumer and capital goods





| Consumer goods (m) | Capital goods (m) |
|---|---|
| 0 | 4 |
| 6 | 3 |
| 9 | 2 |
| 11 | 1 |
| 12 | 0 |




**Capital goods** are used by firms to produce other goods and services and include factories, plant, equipment, premises and technology. Capital goods are assets that are used to make or distribute other goods, and includes machinery, premises and technology. Capital goods are also called 'investment goods'.

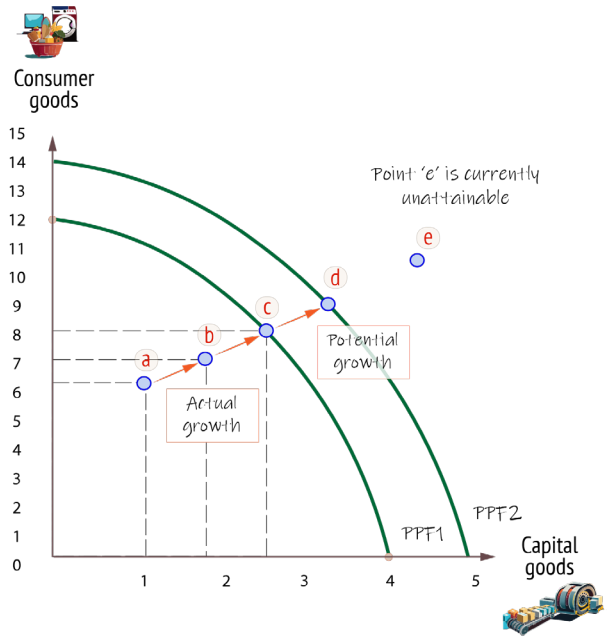
It is common to lump all goods and services into these two categories. All economies must make decisions about whether to focus on the short-term benefits of more consumer goods and services, or whether to allocate resources to future production. Here, the trade-off involves a loss of short-term benefits in terms of standards of living to achieve long term gains in terms of growth and increased standards of living in the future.

## Showing growth

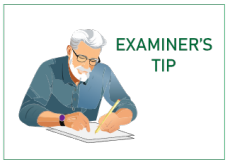
### Actual and potential economic growth

Actual growth in an economy is represented on a PPF with a movement outwards, from the origin. Hence, the movement from 'a' to 'b' and 'b' to 'c' represents an increase in what the economy can produce with its existing factors.

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However, if there is an increase in the quantity of quality of factors of production then the maximum possible production of goods increases as the PPF shifts from PPF1 to PPF2. Hence the movement from 'c' to 'd' represents an increase in potential growth. Point 'e' represents a combination of consumer and capital goods that is unattainable.




Use diagrams to help you explain economic concepts. They can earn you three types of mark – knowledge, analysis and application marks!

## Shifts in PPFs

PPFs can shift in several ways:

### Outwards

This can happen if an economy increases the **quantity** or the **quality** of factors it has. For example, new technology affecting all industries would shift the PPF outwards, as would an increase in the working population, or migration of labour.

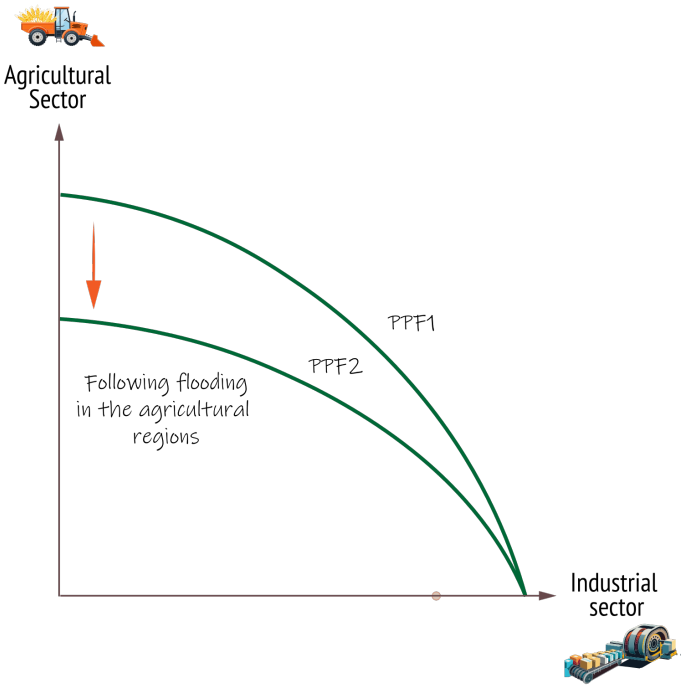
### Inwards

An inward shift in a PPF means that existing resources are being depleted or becoming less useful. For example, this could be because of a **loss of non-renewable resources**, a reduction in the quantity or quality of labour, or from climate change.

### Showing an asymmetric (unbalanced) shock

A PPF can pivot from one point on either the X or Y axis if an event happens that only affects **one axis**. For example, erosion of soil from flooding in one region may affect an economy's agricultural sector but may have no effect on its industrial sector located in a different region.

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Agricultural Sector
PPF1
PPF2
Following flooding in the agricultural regions
Industrial sector

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## Test Yourself

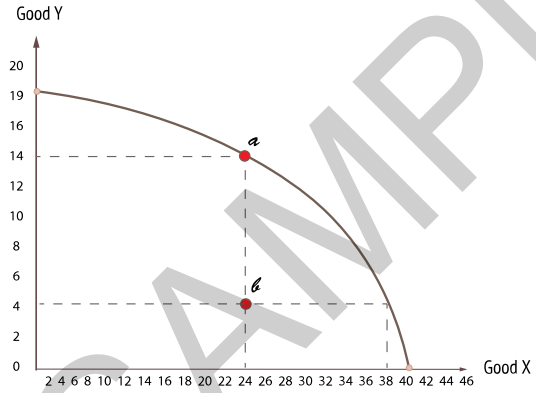
# Questions Set 1/4

### Production possibility frontiers

1) Define the following key terms:
   a) Maximum potential output
   b) Actual output
   c) Marginal returns
   d) Opportunity cost ratio
   e) Consumer goods
   f) Capital goods

2) True or false?
   a) Any point on a PPF is productively efficient.
   b) Any point inside a PPF is impossible to produce.
   c) Any point on a PPF is equally desirable to a country's citizens.

3) Look at the diagram below:
   a) Explain why point 'b' is inefficient.




   b) What is the opportunity cost of producing 40 units of X rather than 38?
   c) Identify three factors that can make a PPF shift outwards.
   d) With the help of your own diagram, explain what would happen to a PPF if new technology was introduced that improved the efficiency of producing Good Y but had no effect on the production of good X.

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4) Questions **a-d** are based on the following PPF schedule.
Consider the information on Utopia, a hypothetical economy that can produce either rice, or beans from all its scarce resources. The figures are in tonnes.

| Rice (m) | Beans (m) |
|---|---|
| 100 | 0 |
| 90 | 20 |
| 80 | 36 |
| 70 | 48 |
| 60 | 58 |
| 50 | 66 |
| 40 | 72 |
| 30 | 77 |
| 20 | 81 |
| 10 | 83 |
| 0 | 84 |

a) Plot the PPF for Utopia, with rice on the Y-Axis, and beans on the X-axis. Scale up to 120 for rice and 100 for beans.
b) What is the opportunity cost of increasing production of rice from 30m tons to 40m?
c) Compare the opportunity cost ratio of increasing output of rice, from 30 to 40 (m) and from 80 to 90 (m) – comment on your result.
d) Comment on the situation experienced by Utopia if it produces 50m tonnes of rice and 50m of beans.

Questions **e-g** are based on the following PPF schedule. Consider the information for a small pacific island economy that can produce either tea or oranges. The figures are in thousands of kilos.

| Tea | Oranges |
|---|---|
| 100 | 0 |
| 90 | 42 |
| 80 | 76 |
| 70 | 105 |
| 60 | 128 |
| 50 | 146 |
| 40 | 160 |
| 30 | 170 |
| 20 | 178 |
| 10 | 185 |
| 0 | 190 |

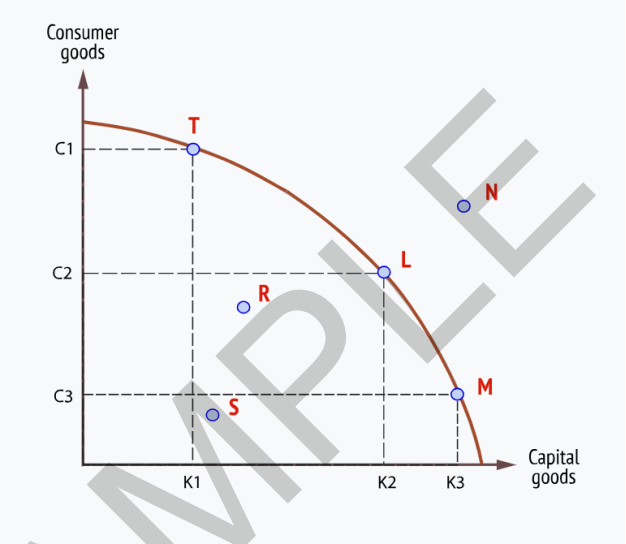
e) Plot the PPF for this economy, with tea on the Y-Axis, and oranges on the X-axis.
f) What is the opportunity cost to this economy of producing 185 units (000 kilos) of oranges?

SAMPLE

g) Use economics analysis to explain why a typical PPF is non-linear (it is bowed outwards from the origin). You may use the internet to help you obtain an answer.

For questions **h-n**, look at the diagram below. Are the following statements true or false?

h) R has the lowest level of unemployment.
i) N is currently not achievable.
j) A movement from M to L has an opportunity cost of K3 to K2.
k) As more capital goods are produced, the opportunity cost falls.
l) A movement from R to S is impossible.
m) T would have the lowest standard of living in the short run.
n) M is likely to create the highest standard of living in the long run.




5) Create five multiple choice questions on this topic, with answers.

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## 3.3.4 Oligopoly

An oligopoly is a market in which a **few firms dominate**, and an oligopolist is one of these dominant firms. While 'a few' is an imprecise number, economists generally look at the market shares of the top three, four or five firms - if these firms control most of the market, then the firms are oligopolists.

### Key characteristics and features of oligopoly

#### Concentrated markets

Markets dominated by just a few firms are called 'concentrated markets'. The degree of concentration can be measured by using **concentration ratios** (or CRs) can be used to help identify whether the firm operates under conditions of oligopoly. Concentration refers to the extent to which market power is in the hands of a small number of firms. Concentration ratios show the combined market shares of the top few firms as a ratio of the total market size, expressed as a percentage.

$$\frac{\text{Combined market share of top few firms}}{\text{Total market size of all firms}} \times 100$$

When markets are highly concentrated the conduct of firms and their efficiency is likely to be sub-optimal.
For example, the global music shares of the top firms (in 2019) were:

Universal Music, 31%
Sony Music, 21%
Warner Music, 18%
Independents, 27%
Artists Direct, 3%
Source: MIDIA (2019),

This makes the three-firm CR 70% - indicating oligopoly conditions.

#### The H-H Index

The Herfindahl–Hirschman Index (HH-Index) is an alternative measure of market concentration in an industry. It is calculated by adding the squared market shares of the top few firms in a market. The higher the number, the greater the degree of concentration.

The maximum figure possible is for a single monopolist, which is 100 (%) x 100 (%) =10,000.

For example, let's assume that the market shares of the largest three firms in a hypothetical market are: Firm A = 35%, Firm B = 25%, and Firm C = 20%.

The H-H Index would give 352 + 302 + 252, which equals:

1,225 + 625 + 400 =2350.

#### Example - UK Supermarkets

The top four UK supermarkets in 2022 by market share were Tesco, with 26.9%, Sainsbury, with 14.6%, ASDA with 14.1%, and Morrisons, with 9.1%.

SAMPLE

The H-H Index for the top four supermarkets in the UK in 2022 was 1222.

Generally, an H-H Index of more than 1400-1500 indicates a very high degree of concentration and suggests the market is an oligopoly. So, in terms of the H-H index this sector is close to reaching the threshold. A merger by any of the top 7 supermarkets would breach the HH threshold. However, even this is rather arbitrary, and would be one component in an evaluation of competition by the UK regulator (The CMA).

### Firms are interdependent

As there are only a few other competitors in the market, the **profit available** to a single oligopolist is **constrained** by the actions and decisions taken by the other firms in the market.

For example, if one oligopolist - firm A - decides to reduce its price in the hope of gaining market share, and the two other firms in the market - B and C - also reduce their prices in response, firm A's strategy will have been thwarted. An oligopolist needs to anticipate and respond to the actions and behaviour of rivals. The need to take rivals into account when making decisions is referred to as **mutual interdependence.**

Given the importance of interdependence, oligopolists face high levels of uncertainty, perhaps never being able to fully predict the behaviour of close rivals. This explains the temptation to reduce competition and the attempt to co-operate with close rivals to reduce uncertainty.

### Differentiated or undifferentiated?

Oligopolists may operate in markets where **differentiation is difficult** - such as the market for refined white sugar, or where differentiation is much easier - such as oligopolists in the motor manufacturing industry. *N.B. The Edexcel board stresses product differentiation as a key characteristic.*

### Competition or collusion?

It follows that a key feature of oligopolies is that key decisions must be made about whether firms actively compete with each other, or whether they limit competition. Competition can be reduced when firms collude with each other and act jointly to enable all firms to reduce uncertainty and increase the level of profits (or other benefits) available to the 'group' of firms.

#### *Types of collusion*

Oligopolists can engage in **overt** (open) collusion by establishing an agreement to reduce competition or to collaborate in some way. For example, members of cartels may create agreements to fix output or price, or other aspects of the market. While 'overt' collusion to fix prices is clearly anti-competitive, and therefore unlawful in most countries, other forms of collusion may be hidden and difficult to legislate for, and to police.

**Covert** collusion arises when oligopolists conspire to 'rig' a market by having agreements which are hidden and secret. In some cases, members may 'whistle-blow' in the hope that they may avoid any punishment if the collusion is discovered by the relevant competition authority. This is more likely if authorities offer incentives to whistle-blow.

**Tacit** collusion arises when firms appear to adopt a similar policy on price or non-price aspects of their business, but there is no agreement between them. This may not involve any collusion in the legal sense and need not involve communication between firms. However, the outcomes (such as higher prices or reduced output) may well resemble those that arise from explicit collusion.

SAMPLE

Tacit collusion may arise when **firms follow rules** which are understood rather than written down. For example, in an oligopoly market with three firms, it may be understood that firm A takes the lead in making a change to price, or to a non-price activity, and firms B and C simply follow the lead. This arrangement is not written and there may be no conscious attempt to rig the market. Price leadership is arguably the commonest form of tacit collusion - in this case, there is no conspiracy to act unlawfully.

From a legal perspective, anti-trust law is concerned with the process of collusion, rather than the outcome, and there must be a conscious commitment to achieve an unlawful outcome.

### Types of competition

Oligopolists may prefer to compete, rather than collude, especially if the penalties for anti-competitive behaviour are significant (such as fines, being forced to wind-up, or being 'broken up'). They may also be worried that they will suffer a loss of reputation if discovered.

Competition can either involve competing on price - price competition - or competing in non-price ways - non-price competition.

### Pricing

Competing on price refers to reducing price to generate more sales and/or increase market share. The **assumption is that PED is relatively elastic** so that demand increases by proportionately more than the price is reduced. Price reductions and discounts may be common and may help achieve wider objectives – especially in terms of strategy.

On the surface, price competition may be beneficial to consumers in that consumer surplus is increased. However, pricing strategies can be introduced that reduce competition, such as cost-plus pricing.

**Cost-plus pricing** exists when the oligopolist sets a selling price as a fixed mark-up above average production costs.

For example, insurance companies may set a fixed 20% mark-up above all their costs, including all the predicted claims costs. If all insurance companies share similar costs, then any sudden change in costs - such as following a particularly harsh winter, will result in all insurance companies raising their prices (called premiums) by the same or a very similar amount.

### Non-price competition

For the oligopolist, reducing price is risky as it can lead to retaliation, and to a price-war which can lead to falling profits for all firms in the industry. This explains the preference for non-price competition. (Any type of competition that does not include price reductions).

For example, rather than compete on the price of their core product (petrol/'gas'), petrol retailers may compete through **special promotions**, 'collectables', through advertising (the quantity and quality of advertising), and by developing a respected and well recognised brand. Modern oligopolists can also focus on their 'social responsibility' as a way of signalling their ethical credentials.

### Barriers to entry

Oligopolists can maintain their relative dominance by benefitting from barriers to entry.

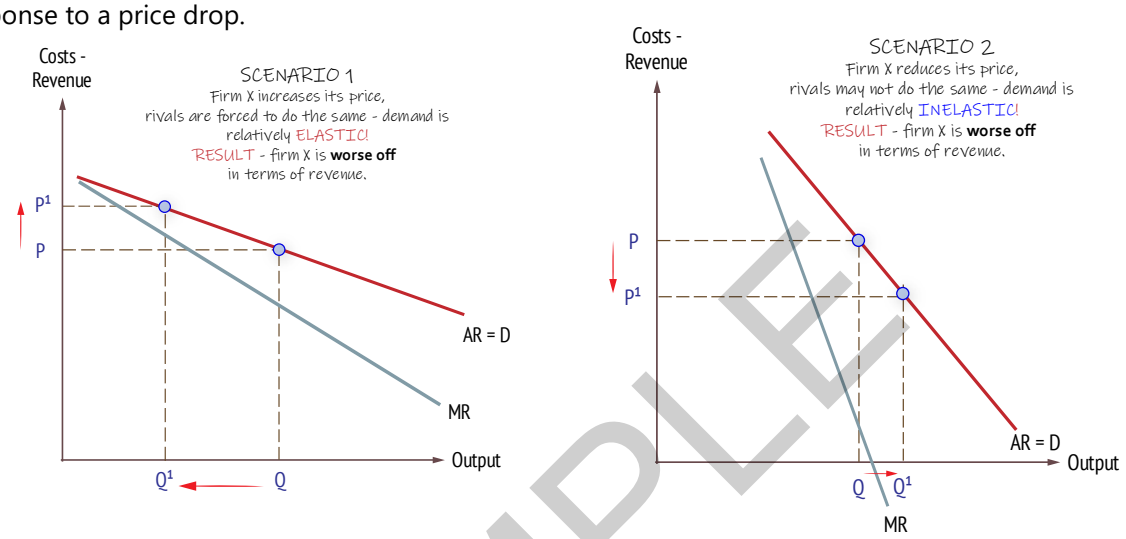
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Barriers to entry are the constraints faced by potential entrants into a market which may deter entry and therefore reduce competition in a market. (See *Contestable markets*).

## Price-stickiness - the oligopolists kinked-demand curve

Prices in oligopolistic markets tend to 'stick' - often for lengthy periods - even when market conditions change. This can be explained though the kinked-demand curve. The oligopolist faces two demand scenarios:

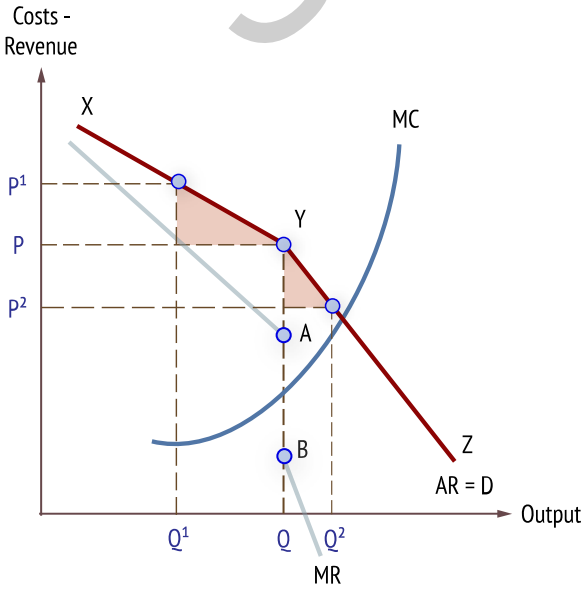
Firstly, when demand is elastic following a price rise, and secondly when demand is inelastic in response to a price drop.




In both scenarios, the firm is worse off - at least in terms of revenue from its pricing options. Raising price creates an elastic reaction, and lowering price creates an inelastic reaction. In both case, revenue is less than achieved at the original price.

Profits will also be maximised at the original price.

Profit maximisation occurs where marginal cost (MC) cuts marginal revenue (MR). For the oligopolist, this may occur in the vertical section of the MR curve, between A and B.




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The level of profit depends upon the position of the ATC (AC) curve. Once price is set, the kinked demand curve implies that the price sticks at P. Even when we factor in the possibility of cost changes, the price will stick at its original level. **Changes in costs have no effect** at all if MC remains between A and B (the discontinuous portion of the oligopolist's MR curve). Even when MC moves outside of this range, price hardly changes. Price stickiness and interdependence can also be explained through Game Theory.

## Game theory

'Game-theory' can be used to help us understand '**interdependence**' and '**price-stickiness**', which are both characteristics of oligopolies.

A game has **three central components** - players, outcomes (pay-offs) and the need for a strategy.

Game 'theory' is the formal study of games where a single player's payoffs are determined by decisions they take and **those taken by other players**. Games may involve **co-operation** between players or may involve **conflict** (or **competition**) between players. Games can be 'zero-sum' (A gains 5, B loses 5) or non-zero-sum.

The assumption is that players (firms, in the case of oligopolies) **action rationally** and in their own interest.

### The Prisoners' Dilemma

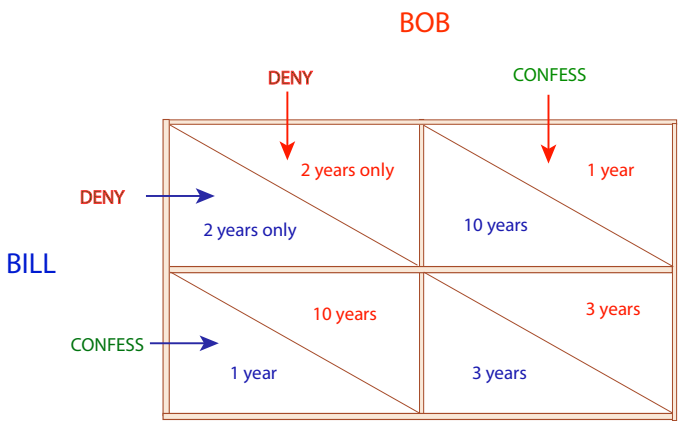
The 'Prisoners' Dilemma' is a very early example of a game which can be applied to oligopolists.

The term 'prisoners dilemma' was first used by Canadian-American mathematician, *Albert Tucker*, in 1950. In this game, two individuals – let's call them Bill and Bob – are arrested for a **petty crime** and placed in separate cells, waiting to be questioned - unable to communicate with each other.

During their interrogations, the police officer suspects the two of committing a much more serious crime. The police officer offers them a chance to confess to the serious crime and get a reduced sentence.

If they both **confess**, they will get a **3-year sentence** – if they both deny they will only get **2 years (**for the lesser crime).

If one denies, and the other confesses, the one **confessing will get 1-year**, and the one **denying will get 10**. The pay-offs (outcomes) can be laid out in a 'pay-off matrix'.




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So, if you were Bill, what would you do? Deny you were involved in the serious crime, or confess?

The key thing is that you can only come up with a completely rational answer *(maximising your own personal benefit or minimising your own person cost)* when you assume the other player (prisoner) is also likely to act rationally.

### The solution

If you think about it, it is obvious that it is best to confess. While it is **tempting to deny**, it doesn't take long to work out that, if you do, and the other confesses, they achieve the best outcome of a one-year sentence, and you achieve the **WORST outcome** of TEN YEARS in jail.

The 'dilemma' arises because the result (pay-off) is out of the control of a single player. An individual prisoner must assume that the other prisoner 'thinks like them'. If a prisoner is rational (and they cannot communicate with the other prisoner) they will have worked out that the other prisoner will also act rationally and take the 'confess' option. Knowing this, they have no choice but to confess.

### Confessing is an example of Nash Equilibrium

So, in this case, confessing is the only rational option! 'Confessing' is also something called 'Nash equilibrium', after the late American mathematician *John Nash*.




Here, Nash equilibrium exists when players have arrived at a position where any change in their strategy will result in a worse outcome. For example, when confess-confess has been arrived at, neither player can switch to deny. (Unless, of course, they can **collude**, and both **agree to deny**.)

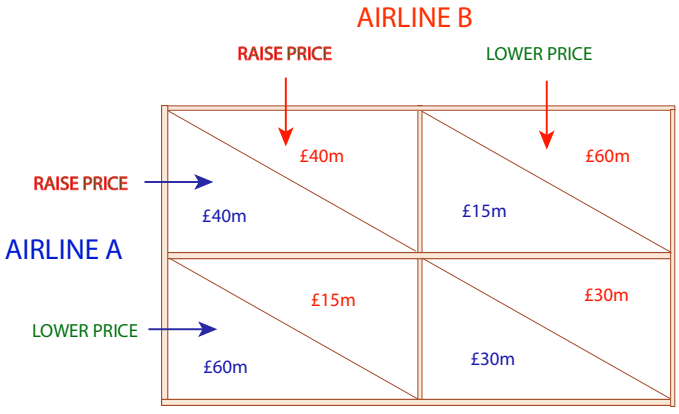
But **this plan has a weakness** – it relies on **absolute trust** between the prisoners. A player can say they will deny 'if they ever get caught', and then switch to confess when questioned, and when they know the pay-off. They will get only 1 year (with the other getting 10). So, unless there is absolute and **unbreakable trust**, confessing is still the best option.

### Dominant strategy

A dominant strategy is a strategy which will **benefit a player** (a firm) **irrespective of the strategy employed by another player** (firm). For example, in a particular market it may always benefit a firm (firm A) to increase its spending on advertising, and it doesn't matter whether Firm B spends more or less on its own advertising or keeps its advertising constant. Advertising always makes firm A better off!

### Applying this to oligopolies

When applying game theory to oligopolists you can see that, once a price is set, there is little gain to be made by changing it. In this sense, the 'sticky price' (as shown in the Kinked-demand curve) is also Nash equilibrium – any movement from this price makes a firm worse off. True, oligopolists




SAMPLE

could collude and raise price together, but only if they trust their rivals not to cheat (or have a water-tight rule stopping other firms cheating).

In the matrix, two rival AIRLINES can either raise price or lower price for a particular route in the hope of **gaining revenue** (assume they compete for the same transatlantic route.)

### Implications of game theory

Game theory provides many insights into the behaviour of oligopolists (sometimes called ***gaming behaviour***). For example, it indicates that **generating rules** for behaviour may take some of the risks out of competition, such as:

1. Employing a simple **cost-plus** pricing method which is shared by all participants. This would work well in situations where oligopolists share similar or identical costs, such as with petrol retailing.
2. Implicitly agreeing a **'price leader'** with other firms as followers. In the Airline example, firm A may lead and raise price, with B passively following suit. In this case, both would generate revenues of £40m. (Combined revenues of £80m – which is the highest value of any decision combination).
3. Oligopolists may collaborate on joint projects – e.g. mobile providers collaborating over new technology or infrastructure (5G), which avoids problematic competition later and gives all participants to opportunity to benefit from 'shared economies of scale'.
4. **Supermarkets** may implicitly agree some lines where price cutting will take place, such as bread or baked beans (*loss leaders*) but keeping price constant for most lines (or raising them).
5. Generally keeping **prices stable** (sticky) to avoid price retaliation and a possible price war.
6. Regulators (such as the ***Competition and Markets Authority*** – CMA) can use the ideas contained within game theory, such as **using fines to alter the possible pay-offs** from colluding.

### Weaknesses of game theory

1. It assumes **perfect information** – e.g. that firms (or players) know the actual pay-offs from a decision.
2. It assumes **rationality and self-interest** – is it possible that players can be altruistic, and make decisions which makes others better off (and makes them worse off)?
3. It is **difficult to produce testable predictions** – because it is highly theoretical it may not be possible to generate a hypothesis which can be tested 'in the field'.
4. It can **over-simplify complex strategic problems** – most oligopoly markets have more than two players, and they may have several products, and operate in several countries.

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## Test Yourself

# Questions Set 3/12

### Oligopoly

1) Define an *oligopoly*. (2 marks)

2) Explain why firms in oligopoly are described as *interdependent*. (4 marks)

3) Draw an appropriate diagram to show the *kinked demand curve* model of price stickiness in oligopoly. (8 marks)

4) Explain how concentration ratios and the Herfindahl–Hirschman Index (HHI) are used to measure market concentration. (6 marks)

5) Draw an appropriate diagram to show how collusion between oligopolists can increase profits compared with competition. (8 marks)

6) Assess the likely benefits and costs of *non-price competition* in oligopoly. (12 marks)

7) Discuss the extent to which collusion is inevitable in oligopolistic markets. (25 marks)

8) Evaluate the usefulness of *game theory* in explaining the behaviour of oligopolistic firms. (25 marks)

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# 3.6 Government intervention

## Introduction to competition policy

To prevent the concentration of power in the hands of a few firms, with all its risks in terms of setting high prices or restricting output, government can **legislate** to prevent or limit this and appoint regulators to ensure that markets remain competitive.

Competition policy is designed to **correct problems** that arise when firms behave in an anti-competitive manner as a result of the abuse of monopoly power.

In this respect, concentration of market power can lead to:

1. Poor outcomes for **consumers** in terms of prices, availability, and quality;
2. Market rigging by firms as a result of **low levels of competition** and barriers to entry;
3. Constraints on technological innovation.

These problems can also lead to a **poorly performing macroeconomy**, with inflationary pressure, relatively low export competitiveness, limited inward investment, and an over-reliance on imports. (These topics are covered in *Theme Two* and *Four*).

Excessive market power can arise when markets are controlled by a single firm (a pure monopolist) or by a few firms (an oligopoly).

Abuse of market power is seen as a **market failure** because the interplay of free market forces does not eliminate the possibility that firms may abuse their power.

### Types of market abuse

Firms can abuse their power in several ways, including:

1. **Limiting output** to the market to artificially create a **shortage** leading to 'inflated' prices.
2. Setting **prices higher** than would occur if the market operated in a competitive way.
3. Setting **prices lower** than the free-market price to drive competitors out of business.
4. Taking over or **merging** with another firm in the same market to **reduce competition** (horizontal integration) - see JD Sports example
5. Taking over or **merging** with another firm in the supply chain to control either **supplies** or **outlets** (vertical integration)
6. Putting up other **barriers to entry** to reduce potential competition.
7. **Colluding** with other firms to rig the market in favour of the producer.

### Regulators

The role of competition regulators is to ensure that firms do not abuse their market power and create a *level playing field* for existing firms and new entrants into a market.

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## The Competition and Markets Authority (CMA)

In the UK, the CMA has the task of implementing competition policy, as laid down in various competition laws.

### Role of the CMA

The CMA has five key roles. To:

1. Investigate **mergers** between organisations, to ensure that competition is not reduced. The CMA can intervene if a merger leads to combined market share of 25%.
2. Investigate **whole markets** when problems are identified.
3. **Take action** against businesses and individuals that take part in cartels or anti-competitive behaviour, including levying fines of up to 10% of turnover.
4. Protect consumers from **unfair trading** practices.
5. Encourage government and other regulators to use competition effectively on **behalf of consumers.**

## Controlling mergers

Mergers will increase market concentration and reduce competition, and regulators can prevent mergers happening. In the UK, the CMA is responsible for monitoring and regulating merger activity.

If the CMA believes that a merger will lead to a substantial lessening of competition, it can block te merger or allow it to go ahead with changes or restrictions.

### Example of the work of the CMA

Following a merger the CMA can force a demerger, as in the case of the merger between JD Sports and Footasylum (who merged in 2019 but were instructed to reverse the merger in 2021). The view of the CMA was that choice would be greatly reduced, with a strong likelihood of higher prices, fewer discounts, and less choice in-store.

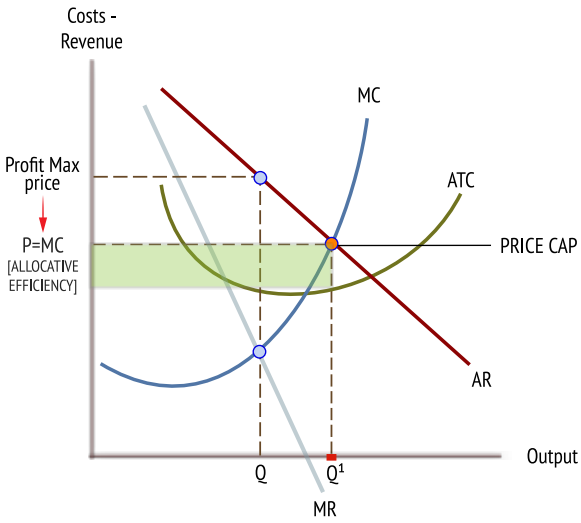
# Dealing with monopoly power

Governments can also attempt to control monopoly power and other possible abuses through a range of measures, including:

1. Special **taxes on monopoly profits**, also called 'windfall' profits (profits from simply being a monopoly and being able to control the market).

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2. Governments can **cap prices** if it thinks market competition is too weak to control prices, or if they believe the industry merits special treatment. The aim of the price cap is to provide the consumer with some protection and move the price (and output) away from profit max (MR=MC) towards the allocatively efficient one, where P=MC.




   a. There are several issues with a price cap, including **deciding what the cap** will be (information failure can corrupt this process); the **discouragement of investment** into the industry and preventing the market from **dynamically adjusting** to changes in demand and costs.
   b. However, on the positive side, capping can provide a **temporary solution** under exceptional circumstances (such as with energy prices following the Russa/Ukraine conflict); and easing **consumer price inflation** (see *Theme Two*).
3. Regulating quality and standards - the government can appoint **special industry regulators** (recognised by the title, 'Office of…' e.g. **OFCOM**) who monitor the industries they have power to inspect. **Legislation** establishes the **performance criteria** the industries are judged against – for example, **water quality** in the case of water supply, and **punctuality** in the case of railways. In recent years, targets in terms of emissions and **environmental effects** have been added to the role of the industry regulators in an attempt to align competition policy with environmental objectives.
4. In extreme cases, a government can **nationalise a complete industry.** This is often the case with goods and services of strategic or security importance, or where central coordination is important. For example, railways in the UK are nationalised to enable a more coordinated approach to rail transport. Public utilities, such as water supply, can also be nationalised to prevent poor quality and to invest in infrastructure when the private sector is, in its chase for profits, less likely to. *(See more on nationalisation later).*
5. Governments can also force firms (especially those using infrastructure) to **unbundle.** Unbundling means separating parts of an industry, such as separating ownership of trade operating companies (TOCs) and control of the physical network of tracks and stations. This not only controls potential abuse of monopoly power, but also reduces barriers to entry and increases contestability.
6. Finally, markets dominated by a few firms can be liberalised through **government support for new entrants**. Subsidies to small firms or those in emerging industries can encourage new entrants and promote technological innovation.

## The digital economy

In April 2021, a new **Digital Markets Unit** (DMU) was set up within the CMA to monitor and regulate the behaviour of platforms with significant market power, including Facebook and Google. This

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follows concerns about the spread of 'fake news', possible interference with elections and platforms favouring goods and services which they own or control.

## Promoting competition through privatisation

Privatisation is the process of returning state owned industries **back to the private sector**.

Historically, the push for privatisation across Europe and many parts of the developed world from the late 1970s followed increasing **criticism of state ownership** as a means of promoting economic growth and wellbeing.

### Different perspectives

Many schools of economic thought, including *monetarism*, *supply-side economics*, and *crowding out theory*, shared one fundamental belief about the public sector - that excessive state involvement in an economy imposed a **considerable drag on economic growth** and development, and 'big state' would hold back the more efficient private sector.

## Advantages and disadvantages of privatisation

### The possible advantages

1. Privatised firms are subject to the **disciplines of the market**, which, it is argued, can create many benefits, including **lower costs**, better performing **management**, higher **productivity** and increased global **competitiveness**.
2. Hayek – the **profit motive** is a key check on public sector waste.
3. Privatisation would lead to increased efficiency across the **supply-side** of the economy.
4. Privatised firms can **raise capital** from the private capital markets, rather than having to 'bid' for increased funding from central government.
5. The revenue accruing to the government from selling shares can **reduce existing public sector debt**, or enable a reduction in taxation, or be used on projects where government involvement is necessary – such as funding infrastructure projects.
6. **Inward investment** from profit seeking foreign firms is more likely to be encouraged – as was the case when the UK oil industry was privatised between 1977 and 1987.
7. If previously state-owned industries are privatised, and then broken up into smaller business units, the disadvantages of possible **diseconomies of scale** associated with state owned industries are **reduced**.

With the smaller involvement of the state, **crowding-out** can be reduced. Crowding out occurs when the state sector grows at the expense of the private sector, meaning that scarce resources, including capital and labour, are diverted away from more efficient and profitable uses.

### Possible disadvantages

1. When firms or whole industries are privatised, the government no longer has the **ability to influence** how they are run, and how decisions are made – subject to normal legal requirements (such as health and safety).
2. Free from government restraint, privatised industries or firms can push up **prices** or **restrict output** and make supernormal profits. This can create a **welfare loss** (of AKL), as shown below.

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3. It should be noted that there is also a welfare loss if the industry is state-owned and sets its **goal just to break-even** (where ATC=AR, at Q) in which case there is also a **welfare loss** compared with the competitive equilibrium - the welfare loss is area K,M,N.
4. If the privatised firms are owned by foreign shareholders, **profits may go abroad**, rather than retained in the economy.
5. While privatisation may make it easier for overseas firms to invest in an economy, there is a **risk** that national security might be jeopardised if the investor is involved in **communications infrastructure** projects. Although unproven, there have been concerns regarding allowing overseas investors to become involved with the **roll-out of 5G**.

**Other strategies**

In addition to privatisation, governments could also attempt to **promote greater competition** in product and labour markets by promoting the growth of small firms, and, in the case of the public sector, '**commercialising**' it to introduce competition in industries still controlled or owned by the state.

For example, **contracts to supply** the public sector could be subject to a process called **competitive tendering**, where private firms are required to bid for public contracts.

The aim of this is to maximise 'value for money' for the taxpayer and keep a lid on costs – this is a common method used in the supply of **public and merit goods**, such as defence, road building, and school building.

### Deregulation

Deregulation is the process of **removing barriers to entry** in previously highly regulated industries.

Historically, heavily regulating industries as associated with industries under public control, and where regulations were in force for protect the monopoly status of the public owned (nationalised) industry.

For example, in the UK, state-run bus services and airlines were privatised in the 1980s to encourage new entrants, and increase competition.

The intended effect of deregulation is to **increase contestability** in the market, increase the level of innovation, and make efficiency improvements across the industry. As a consequence, prices may be kept in check (and pushed nearer to the allocatively efficient level) and quality improved.

However, critics of 'excessive' deregulation argue that the market can become like the '**wild west**', with quality and safety compromised in the chase for 'price sensitive' customers.

## Promoting small businesses

Small businesses are, collectively, big employers and are also often dynamically efficient, so one role of government is to encourage the establishment and success of small businesses. Governments have several options including:

1. Grants
2. Subsidies
3. Loan guarantees
4. Tax breaks
5. Outsourcing public sector contracts to small businesses

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6. Provision of marketing assistance
7. Forcing larger firms to pay 'on time' (large firms often use smaller firms as suppliers, and how the power to delay payment, which puts financial pressure on smaller firms).

## Protection against labour market monopsonies

Given that monopsonies can set low wages, government can legislate to establish **minimum wages**. Legislation can also be used to protect worker rights, such as the right to holiday pay.

### Nationalisation

Nationalisation involves placing private firms into **public ownership**, with the assets of the firm (or industry) under the ownership and control of a public body. Nationalisation is a way of dealing with market failures in product markets, along with imposing **taxes** to reduce harmful behaviour, granting **subsidies** to encourage beneficial behaviour.

#### Examples of nationalisation

Nationalisation was widespread in Europe after the end of the **second world war**. For example, in the UK the *Bank of England* was nationalised in 1946, the *coal industry* in 1947, and the *railways* in 1948.

Much later, and following the **financial crisis**, several UK banks were nationalised or part-nationalised, including *Northern Rock* in 2008, the *Lloyds Banking Group* and the *Royal Bank of Scotland* (RBS) in 2009.

### Advantages and disadvantages of nationalisation

#### The possible advantages

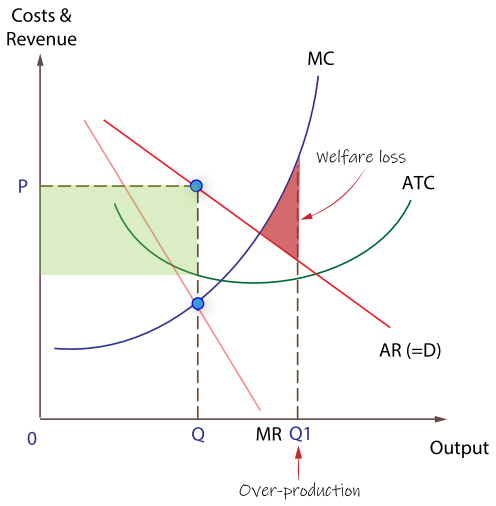
1. It is often argued that, in the public sector, firms and whole industries can be **co-ordinated through a central plan** or strategy – especially beneficial at times of national crisis.
2. Governments might be able to guarantee the production or supply of **strategically important goods or services**, such as energy, water supply, transport, and food.
3. **Public goods** can be provided, with funding through central government.
4. Trading **surpluses** can be handed back to the Treasury, or equivalent, which can be used to subsidise other public and merit goods, or income transfers to reduce inequality or poverty.
5. Under public ownership, the government can set **direct targets to reduce negative externalities**, such as targets for reducing carbon emissions, reducing sewage waste etc. This may be more effective than using 'market mechanisms' like pollution permits.
6. The state has increased **ability to regulate** the macroeconomy. For example, with many industries nationalised the government can directly inject spending directly into the economy when required, such as when unemployment is rising, or the economy is going into recession.
7. Firms may be **natural monopolies**, which means that competition might be wasteful – if publicly owned, prices can be capped so that the monopolist does not exploit their monopoly power.

SAMPLE

8. Nationalised firms or industries can benefit from *internal* **economies of scale**, such as purchasing and technical economies of scale, and *external* economies of scale, such as benefitting from the growth of a nationalised industry in a specific location.
9. In many developing economics, nationalisation may be seen as a 'quick way' to **increase development** (and as part of an 'import substitution' strategy.)
10. Finally, it can be argued that the public sector can '**protect**' its workers from the possible exploitation that might exist in the private sector. For example, the rise of the **'gig' economy** and **'zero-hours contracts'** is closely associated with the private sector, while public sector employees tend to be employed on a more secure basis.

### The possible disadvantages

1. The **profit incentive is absent** when the state takes control of an industry, which means that there may be a **loss of efficiency**, and a rise in inefficiency (including x-inefficiency). This means that management might be inefficient in comparison with similar firms in the private sector. This also means that **costs are higher** than they would be if subject to the constraints of market forces.
2. Under public ownership decision making may suffer from the **Hayekian knowledge problem** – to Hayek, the best knowledge resides in the market and not in government.
3. The nationalised industry might be **under-funded** as a result of the government preferring to spend money in other ways (e.g., tax cuts).
4. Nationalised firms (typically) **cannot raise capital** through the private equity markets**.**
5. Many critics argued that nationalised industries simply **failed to modernise** and embrace new technology.
6. Given that state-controlled industries tend to be large they can suffer from **diseconomies of scale**, such as poor communication and demotivated employees.
7. Nationalised firms may not aim to maximise profits and may 'over-produce' which creates a **welfare loss**. (See diagram).
8. Nationalised industries may run at a loss/deficit, which may force governments to **divert funds** from key areas of the economy to provide support.




9. Increased public ownership may **deter inward investment**, which itself may prevent technology transfer (where innovations are imported, along with the inward investment).
10. Publicly owned firms may 'roll-over' when unions push for **higher pay** (or better conditions) which can **add to wage inflation**.
11. Public-sector organisations and their employees may suffer from **moral hazard** and fail to operate efficiently. A key criticism of state support for failing banks during the **financial crisis** was that it led to a general feeling that banks were 'too big to fail'.

SAMPLE

## Regulation of firms

Governments or their appointed agencies may attempt to influence the conduct of firms through regulation. Regulation involves **legislation** to restrict the behaviour of firms and other organisations, and to set standards of operation or impose conditions on their activities.

Regulation might involve **penalties and sanctions** for 'breaking any rules', as well as incentives to improve - the so-called 'sticks and carrots' approach. In extreme cases, firms may be forced to stop trading.

The conduct of firms appears to be closely related to the market structure in which the firm operates. Monopolies and oligopolies may face little or no competition, and hence they are the most likely to engage in uncompetitive practices or offer poor quality.

In theory, competition provides a check against 'inefficient' pricing, and low quality. By inefficient pricing economists mean prices that exceed the marginal cost of supply - when prices equal marginal cost the price (and corresponding output) is said to be allocatively efficient.

### Areas in which regulation is common:

1. **Health and safety** standards, such as safety at work.
2. Granting licenses to **control the sale** of potentially harmful products.
3. **Consumer protection** legislation, to set minimum accepted levels of behaviour, and terms and conditions of supply.
4. **Protection of employees** to ensure that they are not exploited and receive minimum standards of welfare and pay.
5. Setting controls on **emission levels**.
6. Completely banning products (**prohibition**) if they are considered harmful to health or wellbeing – such as illegal drugs, dangerous weapons, and unauthorised pharmaceutical and medical products and medical procedures.
7. Regulating the **privatised industries**. In the UK, as with the majority of advanced economies, special regulators are appointed to regulate each privatised utility, including energy, water and transport - many of which are natural monopolies.

### Pricing formulae

The price capping process might involve tying price increases to the rate of inflation, minus a figure to **encourage efficiency gains**. In the UK and in other economies using a pricing formula which includes a figure for inflation has been widely used to regulate utilities such as gas and electricity.

For example, the UK regulators use the formula **RPI-X** to regulate prices, where the RPI - the Retail Price Index - is a frequently used index of inflation, and 'X' represents a figure by which the regulator encourages efficiency gains. Hence, if the previous year's RPI is 4%, and 'X' is set at 6%, then the price of the regulated utility must be reduced by 2%. The larger the 'X' factor, the greater the expected efficiency gains.

The UK also uses the RPI+K formula when regulators believe that the firm (or industry) needs to set price increases above inflation to enable additional revenue to be earned to invest in improvements to infrastructure.

SAMPLE

**Rate-of-return regulation** attempts to move the prices of regulated utilities [which are generally natural monopolies] towards the price that would exist **if the market was perfectly competitive**, while allowing them to recoup their service costs. Regulators typically consider all the costs included in supplying a good or service [such as the cost of energy supply] including capital costs, depreciation and operating costs and any relevant taxes, and uses this as a basis for calculating the revenue that would be needed to cover all costs. It may also **allow a reasonable rate of return** on the capital employed in the business.

However, critics argue that this approach encourages firms to inflate their costs, for example, by undertaking unnecessary investment in order to increase costs. However, regulators can try to limit artificial cost inflation by undertaking 'efficiency audits' and through **regulatory lag**. Regulatory lag refers to the principle that cost or price controls remain in place until the next review - perhaps in 3 or 4 years. Hence, the regulated company cannot instantly change prices following a cost increase, which may act as an incentive to absorb costs, and try to make efficiency savings.

### Quality standards

In addition to price, revenue and profit regulation, regulators can set quality standards on producers. Such standards are usually **'minimum' acceptable standards**, and producers may exceed these.

In broad terms, quality refers to the flow of service, or the level of value, that consumers derive from a product. Two aspects of quality can be regulated - quality of the product, and quality of the service.

Examples of quality of product standards include water purity levels (for water) and carbon emission levels (for energy suppliers). Examples of **quality of service standards** include reliability of service (for train operating companies), and quality of billing provision or handling complaints.

However, quality is a highly subjective concept, and much harder to define and measure than price or revenue.

## Advantages and disadvantages of regulation

### Advantages

Regulation provides a number of benefits, such as:

1. Helping achieve the **socially desirable quantit**y and quality of output of goods and services, such as through price capping.
2. Providing a 'light touch' alternative to nationalisation.
3. Regulations can be **updated to reflect new evidence** and new theories, as well as deal with emerging problems, such as global warming, and the CODID-19 pandemic.
4. Regulations can also be updated to reflect the **evolving needs** of consumers.
5. 'Surrogate' competition can also be introduced where no real competition exists – such as setting pricing formulae for energy companies who effectively may be natural monopolies.

### Disadvantages

Regulation also has several disadvantages, including:

1. Government decisions may suffer from **information failure**, which may include setting inappropriate targets or overly strict regulations.

SAMPLE

2. Regulations may **inhibit innovation** and stifle entrepreneurship.
3. Intervention may create **unintended consequences**, such as regulations regarding the production of medicines, which may create barriers to entry and protect existing pharmaceutical companies.
4. Regulation may require a complex and **costly legal system** in order to implement the regulations and make judgments if they are broken.
5. Firms may also incur additional costs in terms of **compliance**.
6. Regulators may also be subject to **political bias**, which can distort their judgment.

Finally, regulators can suffer from regulatory capture, where those that are being regulated - such as the large energy companies - are able to 'win-over' regulators, who then adopt a more 'friendly' and less thorough approach to regulation.

SAMPLE

## Test Yourself

# Questions Set 3/17

### Government intervention

1) Define the term 'regulatory capture'. (2 marks)

2) Explain two ways in which excessive market power can result in market failure. (4 marks)

3) Draw an appropriate diagram to show the welfare loss associated with a profit-maximising monopoly compared to perfect competition. (8 marks)

4) Explain how price capping using the RPI-X formula or similar is intended to promote efficiency. (6 marks)

5) Assess the likely effectiveness of privatisation in promoting competition and efficiency. (12 marks)

6) Draw an appropriate diagram to show the effect of a price cap imposed below the monopoly price. (8 marks)

7) Evaluate the view that nationalisation is a better way of dealing with monopoly power than regulation. (25 marks)

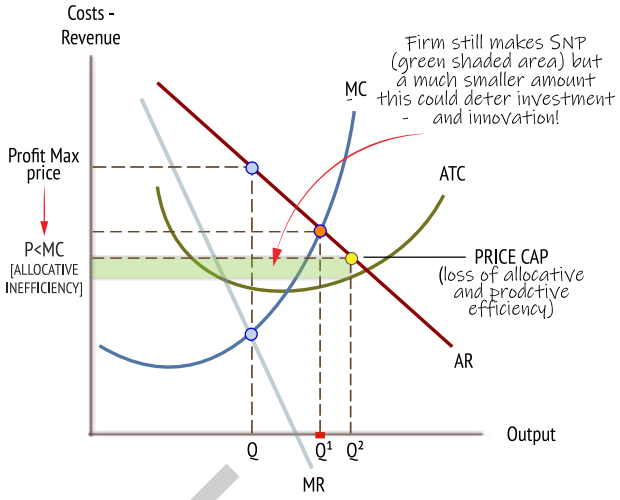
SAMPLE

# Impact of government intervention

## Impact on prices and efficiency

Despite the positive effect of **lower prices** on **consumer surplus**, intervention by government may result in a loss of efficiency.

For example, while a **price cap** reduces prices it can result in both **allocative and productive inefficiency**, as the diagram shows. An excessively constraining cap will encourage consumption beyond the allocatively efficient output. Hence governments need to be careful in setting the cap. Information failure may also limit the effectiveness of such a cap.




However, the use of a price cap is common in the **energy market** in the UK. UK energy prices are tied to the price of gas, which can be **unstable** and cause problems for household and business budget planning, so a cap provides some certainty for households and firms.

# Limits on government intervention

While government intervention in the microeconomy is common there are a few situations where success is limited. This includes:

**Information failure** – governments and regulators will not always have sufficient information to make effective interventions (the **Hayekian knowledge problem)**. For example, in the case of a merger, the possible negative impact is in the future and a regulator like to CMA will not be able to suggest with any certainty how the merger will affect prices and output.

**Regulatory capture** – as mentioned, regulators may end-up defending the position of the firms they have to regulate, meaning that industries are not subject to high levels of scrutiny.

**Competing objectives** – governments are faced with a whole range of objectives and not just ensuring high levels of competition. For example, by imposed strict carbon neutral policies on firms, additional costs may be incurred which may cause these firms to run into financial difficulties. If they leave the market as a result, then the push for more environmentally friendly business could result in less competition.

SAMPLE

## Test Yourself

# Questions Set 3/18

### Limits on government intervention

1) Explain why a price cap may lead to both allocative and productive inefficiency. (6 marks)

2) Assess the extent to which government intervention is effective in correcting the problems caused by monopoly power. (12 marks)

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