# Contents

**Introduction**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>4</td>
</tr>
</tbody>
</table>

**Foundations of Economics**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>5</td>
</tr>
</tbody>
</table>

## Microeconomics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>Competitive markets: demand and supply</td>
</tr>
<tr>
<td>1.2</td>
<td>Elasticity</td>
</tr>
<tr>
<td>1.3</td>
<td>Government intervention</td>
</tr>
<tr>
<td>1.4</td>
<td>Market failure</td>
</tr>
<tr>
<td>1.5</td>
<td>Theory of the firm and market structures</td>
</tr>
<tr>
<td></td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>30</td>
</tr>
<tr>
<td></td>
<td>41</td>
</tr>
<tr>
<td></td>
<td>60</td>
</tr>
<tr>
<td></td>
<td>68</td>
</tr>
</tbody>
</table>

## Macroeconomics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>The level of overall macroeconomic activity</td>
</tr>
<tr>
<td>2.2</td>
<td>Aggregate demand and aggregate supply</td>
</tr>
<tr>
<td>2.3</td>
<td>Macroeconomic objectives</td>
</tr>
<tr>
<td>2.4</td>
<td>Fiscal policy</td>
</tr>
<tr>
<td>2.5</td>
<td>Monetary policy</td>
</tr>
<tr>
<td>2.6</td>
<td>Supply-side policies</td>
</tr>
<tr>
<td></td>
<td>101</td>
</tr>
<tr>
<td></td>
<td>106</td>
</tr>
<tr>
<td></td>
<td>116</td>
</tr>
<tr>
<td></td>
<td>129</td>
</tr>
<tr>
<td></td>
<td>131</td>
</tr>
<tr>
<td></td>
<td>134</td>
</tr>
</tbody>
</table>

## International economics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>International trade</td>
</tr>
<tr>
<td>3.2</td>
<td>Exchange rates</td>
</tr>
<tr>
<td>3.3</td>
<td>Balance of payments</td>
</tr>
<tr>
<td>3.4</td>
<td>Economic integration</td>
</tr>
<tr>
<td>3.5</td>
<td>Terms of trade</td>
</tr>
<tr>
<td></td>
<td>137</td>
</tr>
<tr>
<td></td>
<td>146</td>
</tr>
<tr>
<td></td>
<td>154</td>
</tr>
<tr>
<td></td>
<td>161</td>
</tr>
<tr>
<td></td>
<td>164</td>
</tr>
</tbody>
</table>

## Development economics

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Economic development</td>
</tr>
<tr>
<td>4.2</td>
<td>Measuring development</td>
</tr>
<tr>
<td>4.3</td>
<td>The role of domestic factors</td>
</tr>
<tr>
<td>4.4</td>
<td>The role of international trade</td>
</tr>
<tr>
<td>4.5</td>
<td>The role of foreign direct investment</td>
</tr>
<tr>
<td>4.6</td>
<td>The roles of foreign aid and multilateral development assistance</td>
</tr>
<tr>
<td>4.7</td>
<td>The role of international debt</td>
</tr>
<tr>
<td>4.8</td>
<td>The balance between markets and intervention</td>
</tr>
<tr>
<td></td>
<td>170</td>
</tr>
<tr>
<td></td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>180</td>
</tr>
<tr>
<td></td>
<td>183</td>
</tr>
<tr>
<td></td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>186</td>
</tr>
<tr>
<td></td>
<td>187</td>
</tr>
<tr>
<td></td>
<td>188</td>
</tr>
</tbody>
</table>

How to write an extended essay in economics

Advice on the economics internal assessment exercise

Command terms and their use in the economics syllabus
The meaning of market failure

**Remember**

- Allocative efficiency is achieved if neither too much nor too little quantity of a good is produced and consumed from society’s point of view, and so neither too many nor too few resources are allocated in that market. It follows that a market fails if market forces lead to over-provision of a good (and so over-allocation of resources) or to under-provision of a good (and so under-allocation of resources).

- Markets can fail:
  - when externalities are present,
  - in the case of common-access resources,
  - in the case of public, merit and demerit goods,
  - when firms have monopoly power,
  - as well as in the case where asymmetric information is present.

**Externalities**

**Example 1**

Provide examples where the MSB are greater, equal and smaller than the MPB of consuming a good or service, or of engaging in an activity.

**MSB > MPB**

- If Aled gets vaccinated against flu, not only does he benefit but also all others that come into contact with him, as their probability of catching flu from him is lower. By getting vaccinated, the prevalence of the disease decreases.
- If Silena paints her house and improves her yard, not only does she benefit but also all her neighbours, as the value of their property increases.

**MSB = MPB**

- If Terry buys a Mont Blanc pen to sign her cheques, no one else benefits or is hurt by her buying and using it.
- If Manuel buys and drinks skimmed milk for breakfast, no one else benefits or is hurt by him buying and drinking it.

**MSB < MPB**

- If Zachary lights up a cigar in the restaurant, his action imposes health costs on others in the restaurant.
- If Rachel decides to drive to work rather than taking the train, she may benefit, but her decision imposes costs on all others in the form of additional traffic congestion and pollution.

**Example 2**

Explain why we consider a market to have failed if the MSB are not equal to the MSC.

Here one would first have to explain what exactly the two terms mean. An easy way to proceed is to consider, using a diagram such as the one below, how many units of a good society would like to have produced and consumed.
Society would like to enjoy all units which are worth more to it than what they cost it (in terms of sacrificed resources) up until that point for which the two are equal. For example, society would want to have unit Q1 produced and consumed because it is worth to society Q1a (the size of the MSB enjoyed) while it would cost society only Q1b, so a net benefit to society equal to ab would be enjoyed. This holds true for all units up to (at the limit) unit Qs. If more of the good were produced, then society would incur a net loss (i.e. a decrease in social welfare).

For example, unit Q2 is worth to society Q2f (so there are benefits from producing and consuming it) but it would cost society Q2h. In other words, society would incur a net loss from producing and consuming the good equal to fh. This holds for all units past unit Qs.

From the above it follows that any market outcome other than Qs for which MSB = MSC should be considered a market failure. Any amount less than Qs implies that the market forces did not produce all units society values more than their cost, while any amount more than Qs implies that market forces led to the production of units which cost more to society than they were worth.

**Example 3**

Discuss, using examples, the options available to governments to deal with the free market outcome resulting in the case of demerit goods.

Demerit goods are goods that are considered harmful and for that reason governments would like to limit their consumption. Not only are the consumers of such goods harmed but are others around them as consumption of such goods creates significant negative externalities. The typical examples include tobacco and alcohol consumption (smoking and drinking). The market outcome is suboptimal in that it leads to ‘too much’ of these goods produced and consumed. A market failure is the result. In the diagram below the MSB from consuming the good are less than the MPB because of the external costs of consumption created. In the case of smoking these external costs may include the elevated health risks of passive smokers, while in the case of alcohol they may include the unacceptable behavior often associated with alcohol consumption (for example drunk driving and violence).

The market forces, demand and supply, will lead to Qm units produced and consumed at a market price Pm. The socially optimal amount is less and equal to Qs, as at Qs the MSB equals the MSC. For units Qs-Qm, the MSC of producing the good exceeds the MSB of consuming the good so these units should not have been produced and consumed. Since they are, a welfare loss equal to the shaded triangle (abc) results.

For consumption to be limited to Qs units per period, the market price should be at $P^*$. An indirect tax equal to the external cost of consumption (bc) could do the trick. There are, though, some associated problems: first, it is difficult to estimate the size of the external cost and so the size of the necessary tax. The tax should be substantial as demand for these goods is typically price inelastic, but indirect taxes are regressive in nature meaning that they burden lower-income consumers proportionately more.
Most importantly, a chain of substitutions may be initiated as consumers, especially poorer individuals, will switch to cheaper but lower-quality substitutes that may entail higher health risks and other risks. Direct regulation may prove helpful (for example, prohibiting smoking in offices or restaurants) as at least the external effect of tobacco smoking is minimized. In the case of alcohol, prohibiting the sale to minors (individuals under a certain age) has not been as effective to curtail consumption. Education (through advertising) may prove the most effective long-term option but this should be targeted towards the very young as older people may already be addicted.

Exercise 1

1. Banks providing funds for their employees to obtain specialized training.
2. Smoke from smokers in restaurants.
3. Home improvement loans in a city.
4. A power plant using fossil fuels to generate electricity.

Exercise 2

Determine whether the following statements are true or false. Explain your answers. Use a diagram to illustrate if possible.

1. Whenever a negative externality is present, market forces produce a greater quantity of the good than the socially desirable amount.
2. When an activity creates external benefits, then markets leave them own lead to more of the good being produced than is socially desirable.
3. Efficiency occurs when competitive firms internalize any external production costs, forcing consumers of pollution-causing goods to pay these costs.
4. Issuing and selling pollution permits takes advantage of the market mechanism to reduce pollution-related externalities.

Exercise 3

Rewrite the following statements and fill in the blanks by using the terms provided below. Some terms may be used more than once or not at all.

- positive
- regulation
- output
- emissions
- last
- optimal
- polluter
- third
- legislation
- education
- cost
- Pigovian
- social
- pollution
- cap
- unde-allocation
- trade
- more

If external costs are present, then markets lead to (7)______ more of resources as less than the socially optimal amount is produced or consumed and thus fewer resources than the socially optimal amount are employed in the market.

A (8)______ tax internalizes the externality (9)______ forcing the (10)______ to pay. When tradable (11)______ permits are employed the maximum level of permissible pollution is set by the government and then permits or licences are issued to firms with the right to (13)______ them in the open market. Direct government (14)______ may include requiring firms to limit their level of (15)______ or to limit the amount of pollution (16)______ . Subsidies in the case of (17)______ externalities are a possible solution as they lower the price and result in a greater level of output but governments may also through (18)______ attempt to increase consumption or production of such externalities. For example in many countries (19)______ is compulsory up to a certain level.
Public goods

**Remember**

The key concepts to be able to deal with questions about public goods are:

- non-excludability
- non-rivalry
- free rider including those able to enjoy the good because it is non-excludable
- the marginal cost of an extra user, which is zero or near zero because of non-rivalry.

**Example 4**

Determine whether the following statements are true or false. Explain your answers. Use a diagram to illustrate if possible.

1. Goods provided by government are public goods. _False._ To determine whether a good is a public good or not you must always check whether it is non-excludable and non-rival. Governments have provided and may provide a number of goods and services that are neither non-excludable nor non-rival. For example, in some countries, parts of the food industry are nationalized with several food products provided by the government. Telephone services were (and in some countries still are) provided by the government but these are excludable.

2. Since in schools for the general public every child has the right to attend it follows that education is non-excludable. _False._ Education, especially primary and secondary education, creates massive positive externalities so that provision by the free market alone would lead to under-consumption and under-allocation of resource. Governments ensure that education is available for all by offering schools for the general public often operating alongside private schools. The mere fact that private schools exist implies that the service is excludable.

**Exercise 4**

Determine whether the following statements are true or false. Explain your answers. Use a diagram to illustrate if possible.

1. If Prabla plants beautiful flowers by her street then this may be considered an example of a public good. _True._ The flowers are non-rival and non-excludable.

2. Market forces fail when positive externalities are present, because they under-produce the good associated with the positive externality. _True._ Positive externalities lead to under-production because the beneficiaries do not pay for the benefit they gain from the good.

3. If Ansar can be prevented from using a good he did not pay for then we can conclude that consumption of this good is rival. _False._ In the case of rivalry, the consumer pays for the use of the good and therefore the good is not excludable.

4. The Barcelona versus Manchester United soccer game is an example of an excludable service which is non-rival up to a point (the capacity of Camp Nou stadium). _True._ The stadium has a fixed capacity and once it is full, the game becomes rival.

5. Natalia is a free rider if she benefits from a good without paying for it. _True._ Natalia is a free rider if she consumes a good without paying for it.

**Exercise 6**

In what ways do public goods create externalities.

**Exercise 7**

Rewrite the following statements and fill in the blanks by using the terms provided below. Some terms may be used more than once or not at all.

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<thead>
<tr>
<th>rival</th>
<th>decrease</th>
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</thead>
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<tr>
<td>congestion</td>
<td>free rider</td>
</tr>
<tr>
<td>private</td>
<td>excludable</td>
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<tr>
<td>advertising</td>
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</tr>
</tbody>
</table>

Once a highway is built, the (1) _______ of an extra user is zero up until (2) _______ costs arise. The lack of incentive for individuals to contribute to a public good is known as the (3) _______ problem. The incentive to contribute towards its provision (4) _______ as more is contributed by others. Off-the-air TV and radio broadcasting is an interesting example of a pure public good that is provided by (5) _______. Profit-oriented firms as TV and radio channels do not sell the programmes broadcast but (6) _______. Time which is both (7) _______ and (8) _______.
Common access resources and the threat to sustainability

**Remember**
- Common-access (or common pool) resources have two characteristics, which are:
  - the difficulty in excluding individuals from benefiting from a good
  - the subtractibility of the benefit enjoyed by one individual from those available to others; this is also referred to as rivalry in consumption.
- The benefits of using the common-access (or pooled) resources accrue to the user while the costs are spread to all.
- Do not forget the work of Elinor Ostrom (awarded the Nobel Prize, 2009) who has shown that there are many ways of organizing institutions that enable people to use common-access resources together and to use them in a renewable way over time; people can find rules, adjust their behaviour over time and they have to grow trust in one another. The simplistic logic of the ‘tragedy of the commons’ may prove more disastrous. Watch her ‘sustainable development and the tragedy of the commons’ 8 minute lecture on the Internet.
- Poverty often forces poorer communities to over-exploit land in order to produce more and more food and this is a threat to sustainability.

**Tip**
The easiest way to remember the characteristics of common-access resources is to think of the ocean and the fish: any fishing boat benefits from a catch but the more fish it catches the fewer fish are available for all other fishing boats.

**Example 5**
Determine whether the following statements are true or false. Explain your answers. Use a diagram to illustrate if possible.

1. Property held in common by a community tends to be used efficiently.
   - False (but think of Ostrom’s work). Efficient use requires that the user enjoys all the benefits but also suffers all the costs. If property is communal then there is the risk that users will enjoy the benefit but the costs will be shared.

2. There is an incentive to use resources efficiently if property rights are clearly defined.
   - True. If property rights over an asset exist then there is an incentive to preserve its value. For example, if Chmissia owns a piece of land and has her cows graze on it then she will make sure that the she will be able to continue this as the extra benefits are for her to enjoy but the extra costs generated are also for her to pay.

3. Common-access resources entail negative externalities.
   - True. When people use a common-access resource they impose a cost on others as the amount available for other users decreases. The cost of depleting the resource is not taken into account.

**Example 6**
Provide examples of common-access resources, explaining your choices.

Typical examples of common-access resources include: fisheries, forests, pastures and grazing systems, lakes, oceans and the Earth’s atmosphere.

Each of the above has characteristics that define the CPRs, namely that it is difficult to exclude one from using these and the subtractability of the benefits enjoyed (their consumption is rival).

For example, it is difficult to exclude fishing in the ocean (as no one owns the ocean) and the more fish one fishing company catches, the fewer are available for others to catch. Each fishing boat imposes a negative externality on all other fishing boats. This externality leads to over-fishing.

**Exercise 8**
Explain why open software programs or weather forecasts, despite having common-access characteristics, are not a threat to sustainability.
Abuse of monopoly power

Remember

- A monopoly firm faces the negatively sloped market demand curve for the product and is in a position to restrict output (supply) and so raise its price.
- Firms with monopoly power typically create a ‘deadweight loss’ to society as the output rate they choose is less than the socially optimal.

Example 7

Explain why the existence of monopoly power in a market leads to market failure. Use a diagram to illustrate your answer.

Start from what you know: you know that a market is (allocatively) efficient if just the right amount of the good is produced and consumed; from society’s point of view. This requires that all units worth more than what they cost are indeed produced. Or, in other words, that for the last unit produced and consumed, the extra benefit enjoyed (NB) from consuming it is equal to the extra cost (MC) incurred of producing it (note that we are assuming away externalities).

![Diagram of market failure](image)

Figure 1.26

This condition is satisfied in competitive markets and it means that social (community) surplus (the sum of the consumer surplus and the producer surplus) is maximized. In the diagram below, a competitive market will lead to Qc units being produced (and consumed) at a price Pc.

Consumer surplus is equal to area (PEE), producer surplus is equal to area (FEPc) and social (or community) surplus is equal to area (FEH).

The monopoly firm is able to restrict output to Qm as it faces the market demand curve D. By restricting output the price at which the good can be sold increases to Pm. In the diagram above, distance QmB shows how much consumers value the last unit Qm (MB) while distance QmA shows the marginal cost of producing that unit (MC). Society would have wanted to enjoy units QmQc because each of these is worth more than what it costs to produce. The monopoly firm does not produce these units so we say that the market fails. Fewer resources are therefore allocated in the production of this good than the socially optimal level. Social welfare has also decreased by area (AEB). This area represents net value that society does not attain or enjoy because of the presence of monopoly power.

Example 8

What solutions could governments adopt to limit excessive monopoly power?

Government can enact legislation aimed at ensuring that competitive conditions prevail in markets. Certain business behaviour considered anti-competitive may be prohibited, for example in:

- market sharing agreements (where firms divide up markets either geographically or based on some other criterion and agree not to compete in each other’s territory)
- collusive tendering (when, say, in a government contest to award the construction of a new airport, competitors agree that they will all bid high prices)
- predatory pricing (when a firm sells at a very low price to drive out competitors and assume a monopoly position in the market).

Legislation may also be passed that requires the breaking up of a large monopoly into smaller units (but lawmakers must keep an eye on any economies of scale that may be sacrificed).

Governments can regulate the behaviour of firms with significant monopoly power. They can require, for example, that prices are set lower and closer to the competitive ideal so that output increases and approaches the socially optimal level.

In certain circumstances, governments may even assume ownership of the monopoly firm. This has been the case, especially in the past, in the provision of telephone services, water and electricity services.
as well as postal services. The goal is to set price close to the competitive ideal even if this implies operating at a loss, as in the case of postal services since service to rural, low population-density areas is often guaranteed. Lastly, an effective way to lower the monopoly power of domestic firms is to expose them to foreign competition by decreasing trade barriers such as any taxes on imports (tariffs). Imports increase the supply of the good made available in the domestic markets so price will be squeezed.

**Exercise 9**

Answer the following questions using the diagram below.

![Graph](image)

**Figure 1.27**

1. Assuming the market above was competitive, what is the consumer surplus equal to?
2. Assuming the market above was competitive, what is the producer surplus equal to?
3. Assuming the market above was competitive, what is the social (or community) surplus equal to?
4. Assuming the market above is monopolized and the monopolist chooses to offer Qm units per period at the price Pm, what is the new consumer surplus?
5. What is the change in consumer surplus?
6. What is the new producer surplus?
7. What is the change in the producer surplus?
8. In area 2, what is the new social (or community) surplus equal to?
9. What is the change in social (or community) surplus?
10. Explain why the monopolization of this competitive market results in allocative inefficiency and therefore is a market failure.
Asymmetric information

**Remember**

- Asymmetric information exists when one side of a market knows more than the other side does. There are two types of such informational failures: one is referred to as the ‘moral hazard’ problem while the other is referred to as ‘adverse selection’.
- Moral hazard arises when one party to a contract alters his or her behaviour in ways that is costly to the other party with the limited information.
- Adverse selection arises when the seller knows more about the characteristics of the good being sold than the buyer does. The ‘market for lemons’ example is the best known and as a result of adverse selection ‘bad cars will drive good cars out of the market’.

**Example 9**

Determine whether the following statements are true or false. Explain your answer.

1. In the ‘market for lemons’ the adverse selection issue is that as the price falls, the proportion of low-quality goods offered for sale increases.
   - True. Sellers with cars of higher than average quality will be turned off and withdraw their cars from the market, increasing the proportion of low-quality cars in the market.

2. If a car company offers a guarantee then consumers correctly believe that the car must be good because if it were not the company would pay the cost of honouring the guarantee.
   - True. Any additional cost that such companies incur (guarantees, advertising, expensive premises, etc.) are signals to prospective buyers that cars sold must be good.

3. If Jakub drives carelessly because he just got car insurance then this is an adverse selection problem.
   - False. This is a moral hazard problem where Jakub has an incentive to change his behaviour as a result of the contract he signed.

4. Costly advertising undertaken by a firm is used to signal quality.
   - True. The logic is that otherwise the company would not be willing to undertake the additional expense.

**Exercise 10**

Determine whether the following statements are true or false. Explain your answer.

1. If by law HIV patients are not obliged to reveal their medical condition to health insurance companies the adverse selection problem is intensified.
2. As car insurance premiums increase, drivers least likely to have an accident drop out of the market.
3. A brand name designer in the world of fashion may not cut prices fearing that its customers may infer that it no longer has the incentive to maintain its reputation.
4. Actions taken by sellers to persuade buyers that their goods are of high quality are referred to as screening.

**Exercise 11**

Explain, providing examples, what is meant by the terms ‘moral hazard’ and ‘adverse selection’. In what sense will markets fail if either is present? What are some possible market responses and what can governments do to correct these problems?

**Exercise 12**

Several respected sites and publications routinely test digital cameras and other electronic products and report on their quality. Explain why this practice will tend to increase the prices of high-quality products.