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STUDY GUIDE

ECONOMICS HL

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Economics HL Study Guide

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Welcome to the IB Academy guide for Economics HL.

Our Study Guides are put together by our teachers who worked tirelessly with students and schools. The idea is to compile revision material that would be easy-to-follow for IB students worldwide and for school teachers to utilise them for their classrooms. Our approach is straightforward: by adopting a step-by-step perspective, students can easily absorb dense information in a quick and efficient manner. With this format, students will be able to tackle every question swiftly and without any difficulties.

We distinguish between two aspects: *skill* and *understanding*. Skill is fostered when students practice the syllabus material and can identify variations within the steps even if the same general principle may be applied throughout. In doing so, understanding will soon follow since the student has applied the steps several times. It is a simple yet effective method that has helped many students and we hope it will aid you as well.

The best way to apply what you have learned from the guides is with a study partner. We suggest revising with a friend or with a group in order to immediately test the information you gathered from our guides. This will help you not only process the information, but also help you formulate your answers for the exams. Practice makes better and what better way to do it than with your friends!

In order to maintain our Study Guides and to put forth the best possible material, we are in constant collaboration with students and teachers alike. To help us, we ask that you provide feedback and suggestions so that we can modify the contents to be relevant for IB studies. We appreciate any comments and hope that our Study Guides will help you with your revision or in your lessons. For more information on our material or courses, be sure to check our site at www.ib-academy.nl.

IB Academy Team

If you would like to consider supporting our materials and be recognised for it, send us an email to contact@ib-academy.nl.

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PAPER GUIDE

Hello and welcome! We are happy that you've decided to get your hands on this IB Academy study guide for Economics. Before we get into the depths and valleys of the Econ syllabus itself, let us have a look at the papers that you are to write at the end of this journey.

Paper 1

Extended response paper (25 marks)
Duration: 1 hour 15 min
Choose and answer 1 question from a choice of 3 (Micro, Macro, Global Economy).

Part A:

- 10 marks.
- Theoretical, no example needed.
- Plan for 5 min, work for approx. 26 min.

Part B:

- 15 marks.
- A "Real" real-life example is required. This example should be introduced at the beginning and used throughout the response as the context of your answer.
- Evaluation must be throughout (needed in all markbands).
- Plan for 5 min, work for approx. 39 min.

Paper 2

Data response paper (40 marks)
Duration: 1 hour 45 min
Choose and answer one question from a choice of two. The questions cover the whole syllabus.

- Two definition questions (worth 2 marks)
- Two math questions (2–3 marks)
- Four explain with diagram questions (4 marks)
- An evaluation question using context in text and data provided (15 marks).

Paper 3

Policy paper (60 marks)
Duration: 1h 45min (52.2 min per question)
Answer two out of two questions.

- Each question is worth 30 marks and contains small sub questions for a total of 20 marks, and a 10-mark policy question.
- Policy question: Students are given information and must recommend a policy and evaluate it, with evidence from the text and their knowledge of economics.

INTRODUCTION

1

1.1 The foundations of economics

Before we start this course, we must first look at the foundations of economics. We will discuss what the science of economics actually is and what the scope of this science might be.

- Economics is a social science on how to deal with scarcity.
- Scarcity is the problem of having infinite wants, or unlimited desires, while having only finite resources, or limited means, to fulfil these wants.
- A small scale example of scarcity: a person wants to buy a laptop and a phone, but has only enough money to buy one of the two.
- In general we describe this problem of scarcity as the economic problem.

Nine key concepts that tie together the course material

1 Scarcity	The problem of infinite wants while having only limited resources
2 Choice	Since resources are scarce, economic agents need to make choices. Not all wants can be satisfied, which creates opportunity costs.
3 Efficiency	Efficiency measures the ability to make the best possible use of available resources.
4 Equity	Equity aims at a fair distribution of wealth and resources. It is a normative concept as what is fair means different things to different people.
5 Economic well-being	Multi-dimensional concept that reflects living standards and the ability to meet basic needs. Economies worldwide differ greatly on economic well-being.
6 Sustainability	The ability of the present generation to meet its needs without compromising that ability from future generations.
7 Change	The field of economics is characterized by constant change, and economists need to take this into account when developing new models and refining old ones.
8 Interdependence	With high national and international economic interaction, choices made by one agent affect the economic state of others.
9 Intervention	Government involvement in the organizing of markets and economic activity.

The solution to the economic problem

In order to solve the economic problem, we must make choices between the different alternatives we are faced with. In a general economy these choices must be made on:

- What to produce?
- How to produce?
- For whom to produce?

In economic analysis, production occurs using four factors of production, which are characterized as:

- Land
- Labor
- Capital
- Entrepreneurship

In the IB course we will look at the economic problem from different viewpoints and in different domains.

1.1.1 Opportunity cost

Opportunity cost The value of the next best alternative that is lost while making a choice.

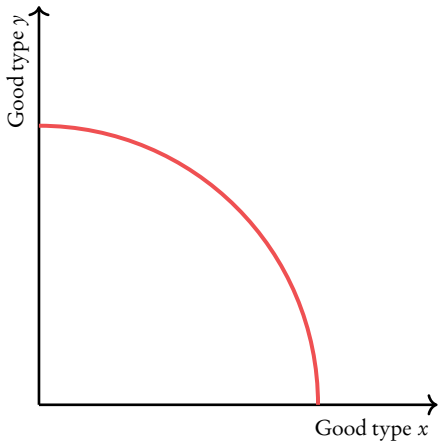
When a choice is made, an alternative is always foregone. We call this the *opportunity cost of the choice*.

For example: A person has only enough money to buy one of three of the following items: a smartphone, a laptop, a tablet.

- He lists the items in order of how much he or she desires them: (1) laptop, (2) smartphone, (3) tablet.
- Because he or she desires the laptop the most, the laptop will be chosen.
- The next best alternative, in this case the smartphone which is next on the list, will be the opportunity cost of the choice.

One way to illustrate opportunity cost is by the Production Possibilities Curve (PPC) diagram.

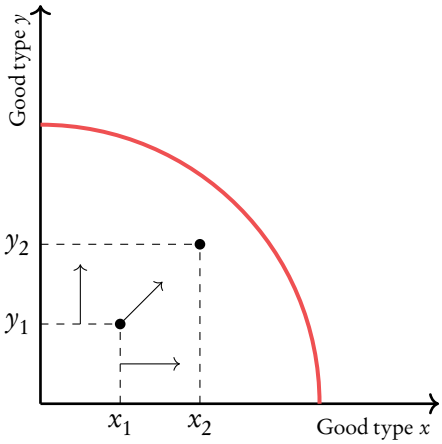
Figure 1.1: Production Possibilities Curve (PPC).



Two goods produced in an economy are plotted on the x and y axis. The PPC then shows combinations of the two goods that are efficient to produce at a given point in time.
With the level of factors of production, the institutional framework, and the state of technology fixed:

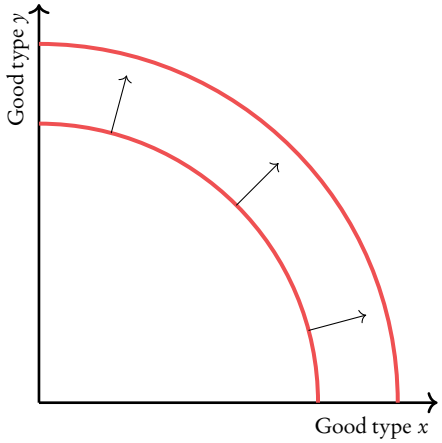
- Points inside the PPC are attainable but inefficient.
- Points on the PPC are attainable and efficient.
- Points outside of the PPC are efficient but unattainable.

Figure 1.2



Increases in output are illustrated by a movement of a point inside the PPC towards the PPC (Figure 1.1).
Increases in potential output are shown by a shift of the PPC curve. This shift can occur in the long-run, and it reflects growth, as combinations of output that were previously unattainable become attainable.

Figure 1.3



Assumptions of the PPC model:

- Only two goods produced in the economy
- Resources and technology are fixed
- All resources in the economy are used to the highest extent. This is of course not sustainable.

Increasing opportunity cost As we produce extra units of one good, increasing amounts of the other good have to be sacrificed.

Increasing opportunity cost is illustrated by a concave PPC.

Constant opportunity cost Producing more units of one good always requires the same amount of the other good sacrificed.

Constant opportunity cost is illustrated by a linear PPC.

1.1.2 Circular flow of income model

Money, goods and services flow through the economy. The circular flow of income model illustrates the exchange between households and firms:

Figure 1.4: Visualisation of the circular flow of income.

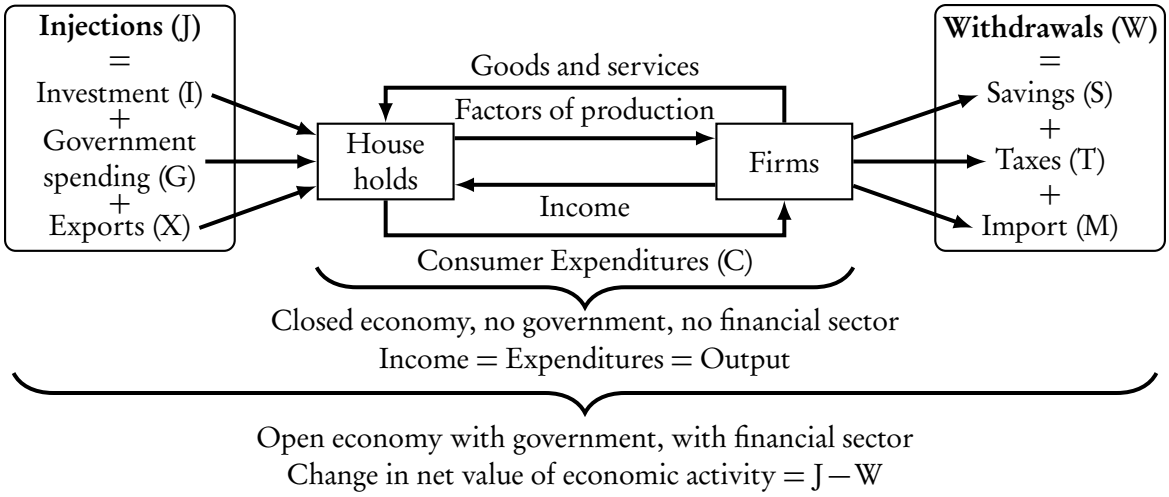


Table 1.1: The factors of production and their respective income.

Factor of production	Income	Factor of production	Income
Capital	⟶ Interest	Land	⟶ Rent
Enterprise	⟶ Profit	Labour	⟶ Wage

Some important notices about the circular flow of income model:

- The middle part of the model is a closed economy (no international trade ⇒ no imports and exports) that has no government (no taxes, no government spending) and no financial sector (no investment, no savings).
- In this economy, the income of consumers will always be the same as their expenditures because saving is impossible and there are no taxes.
- In this economy, the earnings of companies will always be the same as consumer expenditure because consumers can't spend their income on products from abroad (imports).
- In this economy, all earnings of companies will be the same as the value of their domestic outputs because companies can't invest parts of their earnings, nor can they export some of their output.
- Therefore, in a closed economy without a government and financial sector:

$$\text{Income} = \text{Expenditures} = \text{Output}$$

- When we add international trade, a government and a financial sector, injections (value added to the circular flow: investment, government spending and exports) and withdrawals (value removed from the circular flow: savings, taxes, imports) are possible.
- In such an economy the change in the value of economic activity can be measured as:

$$J - W = (I + G + X) - (S + T + M)$$

1.2 The Economic approach to the world

1.2.1 The role of positive and normative economics

Positive economics Positive economics is built around positive statements. They are objective, factual statements that can be proven true or false by scientific experiments. Hypotheses, models, theories, assumptions (like the ceteris paribus assumption), and empirical evidence are all a part of positive economics.

Normative economics Normative statements are value statements used in policy making that determine what the economy "should be" or "ought to be" like.

1.2.2 The history of economic ideas

18th century: classical economics

Division of labor: Adam Smith, the "founding father" of modern economics, discovered that by the division of tasks in a workplace, productivity per worker would increase.

International trade: Countries should specialize in the production of goods in which they have a comparative advantage, and trade with one another.

Invisible hand: Free markets allocate information between buyers and sellers, and they are most efficient without any government intervention.

Early 19th century: classical microeconomics and classical macroeconomics

International trade: Ricardo developed the theory of comparative advantage. Countries should specialize in the production of goods in which they have a lower opportunity cost, and trade with one another.

Say's law of markets: Say claimed that there cannot be overproduction of goods, because supply creates its own demand. The idea can be linked to the circular flow of income model.

Late 19th century: neo classical economics

The marginal revolution: The idea that consuming the first sample of a good will give the consumer more satisfaction than consuming the second or third sample of the same good. This is called the law of diminishing marginal utility.

First diagrams to illustrate theories and models: Alfred Marshall was the first economist to present a visual supply and demand graphical model and illustrate the determination of prices in the market.

20th century: Keynesian economics and monetarist school of thought

Keynesian revolution: Keynes argued against the free market approach, and believed that the mass unemployment of the 1920s Great Depression was not going to disappear without government intervention.

Monetarism (New Classical Economics): Monetarists believe that the main determinant of economic growth is the amount of money in the economy. The focus is therefore on monetary policy.

21st century: increased interdependence between Economics and other social disciplines

Behavioral economics: Aspects of psychology integrated into economic analysis to understand the motives behind decision-making agents

Nudge theory: The idea that consumers can be "nudged" to voluntarily make choices that are better for them and better for the society.

Circular economy: Products are designed to be long-lasting, and new products are repurposed and recycled from old ones. The principles of circular economy are consistent with many of the Sustainable Development Goals (SDGs).

1.3 Structure of the course

In this course we will study the economic problem in four themes:

1. How can governments help solve the economic problem in different cases?
2. How is sustainability threatened, while people or companies are making an effort to solve their economic problem?
3. How does efficiency conflict with equity while people or companies are making an effort to solve their economic problem?
4. How does economic growth conflict with economic development while companies or governments are making an effort to solve their economic problem?

We will study these questions in each of the following four economic domains:

Microeconomics: the science of choosing on a small scale (individuals, companies).
Macroeconomics: the science of choosing on a big scale (regions, countries).
Global economy: the science of choosing in interaction with other countries (international economics) and in order to raise living standards (development economics).

During this economics course we will go through all four domains and discuss the material you need to understand for your IB exam. This guide contains a summary of the contents of the course.

MICROECONOMICS

2

2.1. Demand and supply 19

In this section the microeconomic laws of *Demand* and *Supply* are discussed. Further, it is explained how *Equilibrium* is reached on the market. We will also see that at this equilibrium point *Market efficiency* is reached.

2.2. Externalities 33

Before discussing the theory, this section will briefly go over the most important *Definitions*. Next the *Economics of externalities* will be discussed in general before dividing them into two categories: *Externalities of production* and *Externalities of consumption*. This section will close with *Other sources of market failure* that might exist in the economy.

2.3. Government intervention 41

The government can try to solve market failures in many different ways. This sections discusses the solutions of *Indirect taxes*, *Subsidies* and *Price controls*.

2.4. The theory of the firm 48

This section will discuss the theory of the firm in general. More specific it will discuss the determination of *Production and costs*, *Revenues* and *Profit*. Finally, this section will go into the different *Goals of the firm*, that a firm may have.

2.5. Market structures 55

This section will go into the different market structures that can exist in an economy: *Perfect competition*, *Monopoly*, *Monopolistic competition* and *Oligopoly*.The different characteristics of these structures are explained, as well as the profitability on the long en short term and the level of efficiency.

2.1 Demand and supply

2.1.1 Demand

Law of demand When price goes up, *ceteris paribus*, quantity demanded goes down. Therefore, a negative relationship exists between price and quantity demanded.

Ceteris paribus means 'when all else remains equal'. In this case it means that the law of demand only holds when everything except price and quantity demanded remains the same.

Assumptions underlying the law of demand

Why is the relationship between price and quantity demanded as such? Well, assuming ceteris paribus, we have:

1. Income effect: as the price of a good or service drops, the amount of the good or service which can be purchased using the same amount of money rises. This is because we assume that income stays constant.
2. Substitution effect: a change in the demand of a good as a result of a change in the relative price of the good compared to that of substitute goods. This is because we assume the price of substitute goods stays the same.

Take note that the demand curve slopes downwards as result of the Law of Diminshing Marginal Utility:

Law of Diminishing Marginal Utility as consumption increases, the marginal utility derived from each additional unit declines.

This law directly relates to the concept of diminishing prices. As the utility (satisfaction) of a product decreases when its consumption increases, consumers are willing to pay less for more of a product.

For example, assume a customer has paid $100 for an airfryer. As he has no need for a second airfryer, purchasing another product holds little value to him and he is only willing to pay $25. Thus, as a consumer's marginal utility declines, the price they're willing to pay declines too. Therefore, the first consumed unit typically holds the highest value.

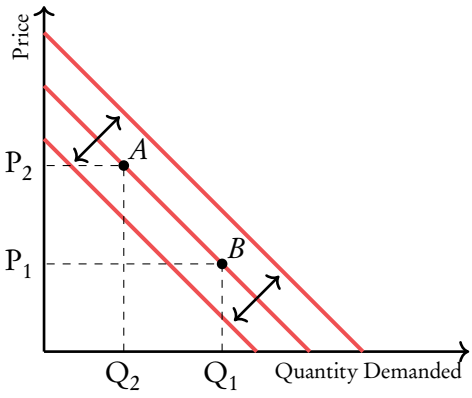
The law of demand can also be written as a formula, the formula of the demand curve, which has the following general form:

$$Q_D = a - bP$$

In this formula:

- Q_D = Quantity Demanded;
- P = Price;
- a = intersect; if the a in the formula changes, the demand curve will shift to the left (if a decreases) or to the right (if a increases);
- b = slope; the higher the b, the higher the slope of the demand curve; in the case of the demand curve, b will be negative because of the negative relationship between price and quantity demanded.

Figure 2.1: The demand curve.



A move along the demand curve occurs when the price of the product changes. If, for example, the price increases, a shift along the demand curve may occur from point *B* to point *A*.

A shift of the demand curve occurs in cases in which any other factor than price changes.

Below the most important of these factors are listed along with their effect on the demand curve:

The income of consumers In general when the income of consumers increases (decreases), consumers will have more (less) money to spend. Their demand of the good of which the demand curve is drawn will increase (decrease). This will shift the demand curve to the right (left).

⇒ The shift above will only happen if the good in question is a normal good (i.e. any good for which demand increases when income increases). Most goods on the market are normal goods.

⇒ In the case of inferior goods (i.e. goods for which demand decreases when income increases) the opposite will happen. When income increases (decreases), the demand curve will shift to the left (right). An example of an inferior good is a hamburger from McDonald's. When the income of people increases, they will typically use the extra money to buy better, healthier and more expensive types of food so demand for hamburgers goes down.

Prices of complementary goods A complementary good is a good that is consumed along with another good. Examples of complementary goods include cars with

fuel, computers with computer software and Christmas trees with Christmas decorations.When the price of a good increases (decreases), the demand for the complementary good will decrease (increase), shifting the demand curve for the complementary good to the left (right).

Prices of substitute goods A substitute good is a good that is consumed instead of another good. Examples of substitute goods include iPhones vs. Samsung phones, Volkswagen vs. Opel cars and match sticks vs. lighters.When the price of a good increases (decreases), the demand for the substitute good will increases (decreases) because it is now a relatively less expensive (more expensive) alternative. This will shift the demand curve for the substitute good to the right (left).

Population When the population increases (decreases) there will be more (less) people to demand the good. This will increase (decrease) demand, shifting the demand curve to the right (left).

Taste when taste (e.g. in fashion) changes so will the demand for certain goods. This depends on the change. If wearing a certain type of shoe suddenly becomes a trend, the demand for this type of shoe will increase, shifting the demand curve to the right.

Future price expectations when a consumer expects the price of a good to increase in the future, they will take advantage of lower prices by demanding more of the good in the present. This leads to a shift in the demand curve to the right.

2.1.2 Supply

Law of supply Higher prices will, *ceteris paribus*, increase quantity supplied. Therefore a positive relationship exists between price and quantity supplied.

This relationship makes sense, because producers will want to make and sell more products when the price on the market for these products has increased in order to make more profit.

There are some underlying assumptions that enforce this relationship.

Assumptions underlying the law of supply

Why is the relationship between price and quantitied supplied as such? Economists will say this is down to two things:

1. Law of Diminshing Marginal Returns: a theory that predicts once an optimal level of capacity is reached, employing an additional factor of production will result in a decreasing marginal output of production.

As long as one unit of input is fixed, additional inputs of variable factors will eventually lead to decreasing product outputs. When the law of diminshing marginal returns is in effect, the firm's supply curve will be upward sloping. This upward-sloping relationship is also a direct result of:

2. Increasing Marginal Costs: When a marginal product is decreasing, marginal cost is increasing. As a firm increases output, total costs, as well as variable costs, start to increase at a diminishing rate.

Ceteris paribus means 'when all else remains equal'. In this case it means that the law of supply only holds when everything except price and quantity supplied remains the same.

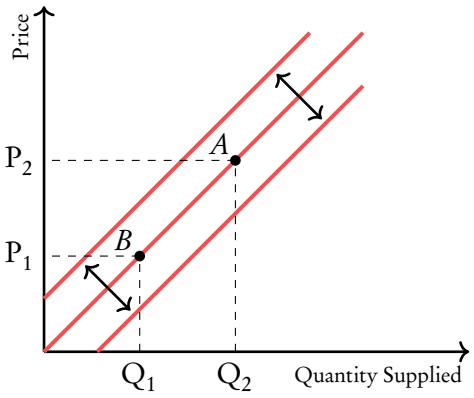
The law of demand can also be written as a formula, the formula of the demand curve, which has the following general form:

$$Q_S = c + dP$$

In this formula:

- Q_S = quantity supplied;
- P = price;
- c = intersect; if c in the formula changes, the demand curve will shift to the left (if c decreases) or to the right (if c increases);
- d = slope; the higher the d, the higher the slope of the supply curve; in the case of the supply curve, d will be positive because of the positive relationship between price and quantity demanded.

Figure 2.2: The demand curve.



A move along the supply curve occurs when the price of the product changes. If, for example, the price increases, a shift along the supply curve may occur from point *B* to point *A*.

A shift of the supply curve occurs in cases in which any other factor than price changes.

Below the most important factors are listed along with their effect on the supply curve:

Cost of factors of production When the factors of production become more (less) expensive, the production cost for producers will increase (decrease). This means they will probably produce less (more) and the supply curve will shift to the left (right).

Level of technology When technology advances (deteriorates), producers can produce more (less) efficiently. This means they will probably produce more (less), shifting the supply curve to the right (left).

Prices of related competitive goods When the prices of competitive goods increase (decrease), producers will feel more (less) confident about 'winning' the competition. They will increase (decrease) production, shifting the supply curve to the right (left).

Prices of related joint goods When the prices of related goods increase (decrease), producers will feel less (more) confident about selling their goods along with the related good. Therefore they will produce less (more) goods, shifting the demand curve to the left (right).

Indirect taxes When the indirect taxes (i.e. taxes levied on the sale of goods) increase (decrease) the price of goods will increase (decrease). This will make producers feel less (more) confident on selling their goods so they will decrease (increase) their production and supply. Consequently, the supply curve will shift to the left (right).

Subsidies When subsidies (i.e. government money given to producers) increase (decrease), producers will decide to produce more (less) of the good. This will shift the supply curve to the right (left).

Numbers of firms / competitors on the market When there are more (less) competitors on the market, the producers will face increased (decreased) competition, decreasing (increasing) their market shares. This causes them to produce less (more), shifting the supply curve to the left (right).

Change in expectations When expectations change so does the production of producers. If a producer, for example, expects an economic crisis to occur, he will probably decrease supply in order to be prepared for a sudden loss in demand.

2.1.3 Equilibrium

Supply and demand interact to produce market equilibrium. This market equilibrium will be at the intersection of the demand and the supply curve, where supply equals demand (see Figure 2.3).

At this equilibrium point, you can find the equilibrium quantity (Q^*) at the horizontal axis and the equilibrium price or market price (P^*) at the vertical axis.

But in some cases the price is different from P^*:

- If the price lies above the market price, the quantity supplied will be higher than the quantity demanded ($Q_S > Q_D$). In this case there will be excess supply.
- If the price lies below the market price, the quantity demanded will be higher than the quantity supplied ($Q_D > Q_S$). In this case there will be excess demand.

Figure 2.3: Equilibrium.

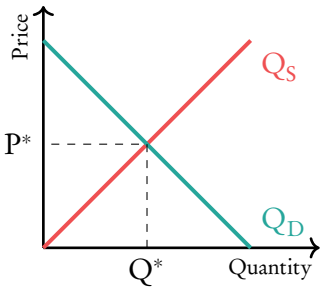


Figure 2.4: Excess supply.

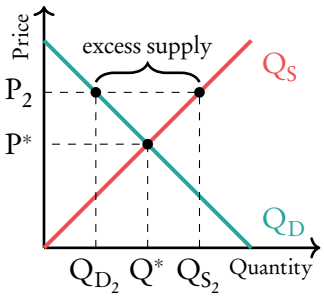
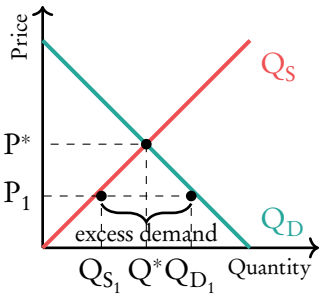


Figure 2.5: Excess demand.



In general, price can be said to have two functions on a market:

Signalling function: A high price is a signal to producers that consumers want to buy the good.
Incentive function: A higher price is an incentive for producers to produce more to increase profit.

2.1.4 Market efficiency

The efficiency that is achieved on a market can be measured by adding up the consumer and producer surplus. This gives you the total welfare.

Consumer surplus (CS) The extra satisfaction gained by consumers from paying a price that is lower than the price they were prepared to pay
→ total welfare gained from being able to consume.

Consumer surplus is measured by calculating the size of the area locked inside the demand curve; the horizontal line from P^* and the vertical line from Q^*.

Producer surplus The excess of actual earnings that a producer makes from a given quantity of output above the amount a producer would be willing to accept for that output
→ total welfare gained from being able to produce; equal to producer profits.

Producer surplus is measured by calculating the size of the area locked inside the supply curve; the horizontal line from P^* and the vertical line from Q^*.

Figure 2.6: Consumer surplus and producer surplus when market is in equilibrium.

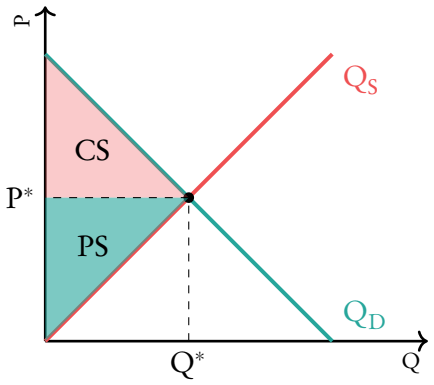
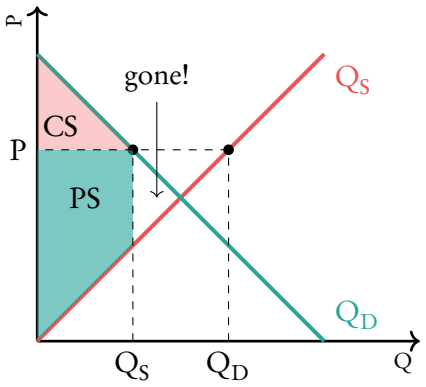


Figure 2.7: Consumer surplus and producer surplus when market is *not* in equilibrium.



Best allocation of resources is reached at the market equilibrium. At that point the community surplus (CS + PS) is maximised. (At that point marginal benefit = marginal cost, see section on market failure).

⇒ to see that this is true, let's look at a situation where price is not equal to the market price (see Figure 2.7).
⇒ You can see that CS + PS is smaller than at the equilibrium, the loss in producer and consumer surplus is marked in the figure.

Elasticities

Elasticities are used to measure the effect a change in some factor (income, price of a good, price of another good etc.) has on supply and demand of a good. For your IB exam you must know of four different elasticities which we will discuss here.

Price elasticity of demand (PED)

The price elasticity of demand is used to measure the effect a change in price has on the demand for a certain good. It can be calculated as follows:

$$\text{PED} = \frac{\%\text{ change in } Q_D}{\%\text{ change in P}}$$

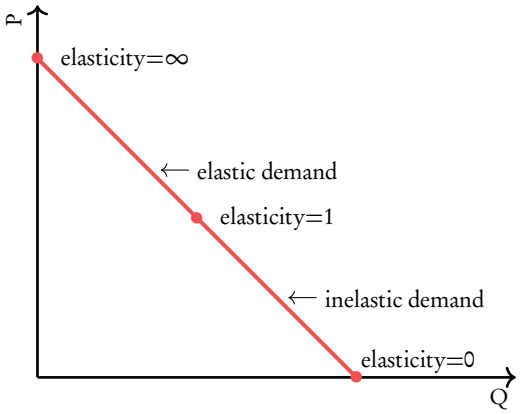
The outcome of PED is typically negative (because there is a negative relationship between price and quantity demanded) but in economics we do not write the minus symbol of the PED.

What does the outcome mean? If price increases by a certain percentage, quantity demanded will decrease by PED × that percentage. (If for example PED = 2 and price increased by 10%, demand would decrease by 20%).

The outcome of the PED can be placed into one of five categories:

1	PED = 0	Perfectly inelastic demand
2	0 < PED < 1	Inelastic demand
3	PED = 1	Unit elastic demand
4	1 < PED < ∞	Elastic demand
5	PED = ∞	Perfectly elastic demand

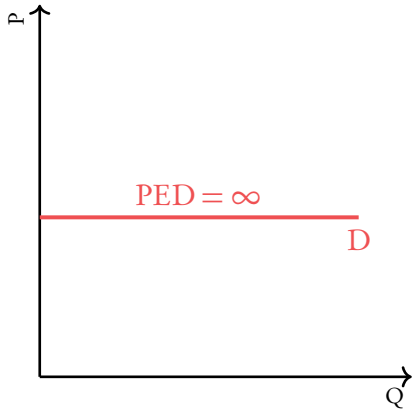
The higher the elasticity, the more elastic PED is, the more demand will change when price changes.



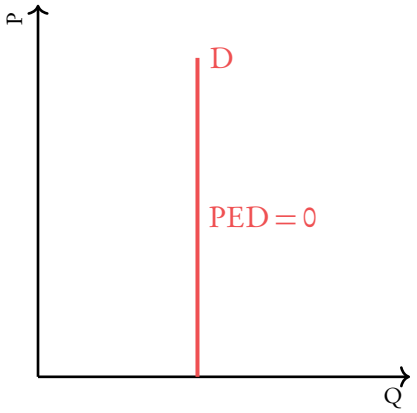
PED is different at each point of the demand curve. In the middle it is equal to 1. Left of the middle of the demand curve PED will be elastic; right of the middle of the demand curve it will be inelastic.

There are two exceptions to the rule above:

On a completely horizontal demand curve, PED = ∞ at every point.



On a completely vertical demand curve, PED = 0 at every point.



When PED is elastic, firms should lower their price to get more revenue because in that case demand will increase more than the price will decrease. The opposite will be the case when PED is inelastic. When PED = 1, the firm should leave the price at the current level; revenue is maximised at this point.

Governments want to tax goods with an inelastic PED because demand changes less than the price increase due to the tax, so they can make more tax revenue on these goods.

The size of the price elasticity of demand is influenced by the following factors:

The number and closeness of substitutes: The more substitutes, the higher PED. If there are a lot of substitutes, consumers can easily switch to another product when the price of the product increases.

The degree of necessity: The higher the need for the product, the lower PED. Consumers will buy goods they need anyway, regardless of the price. Examples include: food and gasoline.

The time period over which PED is measured: The longer this time period, the higher PED. In the long run, consumers have more time to look for alternatives / substitutes for a good. They will switch more often if the price of the good increases.

The proportion of income spent on the good: The smaller this proportion, the lower PED. When the proportion of income spent on a good is low, consumers will not notice or care about a price change and still buy the same proportion of the good.

The type of good: Primary commodities (i.e. materials in raw unprocessed state) have a lower PED than manufactured commodities. Primary commodities are necessary for producers in order to produce. They will buy them anyway, regardless of the price that is asked for them.

Price elasticity of supply (PES)

The price elasticity of supply is used to measure the effect a change in price has on the supply for a certain good. It can be calculated as follows:

$$PES = \frac{\%\text{ change in } Q_S}{\%\text{ change in } P}$$

The outcome of PES is typically positive (because there is a positive relationship between price and quantity demanded).

What does the outcome mean? If price increases by a certain percentage, quantity supplied will increase by PES × that percentage. (If for example PES = 2 and price increased by 10%, supply would increase by 20%).

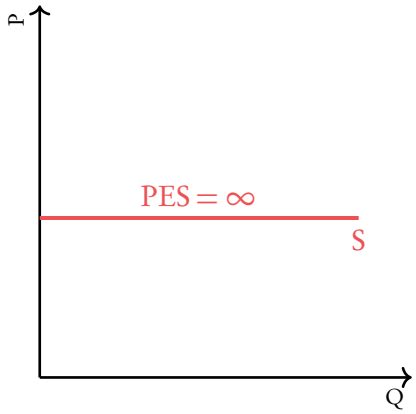
The outcome of the PES can be placed into one of five categories:

1	$PES = 0$	Perfectly inelastic supply
2	$0 < PES < 1$	Inelastic supply
3	$PES = 1$	Unit elastic supply
4	$1 < PES < \infty$	Elastic supply
5	$PES = \infty$	Perfectly elastic supply

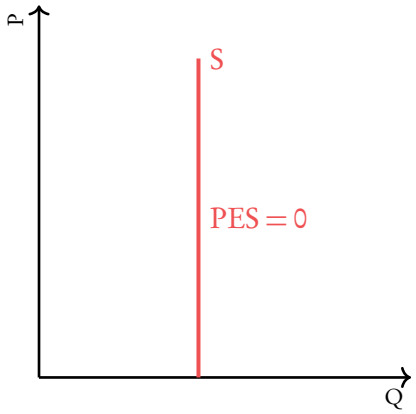
The higher the elasticity, the more elastic PES is, the more supply will change when price changes.

PES is different at each point of the supply curve, but there are two exceptions to the rule above:

On a completely horizontal supply curve, PES = ∞ at every point.



On a completely vertical supply curve, PES = 0 at every point.



The size of the price elasticity of supply is influenced by the following factors:

Mobility of factors of production: The more mobile factors of production are, the easier it is for producers to buy and sell them. This means it is easier for producers to increase or decrease production, therefore the PES will be more elastic.

Unused capacity: When producers have a lot of unused capacity, it will be easier to increase production if necessary, therefore the PED will be more elastic.

Ability to store stocks: If a firm is able to store high levels of stock of their product, they will be able to react to price increases with swift supply increases and therefore the PES for the product will be relatively high.

The time period over which PES is measured: PES will be higher when it is measured in the long run since companies will have more time to adjust production to price levels. In the short run producers often can't change supply by that much.

Type of goods: Primary commodities typically have a low PES while manufactured commodities often have a high PES. This is due to the higher necessity of primary goods (in manufacturing and general usage) compared to manufactured goods.

Income elasticity of demand (YED)

The income elasticity of demand is used to measure the effect that a change in income of consumers has on the demand for a certain product. It can be calculated as follows:

$$\text{YED} = \frac{\%\text{ change in } Q_D}{\%\text{ change in income}}$$

The outcome of YED can be positive or negative:

If the outcome of the YED is *positive*, the good of which the YED is calculated is a normal good. When income increases, so does consumption of the good.

If the outcome of the YED is *negative*, the good will be an inferior good. When income increases the consumption of the good will decrease.

What does the outcome mean? If the income of consumers is increased by a certain percentage, the quantity demanded the good will increase by YED × that percentage. (If, for example, YED = −2 and the income of consumers has increased by 10%, demand for the good would decrease by 20%).

Goods can also be placed into two categories based on the size of the YED:

1. If YED > 1, YED is said to be income elastic and the good of which YED is calculated is a luxury good because an increase in income will lead to a spectacular increase in demand for these goods. Examples of luxury goods include jewelry and sports cars.
2. If YED < 1, YED is said to be income inelastic and the good of which YED is calculated is a necessity good because an increase in income won't change the demand for these goods that much, consumers will need them anyway. Examples of necessity goods include food and medicine.

2.1.5 Critique of the maximizing behavior of consumers and producers

Rational Consumer Choice

Assumptions about consumer behavior: consumers are…

- Rational
- Utility maximizing
- Equipped with perfect (as opposed to limited) information

Behavioral economics Where economics meets psychology.

When we look at behavioral economics we are challenging the assumptions that we as humans act in an 'economically rational' way when given certain choices in the market place. It is the idea that we are "human beings" (*humans*), not "economic agents" (*econs*).

When looking at behavioral economics, you should recognize that the choices consumers make are influenced by many factors that may not be consistent with the assumptions behind traditional economic models.

Econs

- Rational
- Have perfect information
- Extremely intelligent, able to perform complex calculations quickly
- Seek to maximize own utility
- Make decisions based on own self-interest
- Have consistent preferences over time
- Have no self-control problems
- Unbiased

Humans

- Bounded Rationality
- Have incomplete information
- Not as intelligent as 'Econs'
- Limited ability to carry out complex calculations
- Social beings, make decisions in a social context
- Change tastes over time
- May have self-control issues

Dual System Model: Daniel Kahneman and Amos Tversky

The 'Dual System Model' explains why humans make decisions that are different from Econs. According to the model, individuals have two different systems of thinking:

System 1 fast-thinking, sub-conscious system
System 2 slow-thinking, controlled system

System 1 (automatic system)

- Intuitive
- Gut instinct
- Uncontrolled
- Fast
- Immediate
- Impulsive

System 2 (reflective system)

- Deliberate
- Unemotional
- Controlled
- Slow
- Logical
- Calculating

Neoclassical economists would claim that rational consumers make all their decisions using reflective thinking. This is not entirely true, sometimes individuals let the automatic system take over and this can result in poor-decision making.

Limits to human behavior in economic decision-making

Bounded Rationality: consumer rationality is limited by imperfect information and time pressure. Because of limited rationality, individuals often make choices that are satisfactory rather than optimal.

Bounded Self Control: The economic assumption that choices are consistent over time does not always hold true.

Bounded Selfishness: The assumption that utility maximization does not take into account cooperation or helping others

Behavioral economics really influences the way we make choices! When looking at behavioral economics "in action", we look at two things: Choice Architecture and the Nudge Theory

Choice Architecture

This is a theory that the decisions we make are heavily influenced by the way that someone, referred to as "choice architect", presents the choices to us. For example, when standing in a check-out line at the grocery store, you feel compelled to buy the displayed sweets when you normally would not do so. You are more likely to buy as they were placed deliberately at eye-level.

We can break Choice Architecture down in three ways:

Default choice: Consumers go for the 'easier' option. The default choice involves minimizing the 'costs of choosing'. An example would be Google Search: when needing to search something, most people default to Google, despite it being one of the last search engines developed.

Mandated Choice: Situations where consumers are required by law to make a choice in advance. For instance, when receiving your driver's license in the US, you must also simultaneously decide whether or not you want to be an organ donor. This can be seen as forcing a choice.

Restricted Choice: due to 'bounded rationality', consumers may find it difficult to make effective decisions due to the number of choices being too large. Restricting the number of available choices may cause consumers to act and actually make a decision, resulting in a more efficient outcome.

Nudge Theory A theory that suggests that the choice architecture offered to people can be designed to encourage (nudge) them to voluntarily choose the option that is better for them.

When looking at the Nudge Theory, a couple of key aspects must be understood!

Consumers always have their *sovereignty* as they are merely encouraged to make the better choice. In other words, you *keep the power to choose*, but the *options are made by choice architects*.

You can think of it as when your parents used to suggest going for the healthier option and eating fruits or veggies, but they would never mandate that decision for you. Over time however, you will begin to choose these healthy options yourself.

When designing these choices, "architects" must help people override their cognitive biases:

Cognitive bias When individuals divert from the "rational choice" and make decisions based on non-economic factors such as emotion.

Types of bias

Availability bias: The availability of information examples greatly impacts people's decision making processes. For example, if an individual's only available information was that his grandpa smoked and lived to 90-years old, they may infer that smoking is not bad at all.

Anchoring bias: Information on the value of one thing – referred to as an "anchor" – serves as a reference point for other choices and decisions. An example could be a store with sale. The store could have initially highly priced an item at $20 when it should have been sold for $10. The store then discounts it for $15 and an individual buys it as they believe they are receiving a good deal.

Framing bias: The way in which an individual learns something. The way a topic is framed to us initially impacts our decisions. For example, "90% fat free" vs "contains 10% fat". The latter option is framed to sound more appealing.

Social conformity: The idea of wanting to fit in, even when its against our best interest. Examples would be fashion trends and the bandwagon effect: when people adopt certain styles, behaviors, or attitudes simply because others are doing so.

Status quo (inertia bias): The idea that when there are too many choices, we do nothing. Individuals can become overwhelmed and would rather not engage with the task at hand.

Loss aversion bias: People make choices based on the thought that they may lose out on something, even if the decision is ill-informed. "Buy now, only four seats left!"

Hyperbolic discounting: Tendency for humans to prefer short-term rewards over larger long-term rewards.

2.2 Externalities

2.2.1 Definitions

Before discussing the economics of market failures and externalities, it is important to understand a few definitions:

Market failure Failure of the market to achieve allocative efficiency resulting in an overallocation or underallocation of resources.

An externality occurs when production or consumption of a good has an effect on a third party for which the latter does not pay or does not get compensated.

- This effect can be positive (benefit) in which case we speak of positive externalities. Examples include getting educated. The third party that would benefit in this case would be the society in general.
- This effect can be negative (cost) in which case we speak of negative externalities. Examples include pollution from the production of a good, which hurts society (the third party).

Marginal private costs (MPC) Costs of production that are taken into account in a firm's decision making process. The MPC curve is equal to the supply curve.

Marginal private benefits (MPB) Benefits the individual enjoys from the consumption of an extra unit of a good. The MPB curve is equal to the demand curve.

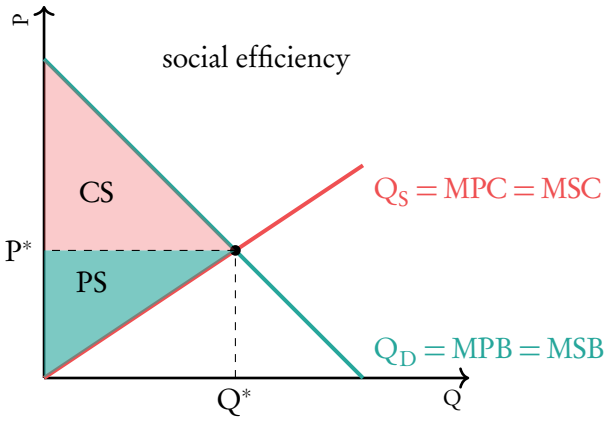
Marginal social cost (MSC) Cost of production to society.

Marginal social benefit (MSB) Benefit of consumption of one extra unit to society.

2.2.2 Economics of externalities

In the ideal situation, the marginal social costs are equal to the marginal private costs and the marginal social benefits are equal to the marginal private benefits (so MPC = MSC, MPB = MSB). The price is determined at the intersection of the demand and supply curves, which also means that the marginal social costs are equal to the marginal social benefits (so MSC = MSB).

Figure 2.8: The ideal situation in which MPC = MSC and MPB = MSB.



Have a look at the graph: in this situation the community surplus will be maximised, *remember?*

In reality, MPC and MSC and MPB and MSB are often not the same. In total four different scenario's are possible:

1	MSC > MPC	negative externality of production
2	MSC < MPC	positive externality of production
3	MSB < MPB	negative externality of consumption
4	MSB > MPB	positive externality of consumption

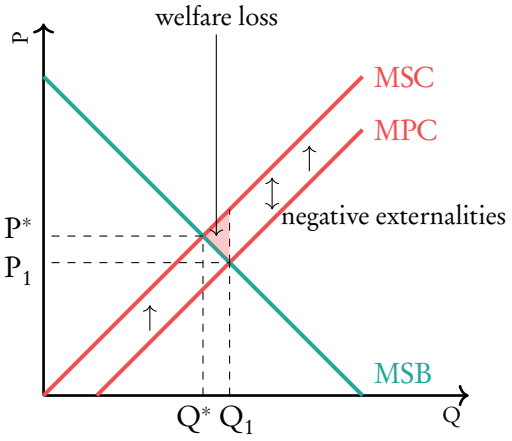
In general we can say the following so the ideal situation is reached when the externalities are equal to zero:

$$MSC = MPC + \text{externalities} \qquad MSB = MPB + \text{externalities}$$

We will have a look at all four alternatives in the two sections that follow.

2.2.3 Externalities of production

Negative externalities of production



In this case MSC > MPC, the MSC curve lies above the MPC curve. This can be caused by polluting production.

As you can see the negative externality leads to a welfare loss (the shaded triangle).

The government can end this by taxing the companies and 'internalizing the externality', or, the government could pass laws to demand stricter environmental standards. This would increase the firms private costs, shifting the MPC curve upwards.

However, there are limitations to government policies when trying to correct externalities. This is important for evaluation:

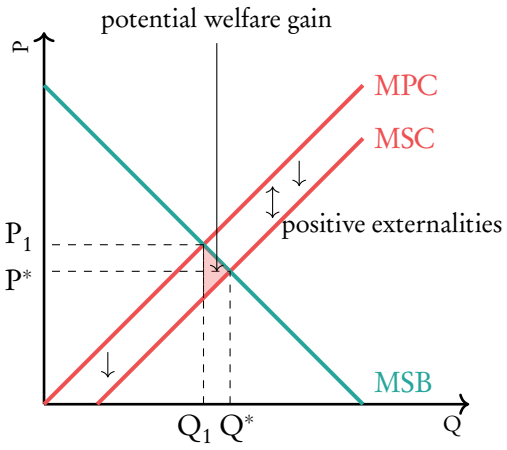
Taxing the Firm ('Internalizing the externality')

- How much pollution is created?
  - Pollution is not easy to measure
- How much should the tax be?
  - There are complications in trying to determine and quantify the tax rate
- Who is actually polluting and how much pollution are they causing?
  - Hard to disentangle the drivers of pollution
- Will the tax actually stop the pollution?

Laws for stricter environmental standards

- May lead to job losses
- Cost of setting up and policing standards
  - may actually be greater than the cost of the pollution

Positive externalities of production



In this case MSC < MPC, the MSC curve lies below the MPC curve. This can be caused by green production.

As you can see the positive externality leads to a potential welfare gain (the shaded triangle). The company produces at Q_1 and P_1, while max welfare could be achieved at Q^*, P^*.

The government could achieve this by subsidising the companies, shifting their MPC curve downwards. Governments could also provide vocational training to improve the quality of labor.

Subsidies

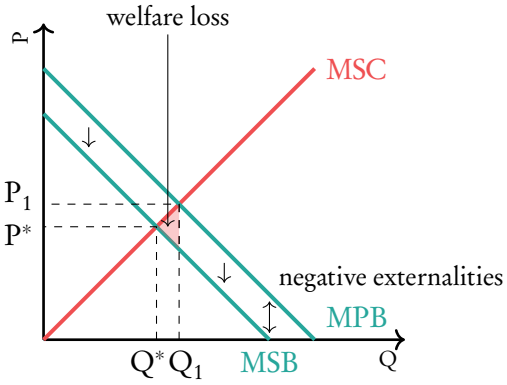
- Difficult to estimate the level of subsidy
- Opportunity costs of providing subsidies

Vocational Training

- High cost
- May discourage firms from providing training
- Trainers may lack expertise
- Improves quality of labor
  - Shifts economy's PPC outwards in the long-run

2.2.4 Externalities of consumption

Negative externalities of consumption



In this case MSB < MPB, the MPB curve lies above the MSB curve. This can be caused by consumption of demerit goods (goods of which the consumption has negative consequences on society) such as gasoline.

As you can see the negative externality leads to a welfare loss (the shaded triangle).

The government can end this by imposing a tax on the consumption of this good, causing MPB to decrease so that the MPB curve shifts downwards. The government could also choose to ban the product entirely, making it illegal. Lastly, the government could opt to educate the public about the dangers of consumption and fund negative advertising. This would shift the MPB curve to the left, essentially decreasing demand for the product.

Imposing a tax on consumption

- Government can collect tax revenue
- Demerit goods could have inelastic demand
  - Qd may not fall as much
- High taxes could encourage people to buy elsewhere
  - Emergence of black markets

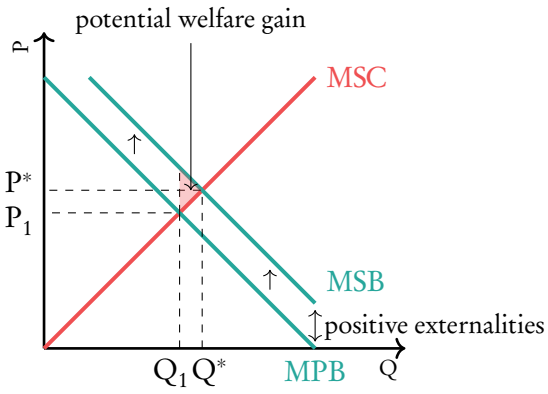
Banning the product

- Could create unemployment
- Taxing the product could be better
  - Tax revenue can be invested in other areas
- Could place a partial instead of whole ban
  - E.g. no smoking in certain places
- May be politically unpopular

Provide education

- Costly
  - Taxpayers unhappy
- A great opportunity cost
  - Tax money could be spent in other areas

Positive externalities of consumption



In this case MSB > MPB, the MSB curve lies above the MPB curve. This can be caused by consumption of merit goods (goods of which the consumption has positive consequences on society) such as education.

As you can see the positive externality leads to a potential welfare gain (the shaded triangle). People consume at P_1Q_1, while the optimum would be P^*Q^*.

The government could get there by subsidising the consumption of the good, shifting the MPB curve upwards. Additionally, governments could invest in positive advertisement and shift the MPB curve to the right (increasing demand for G&S) or pass laws to make consumption of the merit good compulsory.

Subsidies

- Costly
- High opportunity cost

Positive Advertising

- Costly
- Beneficial in the long-run

Pass laws

E.g. insisting citizens have vaccinations, make education compulsory)

- Often only successful when the G or S is provided free of charge
- Some see this as an infringement of their civil liberties

2.2.5 Other sources of market failure

In addition to the discussed sources of market failure the following sources can also be named.

Lack of public goods

Public goods (e.g. dams) have the following two characteristics:

- They are non-rivalrous: more people can use the good at the same time e.g. a dam protects more people at the same time.
- They are non-excludable: people can't be excluded from the use of the good e.g. in the case of a dam, people living in the protected area can't be excluded from the protection by the dam.

In economics we also recognise private goods (e.g. tickets to a concert) which have the following characteristics:

- They are rivalrous: the good can't be used by more people at the same time e.g. tickets to a concert can only be used by one person to enter.
- They are excludable: people can be excluded from the use of the good e.g. someone checking for tickets could deny people entry.

Private firms will not supply public goods because few people will pay for it if they can use it anyway; this is called the free rider problem.

Governments can solve this by providing the public goods themselves paying for them using taxes.

Common access resources, threat to sustainability

Common access resources are resources that everyone has access to so it is very hard to exclude people from using them (e.g. fishing grounds, fossil fuel reserves).

The lack of a pricing mechanism on these resources may cause overuse or depletion. This poses a threat to sustainability.

For example, poverty in developing nations often leads to overexploitation of agricultural land.

What can the government do to solve this problem?

- Legislation to forbid or limit the use of some common access resources.

- Carbon taxes to make sure companies will use less common access resources that eventually lead to the emission of carbon dioxide such as oil, coal and natural gas.
- Cap and trading schemes for companies to trade rights to emit carbon dioxide. This has the same effect as carbon taxes, but also limits the emission to a predetermined level because there is a certain maximum of rights to be traded.
- Funding for clean technologies so companies will use fewer resources.

But government responses are limited because:

- The problems have a global nature. They can only be solved if all countries and governments act against them, otherwise companies will just move to countries where the laws are less strict.
- There's lack of ownership of the common access resources. Often no one feels responsible for solving the problem.
- Effective responses require international cooperation, see above.

Asymmetric information

One party in a transaction possesses more knowledge of the transacted product than the other party resulting in market failure because the price does not reflect the true value of the product. An example can be the difference in information between the seller of a house / the real estate agent and the buyer. The seller knows exactly where the shortcomings of the house lie but the buyer does not unless he inspects the property thoroughly.

The government can prevent this by providing:

- Legislation / regulation: how much information to include when selling a product.
- Information: the government can directly provide information on certain products or help consumers make the right choice by providing brochures etc.

Abuse of monopoly power

Abuse of monopoly power creates a welfare loss because often a higher price is asked for the product than the true value.

The government can prevent this by providing:

- Legislation / regulation to prevent the monopolist from being able to set a higher price.
- Nationalisation of the company. The government can buy the company to make it part of the government so the government now decides what the price shall be.
- Trade liberalisation. Allowing foreign competitors to enter the domestic market creates more competition, which usually lowers the price level.

Adverse selection

When one party in an economic transaction has better information than the other. Buyers may have better information than sellers, or vice versa. In both cases, the result is that poor choices are made from society's point of view. This is a market failure occurring *before* an economic transaction has been made.

A common example of this occurs in health insurance markets. Insurance companies expect clients to be honest with certain risks they face in their daily lives. Say an individual comes in who is a heavy smoker and does not indicate this fact when choosing his insurance plan. The insurance company would not be able to know they are a heavy smoker, and ends up charging them a lower price than they should.

Moral hazard

Occurs when people have an incentive to alter their behavior and take more risks when they know that the negative consequences of their risky decision-making will be taken on by others. This is a market failure occurring *after* an economic transaction has been made.

A common example can be seen in the labor market. If a previously hard-working worker is promoted and is guaranteed a fixed salary with a permanent contract, they might choose to do the minimum amount of work required, knowing that they will still receive the full salary regardless of the quality or quantity of work they do.

How to respond to asymmetric information?

Government responses

- Legislation and regulation: the government would set more regulations to prevent any risky behavior from happening in the first place
- Provision of information: prior knowledge of any potential consequences (e.g. fines) could act as a disincentive

Private responses

- Screening: when the less informed party can find a way for the other party to reveal relevant information. E.g. insurance company revealing information concerning risk factors by asking questions: how much alcohol do you drink?
- Signalling: occurs when the party with more information can provide reliable information to the party with less information. E.g. In the used-car market, sellers offer guarantees or warranties to potential buyers, promising to take back the care or fix any problems should the buyer come across any. This signals to the buyer that the seller knows the quality of the car is worth the price.

2.3 Government intervention

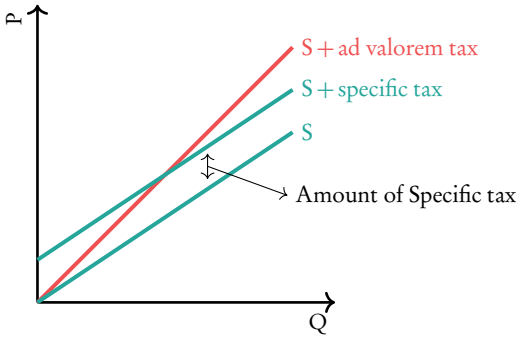
There are a couple of reasons for governments to intervene in markets:

- earn government revenue
- support firms
- support households on low incomes
- influence level of production
- influence the level of consumption
- correct market failure
- promote equity

2.3.1 Indirect taxes

Indirect taxes are taxes imposed on certain goods to discourage the consumption of goods that can create externalities (demerit goods).

Figure 2.9



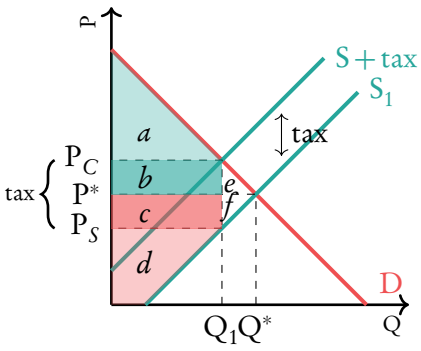
These indirect taxes can be placed into two categories:

Specific taxes: the same amount of tax per unit sold (S+specific tax in the graph).

Ad valorem taxes: a percentage of the price of the good is taxed (S+ad valorem tax in the graph).

Let's look at what happens to the equilibrium when the government decides to install a specific tax on a certain good:

Figure 2.10: Change in equilibrium due to a tax.



- The tax makes the supply curve of the good shift upwards, because the good will now be sold at a higher price.
- There is also a difference in the price consumers pay (P_c which is the price the producers set + the tax) and the price the suppliers receive (P_s which is only the price they have set, and not the tax, because they have to give away the tax money to the government).

Now let's take a look at what happens to the overall welfare level:

Consumer surplus before tax	$a+b+e$	$-$ Loss of $b+e$
Consumer surplus after tax	a	
Producer surplus before tax	$c+d+f$	$-$ Loss of $d+f$
Producer surplus after tax	d	
Extra government revenue	$b+c$	$+$ Gain of $b+c$
In total the tax will result in a welfare loss of	$e+f$	

We call this welfare loss due to a tax the tax burden.

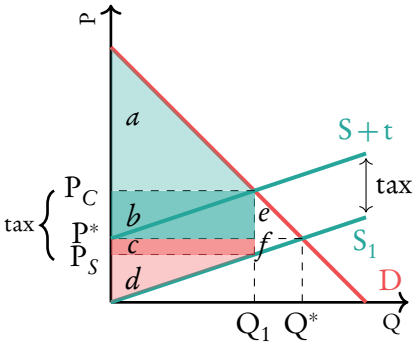
Changes in price elasticity of demand and supply

In general we can say that if the general elasticity of demand and supply changes the slope of the demand and supply curve also changes. In this section we will look at what will happen to the changes in welfare when these elasticities change.

Supply becomes (relatively) more elastic

When supply becomes relatively more elastic, the supply curve will become less steep because a change in price will have a larger effect on quantity supplied.

Figure 2.11: A tax in the case of relatively more elastic supply.



In the graph, the supply curve is shifted upwards due to the tax. from the previous section you can remember that:

- the decrease in consumer surplus is represented by $b+e$;
- the decrease in producer surplus is represented by $c+f$.

As you can see in the graph, when the supply curve is less steep, c and f are now much smaller than b and e.

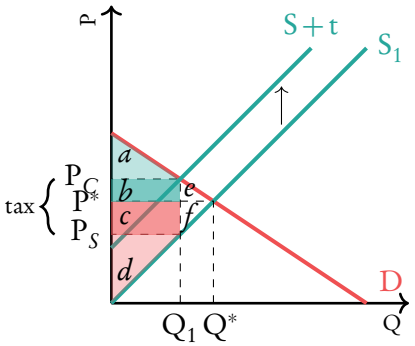
This results in the following general rule: *the higher the elasticity of supply, the higher the tax incidence (welfare loss caused by the tax) will be on consumers and the lower it will be on producers.*

Of course exactly the opposite of the above will be the case when supply becomes relatively less elastic (and the supply curve has an increased slope).

Demand becomes (relatively) more elastic

When demand becomes relatively more elastic, the demand curve will become less steep because a change in price will have a larger effect on quantity supplied.

Figure 2.12: A tax in the case of relatively more elastic demand.



In the graph the supply curve is shifted upwards due to the tax. from the previous section you can remember that:

- the decrease in consumer surplus is represented by $b + e$;
- the decrease in producer surplus is represented by $c + f$.

As you can see in the graph, when the demand curve is less steep, b and e are now much smaller than c and f.

This results in the following general rule: *the higher the price elasticity of demand, the lower the tax incidence (welfare loss caused by the tax) will be on consumers and the higher it will be on producers.*

Off course exactly the opposite of the above will be the case when demand becomes relatively less elastic (and the demand curve has an increased slope).

2.3.2 Subsidies

A subsidy is an amount of money paid by the government to a firm per unit of output.

Possible goals of the government for setting the subsidy may include:

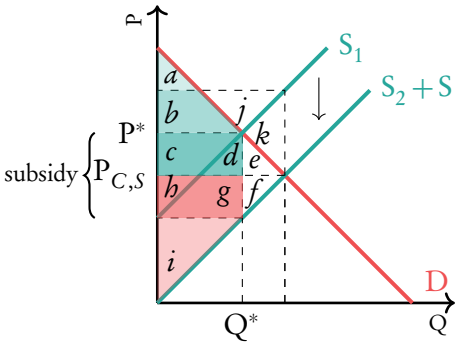
- To lower the price of essential goods: producers of essential goods can lower the price when receiving a subsidy.
- Guarantee the supply of certain goods: more producers will want to produce certain goods if they can get a subsidy in order to do so.
- Enable producers to compete with foreign competitors: domestic companies stand stronger on the international market if they get money in the form of subsidies from their government.
- Acts in line with the Nudge Theory by influencing consumers to consume more of merit goods and consume less demerit goods

Consumer nudges in relation to subsidies

Consumers do not always have perfect information and do not always make rational choices. Governments try to encourage people to make better choices and reduce their 'bad' consumption voluntarily in order to improve individual and societal well-being.

An example of 'consumer nudges' would be cigarette packaging. Governments have placed laws requiring cigarette packets to be of a plain, dull color with graphic images. This is designed to nudge customers to choose not to smoke.

Figure 2.13: Change in equilibrium due to a subsidy.



In the graph you can see the effect on the equilibrium of a subsidy.

The subsidy will shift the supply curve downwards / to the right because producers will now produce more at a lower price for every quantity.

Now let's take a look at what happens to the overall welfare level:

Consumer surplus before subsidy	$a+b$	$+$ Gain of $c+d+e$
Consumer surplus after subsidy	$a+b+c+d+e$	
Producer surplus before subsidy	$c+h$	$+$ Loss of c, gain of $f+g+i$
Producer surplus after subsidy	$f+g+h+i$	
Extra government expense	$b+c+d+e+j+k$	$+$ Loss of $b+c+d+e+j+k$

In total the subsidy will result in a welfare loss/gain of $f+g+i-c-c-d-j-k$

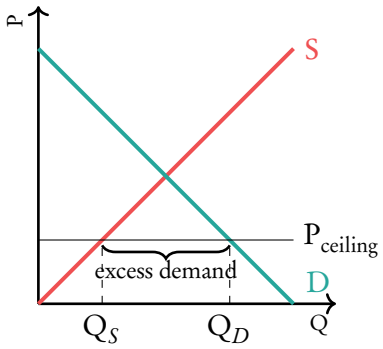
Whether the subsidy will result in a welfare loss or gain depends on the size of the areas involved. If $f+g+i>c+c+d+j+k$, there will be a welfare gain. If the opposite is the case, there will be a welfare loss.

2.3.3 Price controls

A price control is a measure by the government that forces producers to sell goods for a fixed price or for a price within a certain range. In this section we will discuss two price controls: (1) the maximum price (price ceiling) and (2) the minimum price (price floor).

Price ceiling (maximum price)

Figure 2.14: A price ceiling (maximum price) on the market causes excess demand.



With a price ceiling the government sets a maximum price, which lies below the equilibrium price, beyond which producers are not allowed to raise the price.

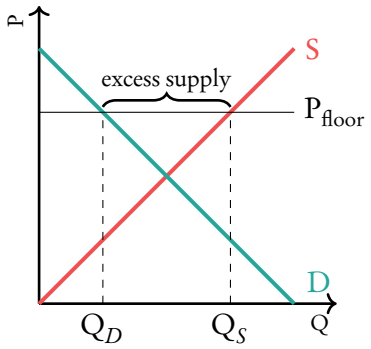
The government can do so to protect consumers against high prices.

As you can see in the diagram, in the case of a price ceiling the demand will be greater than the supply. An excess demand will thus exist.

Possible consequences of setting a price ceiling may include:

Shortage: production falls short of demand.
Underground parallel markets: due to the excess demand some consumers who want to buy the good cannot do so. They may go on the black market to still buy the good in question.
Welfare loss: the market won't be at equilibrium, consumer and producer surplus are not maximised.
Inefficient resource allocation: the market won't be at equilibrium, resources are not used most efficiently.
Non-price rationing: producers may start deciding who may buy and who may not buy. They may do so by queuing: consumers who are willing to wait the longest in a queue may buy the good.

Figure 2.15: A price floor (minimum price) on the market causes excess supply.



Price floor (minimum price)

With a price floor, the government sets a minimum price which lies above the equilibrium price. Below, producers are not allowed to lower the price.

The government can do so to protect producers against large fluctuations in prices (e.g. agricultural products) or to protect workers (e.g. setting a minimum wage).

As you can see in the diagram, in the case of a price floor supply will be greater than demand. An excess supply will thus exist.

Possible consequences of setting a price floor may include:

- Surpluses and government measures. As explained above in the case of a price floor, there will be excess supply and the government often sets a minimum price while promising producers to buy the stock that they can't sell on the market for the higher price.
- Welfare loss. The market won't be at equilibrium, consumer and producer surplus are not maximised.
- Inefficient resource allocation. The market won't be at equilibrium, resources are not used most efficiently.

2.4 The theory of the firm

2.4.1 Production and costs

Let's start with some definitions:

Short-run (SR) At least one factor of production is fixed and the firm cannot quickly change the quantity produced. All production takes place in the short run.

Long-run (LR) All factors of production are variable in the long run but the state of technology is fixed. All planning takes place in the long run.

Total product (TP) Total output that the firm produces using its fixed and variable factors in a given time period.

Average product (AP) Output that is produced on average, by each unit of the variable production factor (V) e.g. 5 cars per tonne of iron ore.

$$AP = \frac{TP}{V}$$

Marginal product (MP) Extra output that is produced by using one extra unit of the variable factor e.g. when one tonne of iron ore is used in addition, 3 more cars can be produced. The marginal product is equal to the slope of the total product curve.

$$MP = \frac{\Delta TP}{\Delta V}$$

Total, average and marginal product curves

In Figures 2.16 and 2.17 the graphs for the total product, marginal product and average product are drawn.

Figure 2.16: The total product curve.

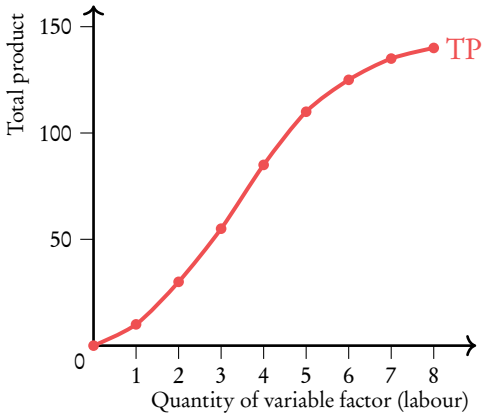
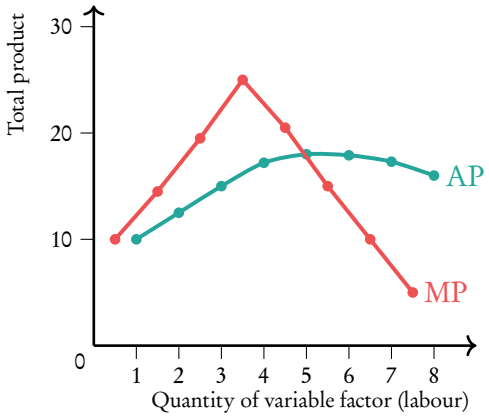


Figure 2.17: Average and marginal product curves.



As you can see, TP is always rising but beyond a certain labour quantity (in this example a labour quantity of 3.5), TP is rising less rapidly (the slope decreases).

In the other graph you can see that at a labour quantity of 3.5 MP starts to decrease, meaning that from a labour level of 3.5 one additional unit of labour will add less to the total product than the previous one.

This phenomenon is called *the law of diminishing returns*; as more of the variable factor is added, there is a point beyond which TP only rises at a diminishing rate.

The AP curve will always intersect the MP curve at the highest point:

- When MP > AP, average product will be increasing.
- When MP < AP, average product will be decreasing.
- When MP = AP, average product will be at the maximum.

Costs in the short run

Total costs (TC) The complete costs of producing output.

Marginal costs (MC) The increase in total cost when producing one more unit of output (q). The marginal cost is equal to the slope of the total cost curve.

$$\text{MC} = \frac{\Delta \text{TC}}{\Delta q}$$

Average total costs (ATC) Costs per unit of output.

$$\text{ATC} = \frac{\text{TC}}{q}$$

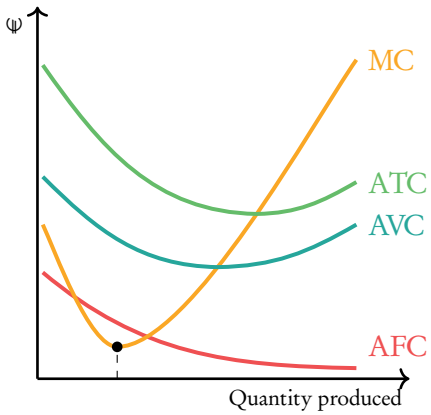
These costs can be:

Fixed costs (FC) Costs of fixed assets such as rent for company space. These costs will always be a constant amount and they won't change in the short run.

Variable (VC) Costs of variable assets. Variable costs increase when production is increased.

In Figure 2.18 you can see the general form of the TC, MC and ATC curves.

Figure 2.18: The TC, MC and ATC curves.



Some important notes on the TC, MC and ATC curves:

- $\text{AFC} = \frac{\text{TFC}}{q}$ and $\text{AVC} = \frac{\text{TVC}}{q}$
- ATC and AVC intersect with MC at their lowest points.
- When MC < AVC or MC < ATC, AVC and ATC are decreasing.
- When MC > AVC or MC > ATC, AVC and ATC are increasing.
- The distance between ATC and AVC decreases when q increases.

Next to the total cost there is also economic cost.

Economic cost The opportunity cost of all resources employed by the firm (including entrepreneurship).

These economic costs can be explicit or implicit:

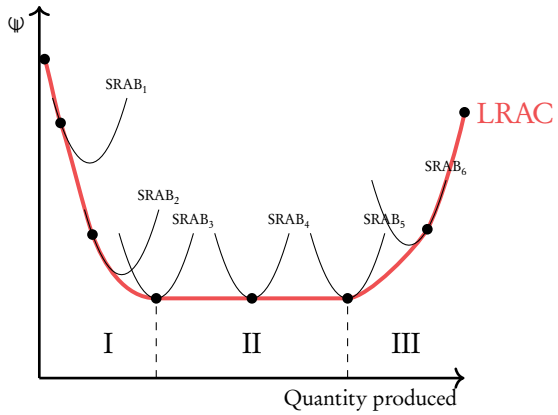
Explicit cost The opportunity cost of the money spent on resources not currently owned by the company.

Implicit cost The opportunity cost of the usage of resources currently owned by the company.

Costs in the long run

The long run average cost curve (LRAC) is a combination of all short run average cost curves (SRAC) that are present at fixed levels of production at fixed levels of factors of production.

Figure 2.19: The long run average cost curve.



In the short run, a producer can't change all the factors of production but in the long run he can. This shifts his SRAC curve along the LRAC curve.

The LRAC curve can be divided into three segments based on the returns to scale:

I. Increasing returns to scale (economies of scale): average cost is decreasing when production is increased.
II. Constant returns to scale: average cost is constant when production is increased.
III. Decreasing returns to scale (diseconomies of scale): average cost is increasing when production is increased.

Factors giving rise to economies of scale

Specialisation: when firms grow they have the resources to specialise their personnel in certain specific tasks of the production process, this decreases the average cost of the product, because the personnel has more expertise in the part of the production process that they are contributing to.

Efficiency: when firms grow they can afford more efficient production methods (machines, bulk buying etc.) this will lead to lower average cost.

Marketing: when output increases the marketing cost typically will only increase slightly or remain the same. This decreases average cost.

Indivisibilities: some production factors can't be divided into smaller pieces, for example large machines. Small firms will still have these large costs, even if production is low. When production is increased these indivisible cost can be divided by more products, lowering average cost.

Factors giving rise to diseconomies of scale

Problems of coordination: when the company grows larger, the company may need more managers in order to manage the logistics of the production. This will increase total costs and this increase average costs.

Problems of communication: when a firm grows larger it generally needs more personnel. Communication with all personnel may be difficult. The company may need to hire more extensive management in order to streamline this communication. This will lead to a higher average cost of production.

2.4.2 Revenues

Total revenue (TR) Total amount of money a firm receives from selling goods or services in a given time period.

$$\text{TR} = p \times q$$

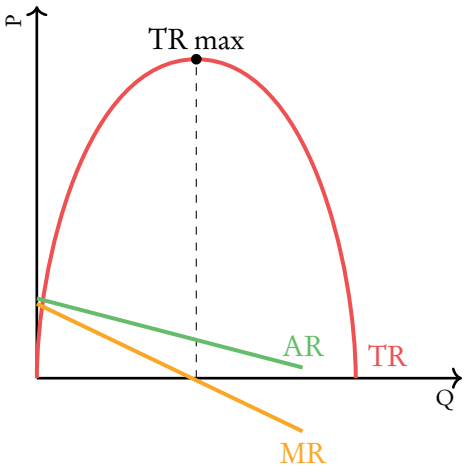
Average revenue (AR) The revenue a firm receives per unit of sales.

$$\text{AR} = \frac{\text{TR}}{q} = \frac{p \times q}{q} = p$$

Marginal revenue (MR) The extra revenue that a firm gains by selling one more product in a given time period.

$$\text{MR} = \frac{\Delta \text{TR}}{\Delta q}$$

Figure 2.20: The total revenue, average revenue and marginal revenue curves.



In the graph you can see the general form of the TR, AR and MR curves. Take note of the following when drawing these curves:

- The MR curve intersects the Q axis when TR is at maximum. This also makes sense: when $\text{MR} > 0$ every additional product will earn positive revenue, raising TR. However, when $\text{MR} < 0$ every additional product will earn negative revenue (a loss), decreasing TR.
- AR is downward sloping.

2.4.3 Profit

In economics two different types of profit are distinguished:

Economic profit (abnormal profit) Total revenues exceed total cost (TR > TC).

Normal profit Total revenue equals total cost (TR = TC, zero economic profit).

In sum, economic profit is all profit that is made above normal profit.

Why will a firm continue to operate at normal profit?

At normal profit all costs are covered. Shutting down would mean not being able to cover fixed costs or not being able to pay off debt.

Loss Negative economic profit, total cost exceeds total revenue (TC > TR).

2.4.4 Goals of the firm

The most common goal of firms is profit maximisation. This goal is achieved when the difference between total cost and total revenue is maximised (TC – TR = max). This is the case when the marginal costs are equal to the marginal revenue (MC = MR).

⇒ When MC > MR selling one more unit would lead to additional loss.
⇒ When MC < MR, selling one more unit would lead to an additional profit.
⇒ So profit is maximised when MC = MR.

In addition to profit maximisation, firms may also have some alternative goals:

Revenue maximisation: producing at a level of output at which the amount of revenue is at its maximum level (MR = 0) for the firm, ignoring increases in costs.
Growth maximisation: the firm may want to maximise the growth. This growth can be measured in revenue, production, employment or market share.
Satisficing: the firm tries to perform satisfactorily rather than to a maximum level.
Corporate social responsibility (CSR): the business includes public interest in its decision making. This may be that the company wants to produce as environmentally friendly as possible, provide good service for consumers, employ workers under favourable conditions etc. Different firms may adopt different approaches to CSR.

2.5 Market structures

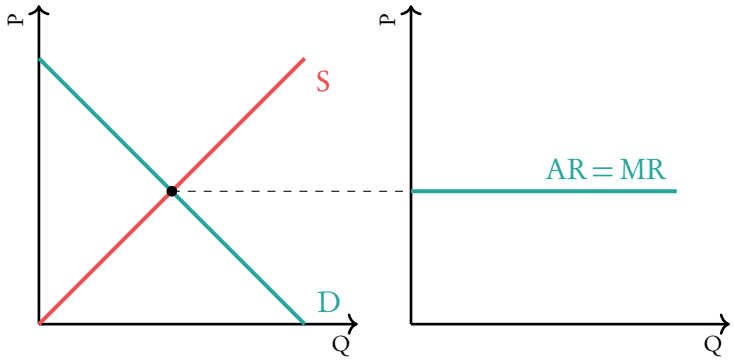
2.5.1 Perfect competition

Characteristics of perfect competition:

5. Freedom of entry / exit. Firms can easily enter or leave the market if the wish to do so.
4. There is perfect resource mobility, meaning resources can move from location to location at zero cost.
3. The product is homogeneous, meaning every product is exactly the same.
2. There is perfect information, everyone knows everything.
1. There is a large number of firms.

⇒ These characteristics imply that firms are price takers, they cannot influence the price in the industry and must sell at whatever the market price is.

Figure 2.21: Market in perfect competition.



⇒ The graphs on Figure 2.21 show the situation on the market when in perfect competition.
⇒ AR is the same as the market price (see the section on revenues).
⇒ MR is equal to AR because every extra good sold means an additional revenue of 1 × market price. Since the firms are price takers, their output does not influence the market price leaving it constant.

Profit with perfect competition

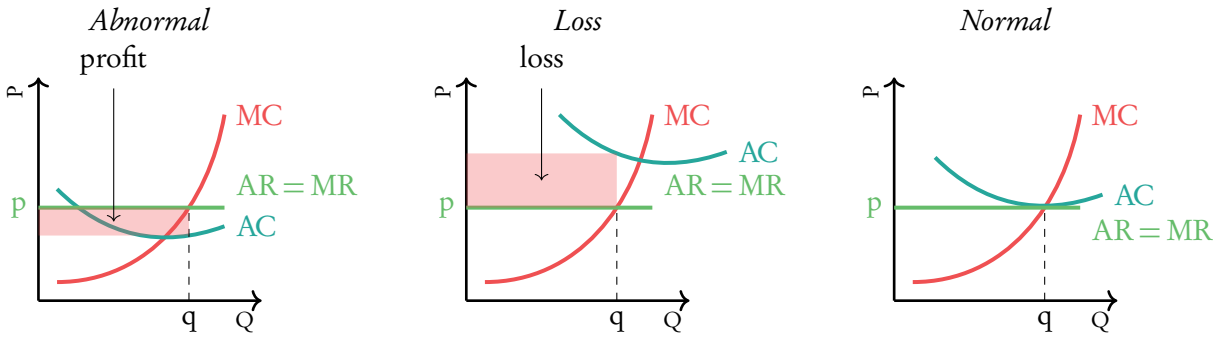
First let's explain how you can read / calculate profit diagrams depicting the cost curves of a firm:

- The firm (which wants to maximise profits) will always produce at the intersection of MC and MR.
- You can calculate the profit at this point by multiplying the difference between AR and AC with the production of the firm:

$$\text{profit} = (\text{AR} - \text{AC}) \times q$$

In the short run, firms in a perfectly competitive market can make abnormal profit (profit > 0), normal profit (profit $= 0$) or a loss (profit < 0) depending on the place and shape of the AC curve. Let's review the three situations in Figure 2.22.

Figure 2.22: In the short run firms in a perfectly competitive market can make abnormal profit (profit > 0, left), a loss (profit < 0, middle), or normal profit (profit $= 0$, right).

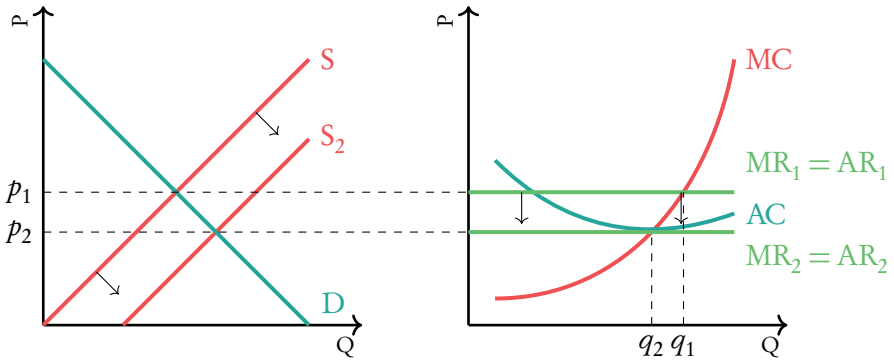


Because at the production level average cost lies below average revenue, the company will make a profit (the shaded area).

Because at the production level average cost lies above average revenue the, company will make a loss (the shaded area).

Because at the production level average cost is equal to average revenue, the company won't make profit or loss (normal profit).

Figure 2.23: When in the short run profit is possible, firms will enter the market, increasing supply, decreasing MR = AR, eliminating any profits in the long run.



In the long run, firms in a perfectly competitive market will make normal profit (profit = 0).

Starting in the short run situation where there is profit, firms from outside the market will know that there is a profit to be made and start entering the market.

This will shift the supply curve on the market to the right (increase in supply).

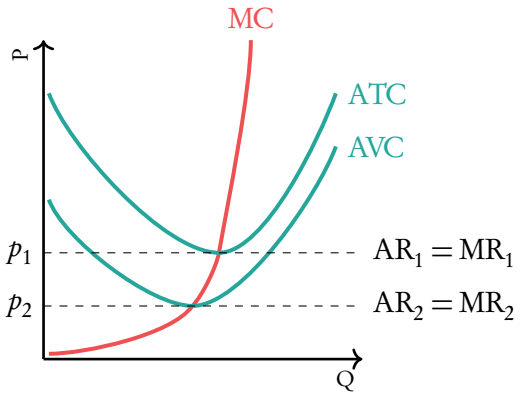
This causes the market price to decrease.

Since the market price is equal to the MR, the marginal revenue will also decrease.

Firms will keep entering the market until the MR curve has decreased to the point where profits will be zero.

Shut down and break even price

Figure 2.24: The break even and shut down price levels.



Shut down price When the price falls below this price, the company will shut down in the short run (immediately), because the average variable revenues are less than the average variable costs, meaning the company can't cover the variable cost. The shut down price thus lies at AR = AVC.

Break even price The price at which a firm is able to make normal profit in the long run. When the price falls below this price, the company will shut down in the long run. The break even price thus lies at AR = ATC.

Allocative and productive efficiency

In firm theory we recognise two types of efficiency:

Allocative efficiency Suppliers are producing the optimal mix of goods and services required by consumers. Allocative efficiency occurs when the company produces at the point where

$$MC = AR$$

(cost to producers) = (value to consumers)

Productive efficiency (technical efficiency) Suppliers produce the product at the lowest possible unit cost (AC). Occurs when production takes place at minimum point of ATC.

⇒ If you take another look at the graphs of perfectly competitive firms, you will see that in the long run both allocative (MC = AR) and productive (q at minimum AC) is achieved.
⇒ In the short run, when there is a profit or a loss, there will still be allocative efficiency (MR = AR), but there won't be productive efficiency (q is not at minimum AC).

2.5.2 Monopoly

Characteristics of a monopoly:

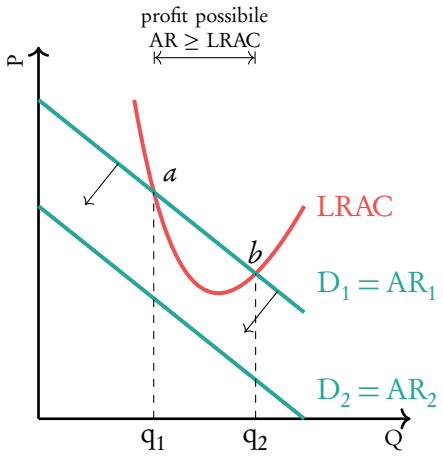
1. There's a single or dominant firm.
2. There are no close substitutes of the good on the market.
3. There are significant barriers to entry the market.

Barriers to entry Ways of preventing entry of a company to the industry.

Examples of barriers to entry include:

Economies of scale: firms entering the market cannot directly obtain the advantage of economies of scale of the existing firms (because they start small and still need to grow) and therefore cannot compete against the low prices of the existing firm.
Branding: consumers may not be willing to leave the popular brands of existing firms on the market in order to switch to the product sold by the new firm.
Legal barriers: the government prevents entry into the market by law.
Natural monopoly: there are only enough economies of scale to support one firm. In order to understand this take a look at the graph in Figure 2.25.

Figure 2.25: Natural monopoly.



Suppose there is currently one firm in the market with the LRAC curve and $D_1 = AR_1$. This firm can make a profit when the production lies between q_1 and q_2. (Because in that range, the average revenue will exceed the average cost).

If another firm enters the market demand curve for the goods of the existing firm will shift to the left because less demand is left for the existing firm. The existing firm now can't make a profit anymore, because there are no points where the average revenue exceeds average cost.

We will now review the graphs of a monopolist firm. It is important to note what the major difference between the graphs of a monopolist firm and a firm in perfect competition are:

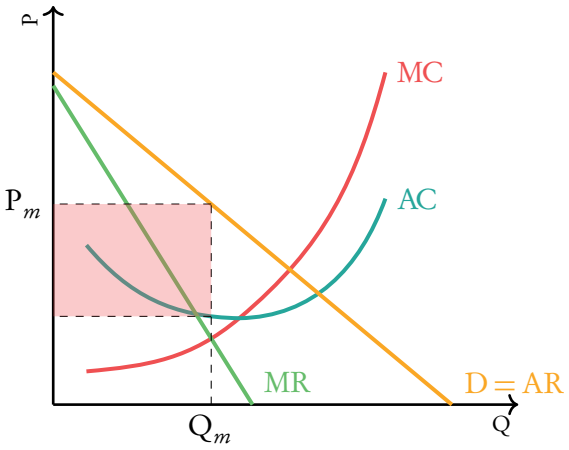
- The MC and AR (= D) curves are no longer one and the same.
- The monopoly is not a price taker but a price maker. It can determine the price all on itself. Therefore the the MC and AR (= D) curves are no longer vertical lines. For a monopolist firm they are downward sloping.
- Determining profit of monopolist firm can be done the same way as for a perfectly competitive firm:

$$\text{profit} = (\text{AR} - \text{AC}) \times q$$

- The only difference is that you will need to determine price using the Demand (= AR) curve. When you have found the production quantity (depending on the goal of the firm, see below), draw a vertical line at this quantity towards the demand curve. The price on the market will be the vertical coordinate of the intersection point of this horizontal line and the demand curve.

Profit when the goal is maximum profit

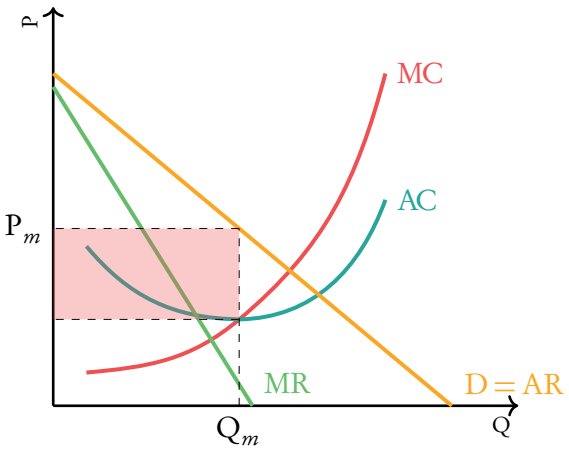
Figure 2.26: Profit for a monopolist when pursuing maximum profit.



- Maximum profit is achieved when production is at MC = MR.
- Draw a vertical line upward towards the demand curve to find the price (P_m)
- The shaded area represents the profit to be made by the monopolist firm.

Profit when the goal is maximum revenue

Figure 2.27: Profit for a monopolist when pursuing maximum revenue.



- Maximum revenue is achieved when production is ar MR = 0.
- Draw a vertical line upward towards the demand curve to find the price (P_m)
- The shaded area represents the profit to be made by the monopolist firm.

Some notes on profit in the case of a monopoly

- A monopolist firm can make profit in both the long run and the short run, because new firms can't enter the market due to entry barriers.
- When the monopolist firm pursues maximum profit:
  - There will be no allocative efficiency because MC ≠ MR at the production level.
  - There will be no productive efficiency because production is not at the level where AC is at its minimum.
- Although monopolist firms will not attain allocative or productive efficiency, being able to make large profits does have some advantages:
  - Monopolist firms have enough profit to finance research and development in order to make better products in the future.
  - Monopolist firms can grow large enough to fully exploit economies of scale, which could reduce the price eventually.

Advantages and disadvantages of monopoly in comparison to perfect competition

Advantages

- Higher levels of investment in R&D from abnormal profits
- Need to innovate to maintain abnormal profit
  - may benefit consumers in the long-run
- Possibilites of Economies of Scale:
  - Pushes MC curve down
  - May produce at a higher output and lower price than in perfect competition

Disadvantages

- High profits of monopolists are unfair:
  - depend on size and power of the monopoly
- If significant Economies of Scale do not exist: may restrict output and charge higher price than under perfect competition
  - Can exercise anti-competitive behavior to maintain monopoly power:

Government Intervention in Response to abuse of significant market power

- Legislation and Regulation
- Government Ownership
- Fines

2.5.3 Monopolistic competition

Characteristics of monopolistic competition:

1. There's a large number of firms.
2. The products sold are differentiated.
3. There are no barriers to entry or exit.

It is important to note that monopolistic firms do compete in the market because products are differentiated. Two different forms of competition are possible:

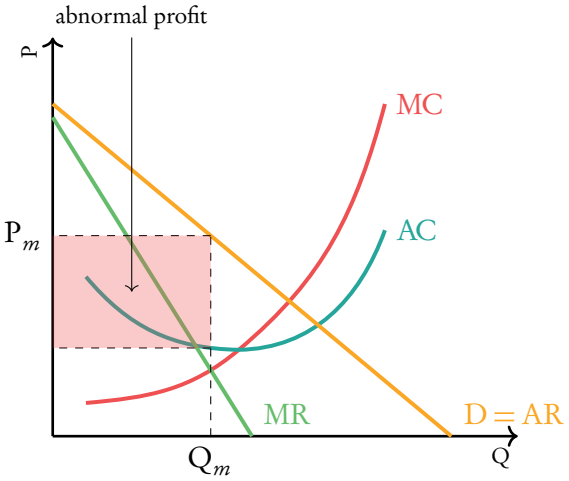
Price-competition Rivalry between suppliers based solely on price.

Non-price competition Rivalry between suppliers based on other aspects than price e.g. quality of service, packaging, advertising and product development.

The cost and revenue curves of monopolistic firms look the same as the cost and revenue curves for monopolist firms. Monopolistic firms are, like monopolist firms, in some degree price makers: because they sell differentiated products, they can decide what price to ask.

Short run

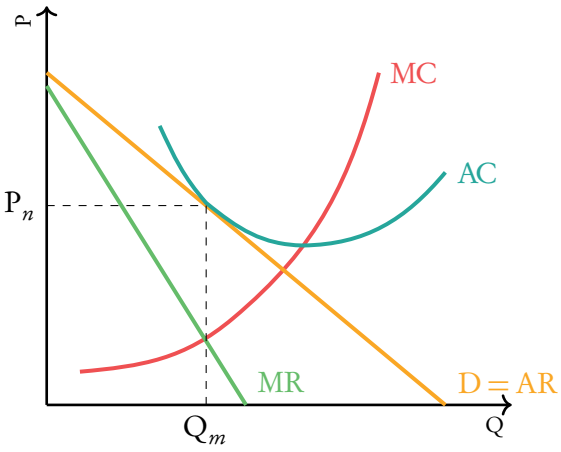
Figure 2.28: Profit for monopolistic firms in the short run.



- In the short run, monopolistic firms have some market power, due to differentiated products the demand curve is downward sloping: the firm can influence price.
- This means that in the short term making a profit (like is drawn in the graph in Figure 2.28) or a loss is possible.
- When profit maximisation is the goal of the firm, the profit is the shaded area found by using MC = MR using the demand curve to find the price.

Long run

Figure 2.29: Profit for monopolistic firms in the long run.



- Due to the absence of entry and exit barriers in the long run profit will be normal (profit = 0).
- If in the short term companies make a profit (loss) then in the long term companies will enter (leave) the market.
- New firms will take away business (firms that left will leave their business for the old firms), which shifts the demand curve to the left (right).
- Profit, found using MC = MR, using the demand curve to find the price, will be zero.

Some notes on profit in the case of monopolistic competition:

- In the short term, there will not be allocative or productive efficiency because MC $\neq$ MR at the production level and the production level is not at the minimum of AC.
- In the long term, there will not be allocative or productive efficiency for the same reason.

2.5.4 Oligopoly

Characteristics of oligopoly:

1. Dominance by a small number of firms
   - Dominance by a small number of firms can be measured using the concentration ratio (CR) e.g. $CR_4 = 80\%$ means the sum of the market share of the 4 large firms in the industry is 80%. The higher this number, the more likely it is that an oligopoly exists in this market.
2. Differentiated or homogeneous products. In an oligopoly either can be the case.
3. High barriers to entry (see monopoly).
4. Interdependence: decisions by one firm influence the other.
   - For example two firms deciding on what price to set for a product (see the table for the options they face). The firms currently offer $5.50.
   - If only one firm lowers the price this would be the best scenario for that one firm, but the worst for the other firm.
   - In this example firms will most likely lower the price, in fear of the other firm doing it and leaving them with an extreme decrease in profit. This will happen while remaining at a price $5.50 would be the mutually best option.
   - If firms were able to collude they could be better off.

		Firm A's choices	
		Set the price at $5.50	Set the price at $5.00
Firm B's choices	Set the price at $5.50	Firm A gets $6 million Firm B gets $6 million	Firm A gets $8 million Firm B gets $2 million
	Set the price at $5.00	Firm A gets $2 million Firm B gets $8 million	Firm A gets $4 million Firm B gets $4 million

Collusion

Collusion The collaboration of firms to charge the same price; the firms will act together as one monopoly. When oligopolist firms collude, their graphs will be exactly the same as for monopolist firms.

Note that collusion is illegal in most countries. It can maximise the profit of firms but it goes at the expense of consumers who are faced with higher prices.

Cartel Collusive oligopoly (group of firms making price arrangements).

Two forms of collusion can be recognised:

Formal collusion Firms agree on a price, all firms participating in the collusion know that they are participating and know the negotiated price.

It is important to note that a formal collusion is not openly communicated to the general public or the government: collusive agreements are often handled in secrecy.

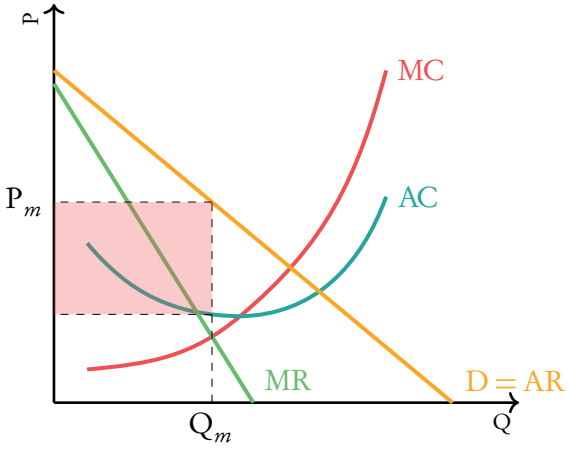
Tacit collusion Firms charge the same price by looking at each other. There is no formal agreement involved.

But members of a cartel have an incentive to cheat. Asking for a price beneath the arranged one could boost profits.

Cartels are also hard to maintain due to fear of government penalties. Being part of a cartel is, again, illegal.

Remember, when oligopolies are collusive, the firm acts as a monopoly. The graph for collusive oligopoly would look the same as in a monopoly.

Figure 2.30: The break even and shut down price levels.



Summary Table

Market type	*Nr. of suppliers*	*Barriers to entry or exit?*	Product type	Other characteristics	Time	*Allocative? (MC = AR)*	*Productive? (MC = AC)*	*Possible abnormal profit?*
Perfect competition	many	no	homogeneous	perfect information and resource mobility	SR	✓	✗	✓
					LR	✓	✓	✗
Monopolistic competition	many	no	differentiated		SR	✗	✗	✓
					LR	✗	✗	✗
Oligopoly	some	yes	either	interdependence	SR	✗	✗	✓
					LR	✗	✗	✓
Monopoly	one	yes	differentiated	no close substitutes	SR	✗	✗	✓
					LR	✗	✗	✓

MACROECONOMICS

3

3.1 Overall economic activity

3.1.1 Circular flow of income model

Money, goods and services flow through the economy. The circular flow of income model illustrates the exchange between households and firms:

Figure 3.1: Visualisation of the circular flow of income.

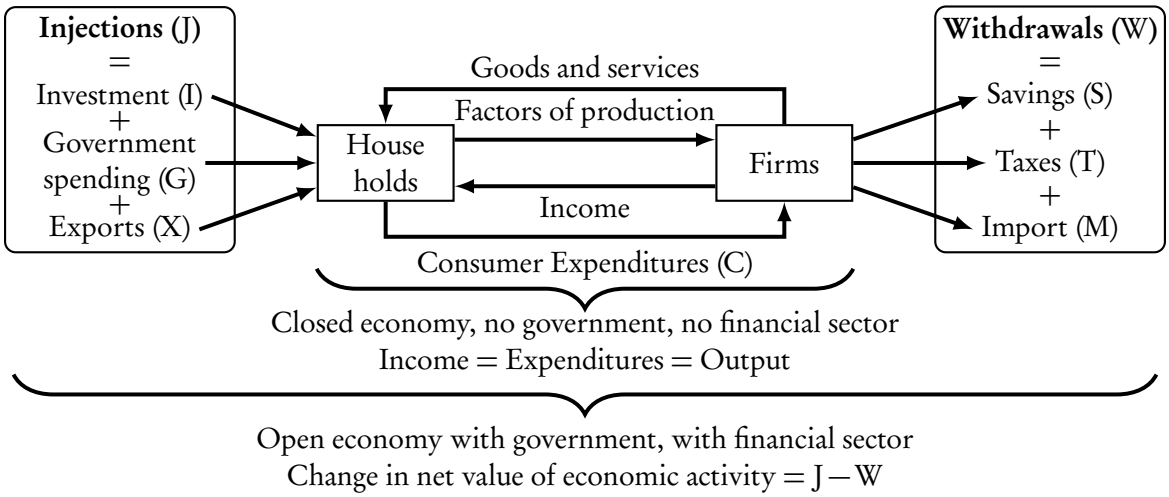


Table 3.1: The factors of production and their respective income.

Factor of production	Income	Factor of production	Income
Capital	⟶ Interest	Land	⟶ Rent
Enterprise	⟶ Profit	Labour	⟶ Wage

Some important notices about the circular flow of income model:

- The middle part of the model is a closed economy (no international trade ⇒ no imports and exports) that has no government (no taxes, no government spending) and no financial sector (no investment, no savings).
- In this economy, the income of consumers will always be the same as their expenditures because saving is impossible and there are no taxes.
- In this economy, the earnings of companies will always be the same as consumer expenditure because consumers can't spend their income on products from abroad (imports).
- In this economy, all earnings of companies will be the same as the value of their domestic outputs because companies can't invest parts of their earnings, nor can they export some of their output.

- Therefore, in a closed economy without a government and financial sector:

$$\text{Income} = \text{Expenditures} = \text{Output}$$

- When we add international trade, a government and a financial sector, injections (value added to the circular flow: investment, government spending and exports) and withdrawals (value removed from the circular flow: savings, taxes, imports) are possible.
- In such an economy the change in the value of economic activity can be measured as:

$$J - W = (I + G + X) - (S + T + M)$$

3.1.2 Measures of Economic Activity

The size of the 'economic activity' can be measured in different ways:

GDP — Gross Domestic Product Total income earned by the factors of production in a country, regardless the assets owner.

GNP/GNI — Gross National Product / Gross national income The total income earned by a country's factors of production, regardless the assets location.

Each of these indicators can be measured:

- At nominal value = at current prices
- At real value = adjusted for inflation
- Per capita = per head of population

Nominal values and real values are useful for *comparison over time*, whereas GDP/GNI per capita is more appropriate for *comparing between countries* in terms of standard of living

You need to be able to calculate the measures in the following ways:

GDP

- Output method: sum of value of all goods and services produced in the economy.
- Income method: sum of all incomes earned in the economy.
- Expenditure method: sum of expenditures by all sectors in the economy:

$$GDP(Y) = C + I + G + X - M$$

GNP / GNI

GDP+ net property income from abroad

Real GDP

$$\frac{\text{Nominal GDP}}{\text{GDP Deflator}} \times 100$$

Other measures of economic activity

OECD Better Life Index Usage of 11 topics concerning material living conditions and quality of life that affect wellbeing.

Happiness Index Ranking of countries based on their happiness levels. Main variables consist of GDP per capita, social support, healthy life expectancy, etc.

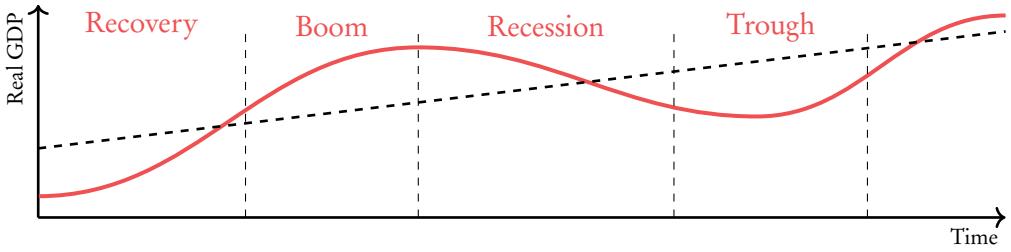
Happy Planet Index (HPI) Measures sustainable wellbeing through a combination of four elements: wellbeing (satisfaction), life expectancy, inequality of outcomes, and ecological footprint.

Note: These measures of economic activity also make up parts of the composite indicators found in 4.5.2!

3.1.3 The business cycle

The economy tends to go through a cyclical pattern of Real GDP development. The pattern is called the business cycle (Figure 3.2). The business cycle consists of different phases of real GDP growth and decline, but in the long run GDP increases, hence the increasing trend line drawn in figure 3.2.

Figure 3.2: The business cycle.



It describes the short-term fluctuations in economic activity in a country over time, which create a long-term trend of growth in the economy.

Table 3.2: Characteristics of the phases of the business cycle.

Phase	Recovery	Boom	Recession	Trough
	GDP is increasing	GDP increases less and reaches highest point	GDP starts to decrease	GDP decreases less and reaches lowest point
Consumption & Investment	Increasing	Increasing to highest point	Decreasing	Decreasing to lowest point
Unemployment	Decreasing	Decreasing to lowest point	Increasing	Increasing to highest point
Price Level	Increasing	Increasing	Stable or possible decrease	Stable or possible decrease

3.2 Aggregate demand and aggregate supply

3.2.1 Aggregate demand

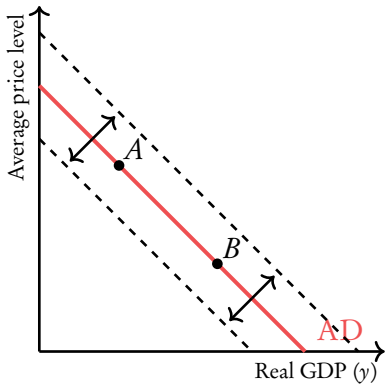
Aggregate demand (AD) Total demand for goods and services in an economy at a given time.

$$AD = C + I + G + X - M$$

The AD curve is typically downward sloping: if the average price level increases, consumers will typically buy less goods and vice versa. There is a negative relationship between price and demand.

Shifts of and moves along the AD curve

Figure 3.3: Aggregate Demand curve.



- A move *along* the AD curve occurs when the average price level changes. If, for example, the average price level increases, a shift along the AD curve may occur from point *A* to point *B*.
- A shift *of* the AD curve occurs when one of the components that make up AD increase or decrease: when C, I, G or X increase (decrease) or M decreases (increases), the AD curve will shift to the right = a general increase in demand (left = a general decrease in demand).

Table 3.3 contains different factors that influence Consumption, Investment, Government Spending, Exports and Imports.

Table 3.3: Factors that can influence, C, I, G, E and M.

Consumption (C)	Investment (I)	Government spending (G)	Net Exports (E — M)
+ Consumer confidence	— Interest rates	+/— Policy choices of the government	+ Income of trading partners
— Interest Rates	+ Business confidence		— Value of home currency
+ Wealth	+ Level of technology		+ Value of foreign currencies
+ Disposable income	— Business tax		— Level of protectionism
— Income tax	— Level of corporate debt		
— Level of household debt			

(+) = positive relationship, (—) = negative relationship.

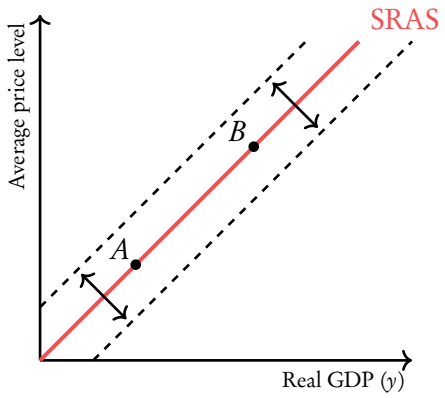
3.2.2 Short run aggregate supply

Aggregate supply (AS) The total amount of goods and services that all industries in the economy will produces at every given price level. In the short run (SRAS) or in the long run (LRAS).

The SRAS curve is typically upward sloping: if the average price increases, producers will typically produce more to increase revenue or profit.

Shifts of and moves along the SRAS curve

Figure 3.4: Short Run Aggregate Supply Curve.



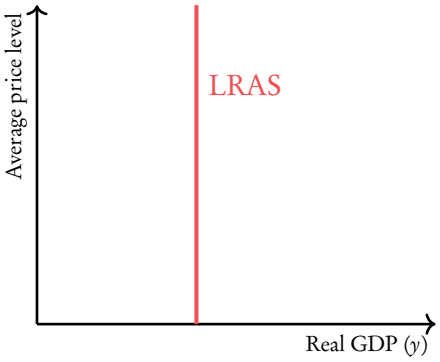
- A move *along* the SRAS curve occurs when the average price level changes. If, for example, the average price level increases, a shift along the SRAS curve may occur from point A to point B.
- A shift *of* the SRAS curve occurs when one of the components that make up SRAS increase or decrease: when resource prices or business taxes decrease (increase) or subsidies increase (decrease) the SRAS curve will shift to the right = a general increase in short run supply (left = a general decrease in short run supply).

3.2.3 Long run aggregate supply

In the long run the AS curve differs from the SRAS curve. But the exact difference is disputed: neo-classical economists and Keynesian economics both have a different view on what the long run aggregate supply (LRAS) curve should look like:

Figure 3.5: The neo-classical LRAS curve and the Keynesian AS curve.

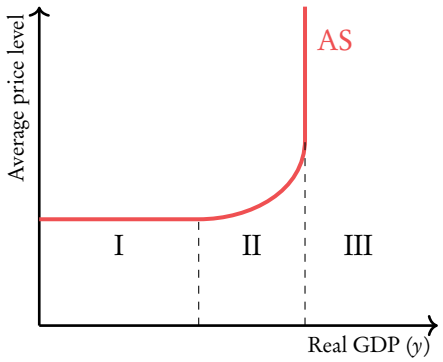
Neo-classical LRAS



In the opinion of neo-classical economists, producers are producing at full capacity, they cannot produce more, so a change in price doesn't and cannot influence the LRAS. The LRAS curve only depends on the quantity and quality of factors of production. When they increase (decrease) the LRAS will shift to the right (left).
Quantity and quality of factors of production are influenced by:

- Changes in efficiency (+)
- Technological development (+)
- Changes in unemployment (–)
- Institutional / government policy changes (+/–)

Keynesian AS



The Keynesian AS curve consists of three parts:

I Producers are producing below capacity, so they can increase output without raising the cost of a product, the average price level remains the same.

II When producers increase output even further, factors of production will become scarce, increasing the price of the product.

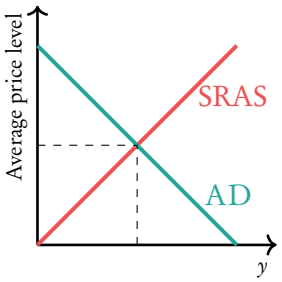
III Producers are operating at full capacity, they cannot increase output any further.

3.2.4 Equilibrium

The equilibrium point is the point at which demand is equal to supply. This point determines the average price and quantity produced and sold on the market. Since we have learned that there are three different supply curves, three possible equilibria exist:

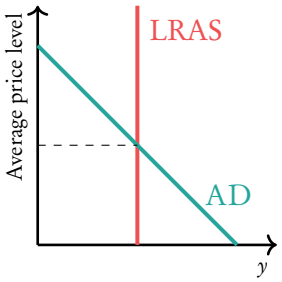
Figure 3.6: Three equilibria: short run, long run neoclassical view and long run Keynesian view.

Short run



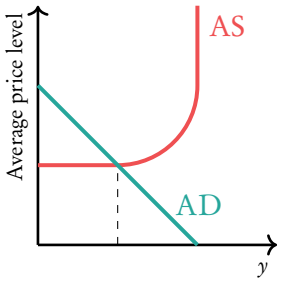
Price and output are determined by the interaction of AD and SRAS.

Long run – neoclassical



The impact of any changes in AD will be on price only, because LRAS is a vertical line so output will not change.

Long run – Keynesian



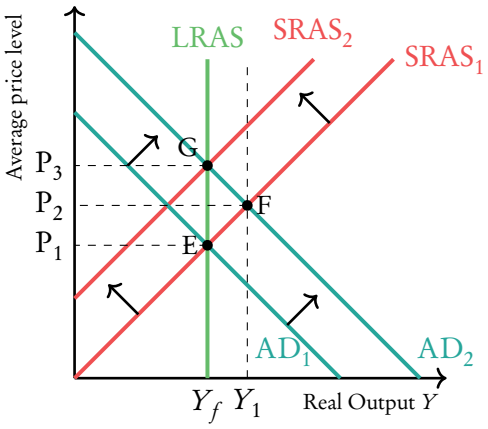
The economy usually operates at less than capacity (as shown). This will lead to slow growth and unemployment.

Changes in the long run neoclassical equilibrium

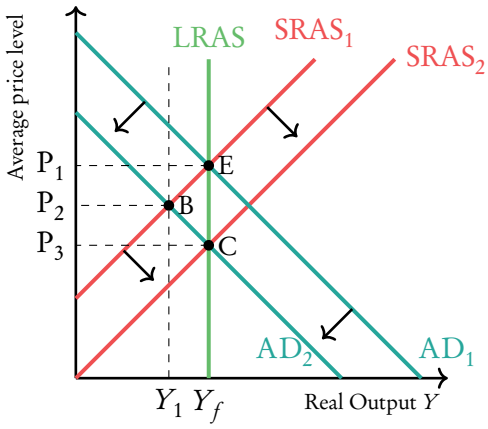
Two possible changes are possible: (1) an increase in AD and (2) a decrease in AD. We will illustrate both changes graphically:

Figure 3.7: Changes in the neoclassical equilibrium.

Increase in AD



Decrease in AD



Increase in AD

- E is our starting point: long run equilibrium, full employment (producers are producing at full capacity)
- AD increases so we move from AD_1 to AD_2. We end up at point F at a higher average price and a higher output.
- But this means that the economy is now producing beyond full capacity, this leads to a dramatic increase in costs.
- In order to solve this, firms will decrease their SRAS, so SRAS shifts to the left: $SRAS_1 \Rightarrow SRAS_2$. We end op at point G.
- Result: we end up at the same level of real output as before (again full employment) but at a higher average price.

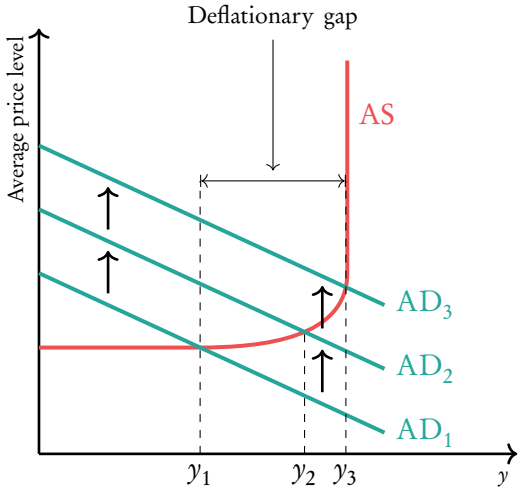
Decrease in AD

- E is our starting point: long run equilibrium, full employment (producers are producing at full capacity)
- AD decreases so we move from AD_1 to AD_2. We end up at point B at a lower average price and a lower output.
- But this means that the economy is now producing below full capacity, this leads to a dramatic decrease in costs.
- In order to solve this, firms will increase their SRAS, so SRAS shifts to the right: $SRAS_1 \Rightarrow SRAS_2$. We end op at point C.
- Result: we end up at the same level of real output as before (again full employment) but at a lower average price.

Changes in the long run Keynesian equilibrium

Again we will discuss what will happen when AD changes, but this time in the situation of a long run Keynesian equilibrium.

Figure 3.8: Change in the Keynesian equilibrium: increase in AD.



Increase in AD (decrease in AD: the opposite will happen)

- We start at AD_1, output is at y_1. At this point production is below capacity: there will be unemployment and slow growth. There is a deflationary gap: demand is less than potential output.
- AD increases so we move from AD_1 to AD_2. This reduces unemployment (output increases), but also increases inflation (price level increases).
- When AD increases even further to AD_3, the same thing will happen.
- But with each increase of AD the increase in output will be less big and the inflation even higher.

Shifts in the LRAS curves

Another possibility is the increase of the neoclassical LRAS or Keynesian AS curve, which can shift either to the left or to the right. When this happens, all you have to do is find the intersection of the new LRAS curve and the AD curve. Production and average price level will be at this point.

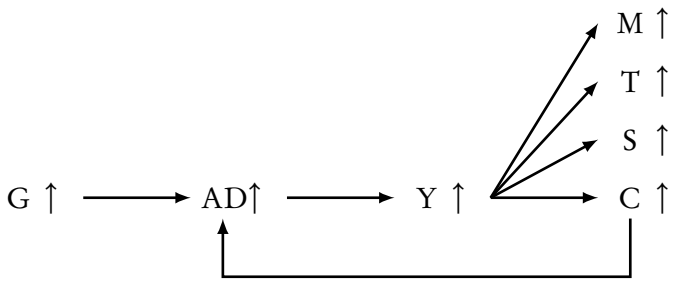
The Keynesian multiplier

If a government decides to increase spending (G), the change in GDP (Y) will be larger than the increase in G. We call this the multiplier effect:

$$\Delta Y = k\Delta G$$

The change in GDP is equal to the multiplier (k) × the change in government spending (G).

The workings of the multiplier effect can be explained through the following flow-chart:



An increase in government spending (G), an injection, will lead to a higher level of aggregate demand (AD) because people have more money to spend, this will increase production (GDP, Y), which will cause incomes to go up, because more workers are needed to produce the extra production. This increase in income will cause consumer expenditure (C), Imports (M), Taxed income (T) and Savings (S) to increase.

The extra money that can be spent domestically (C) will again increase Aggregate Demand, which will increase Y, which will increase M, T, S and C etc.

However, every time we move round this flowchart, some of the money will leak out of the economy: it will either be used to import (M) and therefore leave the country, used to pay taxes (T) and therefore flow back to the government or used to save (S) and therefore end up on a savings account, not being used to consume. These factors are called "leakages".

The fraction of the extra income that causes AD to rise even more will, thus, slowly decline, until eventually GDP stabilises at a new, higher, level.

Calculating the Keynesian multiplier

There are two ways to calculate the size of the Keynesian multiplier:

$$k = \frac{1}{1 - \text{MPC}}$$

$$k = \frac{1}{\text{MPS} + \text{MRT} + \text{MPM}}$$

MPC — marginal propensity to consume The percentage of additional government expenditure that consumers use to consume.

MPS — marginal propensity to save The percentage of additional government expenditure that consumers save.

MPT — marginal rate of taxation The percentage of additional government expenditure that consumers have to pay back in taxes.

MPM — marginal propensity to import The percentage of additional government spending that consumers use to import goods.

3.3 Macroeconomic objectives

3.3.1 Low unemployment

Unemployment All people of working age that are not working and are actively looking for a job.

Unemployment rate $\frac{\text{unemployed people}}{\text{labour force}} \times 100$

Labour force Everyone that can, wants to, and is allowed to work. Typically the labour force consists of all people that are currently employed + all unemployed people.

Unemployment can be hard to measure, this has several reasons:

1. The existence of hidden unemployment: people not represented in the unemployment figures:
   - people who have given up looking for a job;
   - people in a part-time job that would want to work full time (which isn't possible);
   - people who are overqualified for a job, but can't find a better one.
2. Unemployment figures are an average: the unemployment figure ignores regional, ethnic, age and gender differences.

Consequences of unemployment

Economical Consequences

- Loss in GDP (drop in production).
- Loss of tax revenue, because unemployed people have less income to pay taxes.
- Increased cost of unemployment benefits.
- Loss of income for individuals.
- Greater differences in income distribution.

Personal Consequences

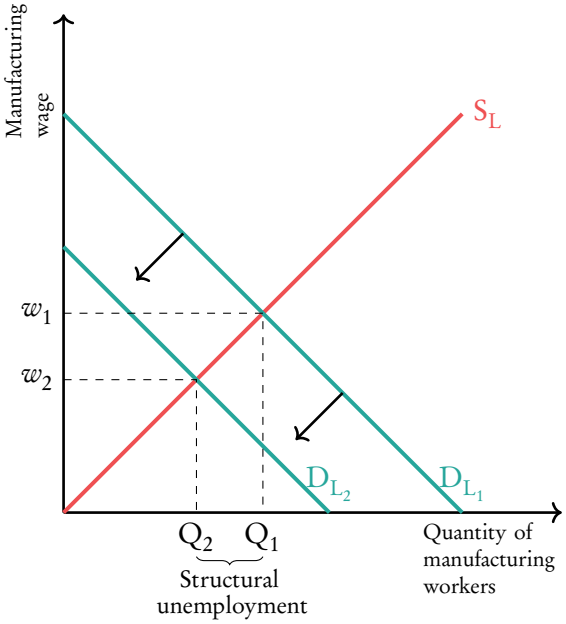
- Increased crime rates, using crime to increase money to spend.
- Increased stress levels; worries over money
- Increased indebtedness.
- Being unable to pay for housing; homelessness.
- Family breakdown.

Table 3.4: Types of unemployment.

Type	Cause	Possible solutions
Cyclical (demand deficient)	Decrease in aggregate demand, causes production to go down and people to become unemployed	• Demand side policies to increase AD
Structural	Permanent changes in demand and supply (e.g. change in taste, advance in technology) causes people in certain industries to become redundant	• Retraining employees to fit other jobs • Encourage people to move to other regions • Reduce unemployment benefits to encourage people to find a new job • Less regulation so employment becomes easier
Seasonal	Lower labour demand at certain times of year (e.g. less labour demand for waitresses in winter)	• Reduce unemployment benefits • Encourage to take other jobs in the off-period
Frictional	Imperfect information: it takes time to find a new job when you have left your old one	• Improve information flow (e.g. vacancy websites) • Reduce unemployment benefits

Graphical depiction of unemployment

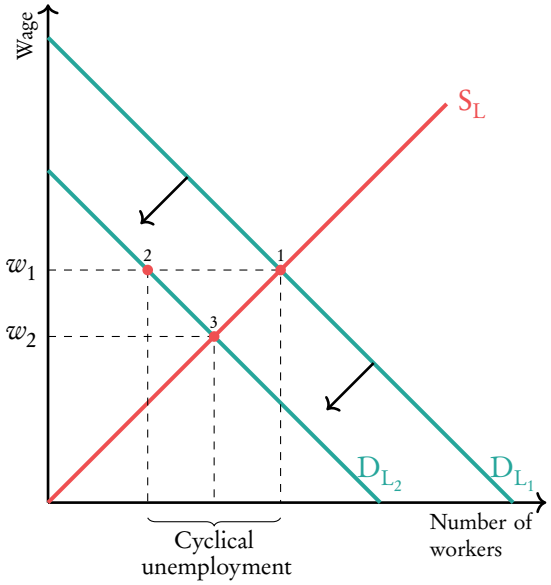
Figure 3.9: Graphical depiction of structural unemployment.



Structural unemployment

- Due to a change in AD (e.g. taste, technology) the labour demand (D_L) decreases from D_{L_1} to D_{L_2}.
- Employment decreases from Q_1 to Q_2.
- Wages decrease from w_1 to w_2.

Figure 3.10: Graphical depiction of cyclical unemployment.



Cyclical unemployment

- Due to economic recession labour demand decreases from D_{L_1} to D_{L_2}.
- But wages are sticky, it takes time for wages to adjust to a new situation. This can be because contracts determine wages over a longer time period or people who are already employed won't take a lower wage: they remain at w_1 instead of falling to w_2.
- There is a surplus of labour: supply of labour is at point 2, demand for labour at point 1.

3.3.2 Low and stable rate of inflation

Inflation A sustained increase in the level of prices.

Disinflation A persistent fall in the rate of inflation.

Deflation A persistent fall in the level of prices.

Consumer Price Index (CPI)

Economists compile a basket of goods that is representative for the economy, they then compare the cost of this basket over time. The increase in price of the basket is the inflation rate.

$$\text{CPI} = \frac{\text{Cost of a typical basket in year 2}}{\text{Cost of a typical basket in year 1}} \times 100$$

$$\begin{aligned}\text{Cost of typical basket} = {} & \text{Price of product category 1} \times \text{weight factor}_1 \\ & + \text{Price of product category 2} \times \text{weight factor}_2 + \ldots \\ & \cdots + \text{Price of product category } n \times \text{weight factor}_n\end{aligned}$$

$$\text{Inflation rate} = \frac{\text{new CPI} - \text{old CPI}}{\text{old CPI}} \times 100$$

Consequences

Consequences of inflation

- Greater uncertainty: what will prices do in the future?
- Decrease in purchasing power: people can buy less due to higher prices.
- Less savings: people want to spend money now, because it is decreasing in value.
- Damage to export competitiveness: foreign countries will buy less goods from the country that has inflation due to increasing prices in this country.

Consequences of deflation

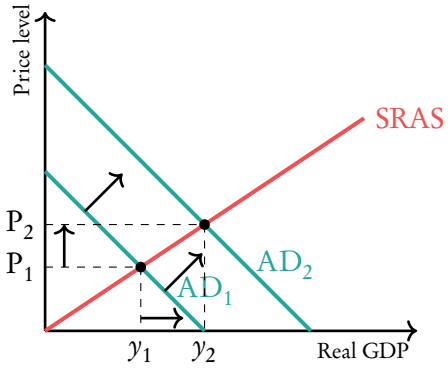
- Deferred consumption: consumers will wait to spend money, because prices are decreasing: goods bought in the future will be cheaper.
- High level of cyclical unemployment: less consumption will lead to less production and therefore causes unemployment.
- Bankruptcies: less consumption will cause profits of firms to decline. This may result in them having to shut down.

Difficulties in measuring inflation

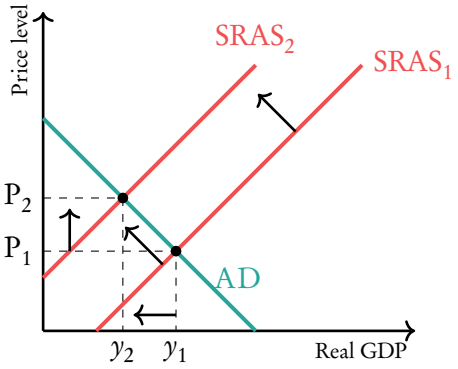
- Different income earners may experience a different rate of inflation when their consumption pattern is not accurately reflected in the CPI (it is an average).
- Inflation figures may not accurately reflect changes in consumption patterns and the quality of the goods purchased.
- Sudden swings in the price level of food and oil can influence CPI heavily. Economists therefore also calculate an underlying rate of inflation.
- CPI only measures change in consumption prices, while changes in producer prices are also important (the PPI *does* use producer prices).

Two different forms of inflation

Figure 3.11: Graphical depiction of demand pull inflation (left) and cost-push inflation (right).



As you can see in the graph an increase in AD (shift to the right) causes price level to rise from P_1 to P_2.



When the cost of production for some reason increases, the SRAS curve will shift to the left: production will decrease. This causes price level to rise from P_1 to P_2.

How could the government reduce inflation?

Increase taxes / reduce government spending (fiscal policy): this will cause incomes of people to decrease, reducing spending and thus reducing demand pull inflation.

Raise interest rates: this will cause people to save more (they will get more interest) and spend less, this reduces demand pull inflation.

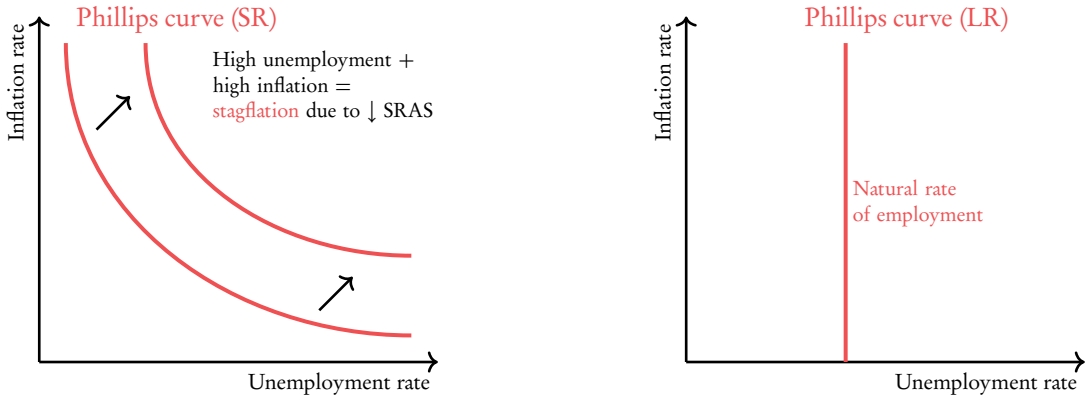
Reduce money supply (monetary policy): when there is less money in circulation, the value of money will increase. So less money is needed to buy something and the price is reduced.

Supply-side policies – shift supply curve to the right: (e.g. education, invest in technology etc.) this will reduce the cost for producers, reducing cost-push inflation.

Inflation and unemployment trade-off

In the short run and the long run there is a connection between inflation and unemployment. This relationship is called the Phillips Curve.

Figure 3.12: Short run (left) and long run (right) Phillips curves.



Short run

- At a low level of unemployment, wages will be high (because at that point demand for labour will be high), high wages will lead to high production cost and high cost-push inflation.
- At high levels of unemployment, wages will be low (because at that point demand for labour will be low), low wages will lead to low production cost and a low cost-push inflation.
- If SRAS suddenly decreases (supply shock), this can cause the prices to rise (less supply, prices ↑), but unemployment to remain at the same level (because firms can't fire people in the short run). This causes the Phillips curve to shift outwards: stagflation.

Long run

- When the economy is at long run equilibrium, there will be full employment (see neoclassical view).
- In this case the unemployment rate = natural unemployment rate. Therefore inflation does not influence unemployment.

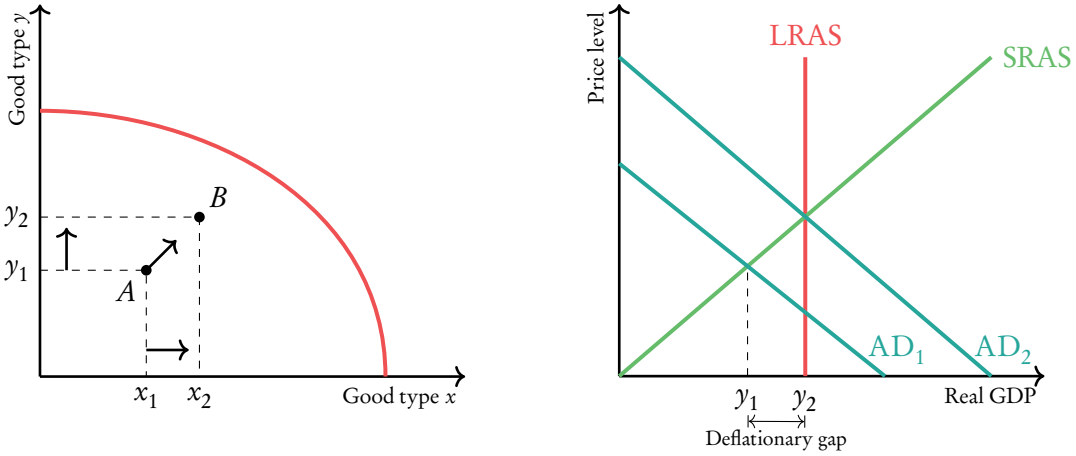
3.3.3 Economic Growth

Economic Growth $\dfrac{\text{new GDP} - \text{old GDP}}{\text{old GDP}} \times 100$

There are two possible sources of economic growth:

1. GDP increases due to an increase in output
2. GDP increases due to an increase in potential output

Increase in output



The graph on the left shows the Production Possibilities Frontier (PPF) = A curve that shows the theoretical maximal combination of two goods that an economy can produce if full use is made of all factors of production.

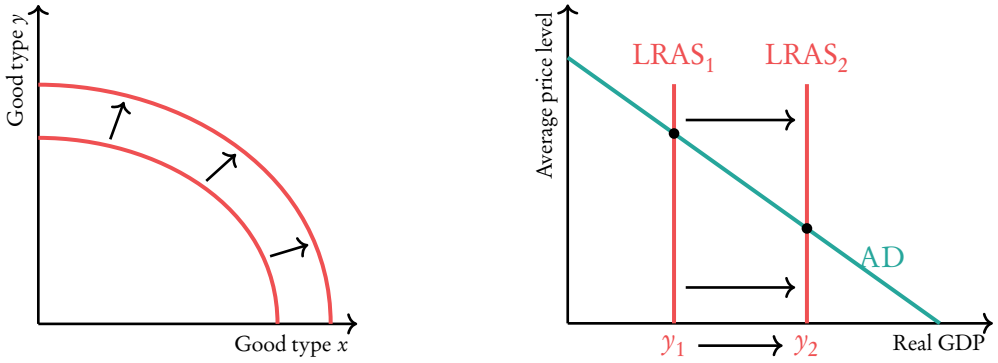
When AD increases ($AD_1 \Rightarrow AD_2$ in the graph on the right), GDP will increase as well ($y_1 \Rightarrow y_2$).

In the PPF: a shift from point *A* to point *B*: a higher production of both goods can be attained.

Possible cause: the country is making better use of existing resources, resulting in a more efficient production.

The gap between y_1 and y_2 is called a deflationary gap, because the economy was not producing at capacity (a point on the LRAS) curve.

Increase in potential output



The theoretical maximum production is increased, the production at full capacity is higher than before.

LRAS (= production at capacity) increases: $LRAS_1 \Rightarrow LRAS_2$.

PPF shifts outwards: the theoretical maximum production is increased, so more of both good *y* and good *x* can be made.

Possible cause: increases in the quantity and quality of resources due to investments in:

Human capital to increase productivity / skill of workers
(e.g. through education).
Physical capital to increase quantity / quality of man-made resources
(e.g. better machines, technological advance).
Natural capital to improve / increase the stock of natural resources
(e.g. explore parts of the world for fossil fuels).

Consequences of economic growth

- Increase in living standards, due to higher GDP per capita, increase in wealth.
- Decrease in unemployment, more workers needed for the increased production.
- Possible increase in inflation; when caused by a higher demand prices may rise due to demand pull inflation.
- Possible reduction in inequality (using taxation). Governments can increase their tax revenue and redistribute more.
- Increase in exports and imports: more production may lead to a higher export potential, more demand may lead to a higher import potential.
- Possible increase in sustainability. When GDP is growing there is more money available to work on sustainable technologies / when GDP growth is caused by technological advance, part of that technological advance may be used for a more sustainable production.
- Possible decrease in environment: a higher GDP means production has increased. Production may be polluting the environment.

3.3.4 Equity in the distribution of income

Equity Fair distribution of income.

Equality Equal distribution of income.

Due to unequal ownership of factors of production there is inequitable distribution of income.

How to promote equity?

Taxation to redistribute income

- Direct vs. indirect taxes
  - Direct: imposed directly on income, wealth and profit. (e.g. income tax)
  - Indirect: imposed over consumer spending (e.g. VAT)
- Progressive, regressive and proportional taxation
  - Progressive: the higher the income, the higher the average tax rate.
  - Regressive: the higher the income, the lower the average tax rate.
  - Proportional: same tax rate for all incomes.

Direct government expenditures

- Provide money directly to people
- Subsidies (e.g. subsidise certain sectors in order to employ more people).

Transfer Payments (e.g. unemployment benefits, pensions).

Evaluation of redistribution of income policies

Arguments in favor of redistributions

- Taxes are important revenue for the government
- Taxes can help reduce market failure (see microeconomics).
- Redistribution makes the distribution of income more fair

Arguments against redistribution

- Full efficiency can only be reached without government intervention
- Taxes may discourage people to work or engage in entrepreneurial activities
- Taxes have negative effects on growth
- Transfer payments cost a lot of money which could also be used elsewhere

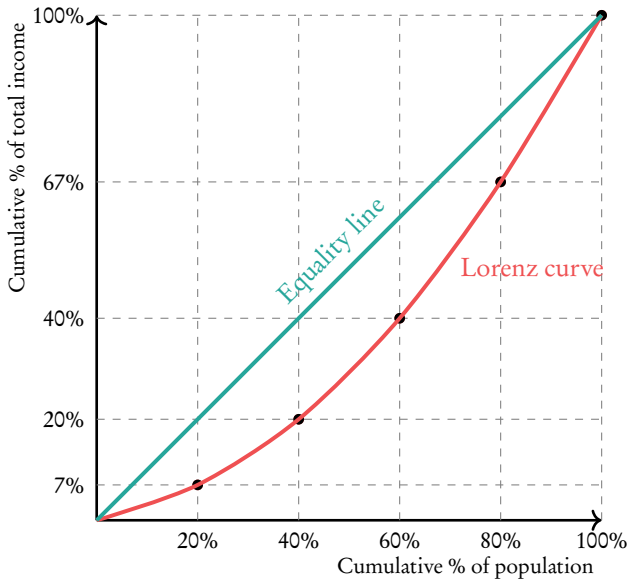
Lorenz curve

The degree of equity can be measured using the Lorenz curve. A Lorenz curve is shown on Figure 3.13, drawn on the basis of the fictional data in Table 3.5.

Table 3.5: Fictional data to draw a Lorenz Curve.

Person	Income	% of population	Cumulative	% of total income	Cumulative
A	10,000$	20%	20%	7%	7%
B	20,000$	20%	40%	13%	20%
C	30,000$	20%	60%	20%	40%
D	40,000$	20%	80%	27%	67%
E	50,000$	20%	100%	33%	100%

Figure 3.13: Lorenz curve.



The population of a country is divided into a number of income groups of equal size (in this example: 5). The first group contains the 20% poorest people of the country, the final group the 20% richest people of the country. Of each group the percentage of total income which the people in the respective group earn is calculated.

The cumulative data of these percentages is used to draw the Lorenz curve.

The green line in the diagram represents the equality line: if every group earned the same percentage of total income, the Lorenz curve would lie on this equality line. The further away the Lorenz curve lies from the equality line, the less equal the income is distributed among the people of the country.

Another measure of equality is the Gini-index. This is a number between 0 and 100. The higher this Gini-index the more unequal the distribution of income.

Poverty

In some cases income is distributed extremely unequal. In these cases poverty is imminent.

Absolute poverty The inability to fulfil the basic economic needs.

Relative poverty Being poor relative to others around you.

Causes of poverty

- Low incomes
- Unemployment
- Lack of human capital, not having enjoyed enough education may lead to unemployment and low incomes.

Consequences of poverty

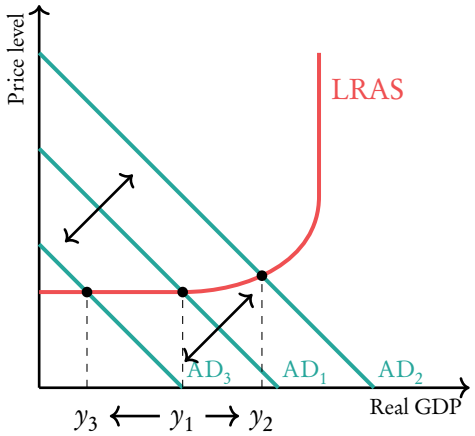
- Low living standards
- Lack of access to health care and education

3.4 Government intervention

3.4.1 Fiscal policy

Fiscal policy Government intervention by either adjusting taxes or adjusting government spending.

Figure 3.14



Two types of fiscal policy

Expansionary fiscal policy

- Reducing taxes
- Increasing government spending
- AD increases: a move from AD_1 to AD_2.

Contractionary fiscal policy

- Increasing taxes
- Decreasing government spending
- AD decreases: a move from AD_1 to AD_3.

Fiscal policy also automatically stabilises short term fluctuations in GDP: e.g. unemployment benefits, progressive tax system. People suddenly losing their job in a time of crisis get benefits from the government, so their loss in income is manageable. Their purchasing power / expenditure doesn't decrease that much, so GDP will not fluctuate dramatically.

Fiscal policy also promotes long term economic growth:

- Government expenditure can help to create an economic environment favourable to investment. (e.g. investing money in infrastructure).
- Direct investments by the government may lead to a more efficient production (e.g. by providing companies with the means to do more research & development).

The government budget

Government Revenue

- Taxes
- Sale of goods and services (e.g. by companies that belong to the government).
- Sale of state owned enterprises

Government Expenditures

- Current expenditures = recurring expenditures (e.g. wages of civil servants, interest on government debt).
- Capital expenditures = one-time payments (e.g. building a new school).
- Transfer payments = payments to citizens (e.g. welfare, pensions).

• Revenue > expenditures	→ surplus	→ government debt decreases
• Revenue < expenditures	→ deficit	→ government debt increases
• Revenue = expenditures	→ balanced budget	→ government debt remains the same

Sustainable level of government debt

One of the macroeconomic objectives of governments is a sustainable level of (national) debt. National debt is the accumulation of budget deficits in a year and it represents the total amount of money governments owe to its creditors (domestic or foreign). Government debt is normally presented as a percentage of GDP.

Deficit spending by the government benefits stakeholders in the short-term, as it drives economic growth. However, as government debt becomes greater, there will be an increase in long-term *debt-servicing* costs.

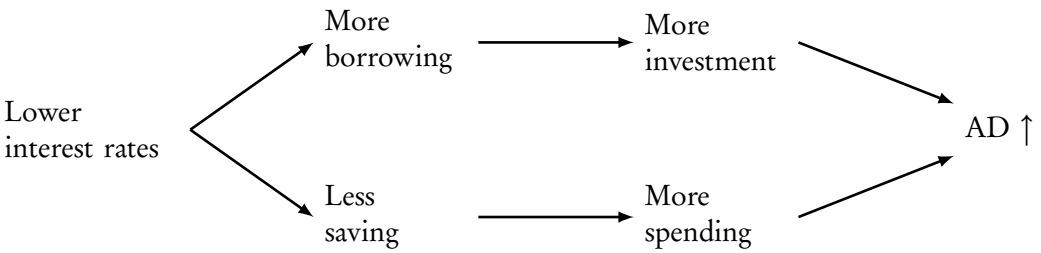
Debt-servicing The amount of money needed to pay back a loan and its interest in a given amount of time.

Costs of high levels of government debt:

- Leads to crowding-out of private investments
- Can have damaging effects on other areas of spending
- May require higher taxation to fund expenditure
- May decrease ability of governments to respond to emergencies

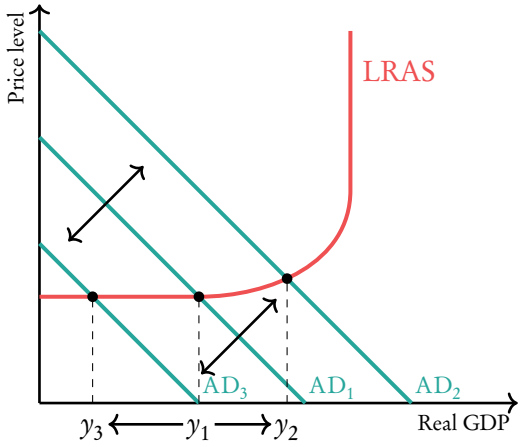
3.4.2 Monetary policy

Monetary policy Central bank intervention by adjusting interest rates or money supply.



Two types of monetary policy

Figure 3.15



Expansionary / easy monetary policy

- Increasing the money supply, this will decrease the price paid for money (which is interest) so interest will decrease.
- AD increases: a move from AD_1 to AD_2.

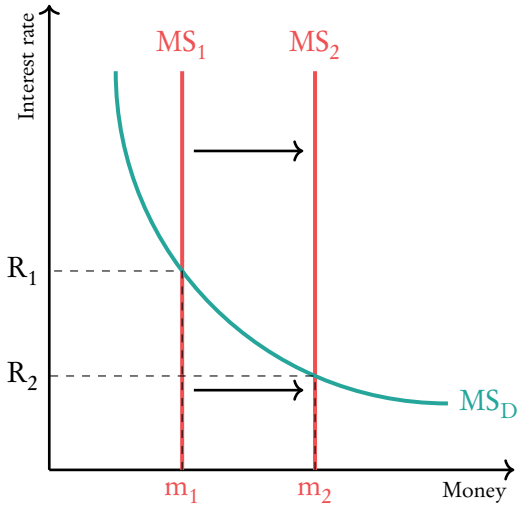
Contractionary / tight monetary policy

- Decreasing the money supply, this will increase the price paid for money (which is interest) so interest will increase.
- AD decreases: a move from AD_1 to AD_3.

Note: Central banks are more guided by maintaining a stable rate of inflation than by influencing aggregate demand. Central banks will therefore seldom use their powers to try and increase AD.

The role of central banks

Figure 3.16



Responsibilities of Central Banks

- Controlling inflation
- Controlling money supply
- Influencing exchange rates
- Regulating commercial banks
- Controlling interest rates

What can Central Banks Do?

- Increase money supply (releasing money from reserves). This will cause the Money Supply Curve (MS) to shift to the right ($MS_1 \Rightarrow MS_2$). This measure will decrease the price of money = interest rate.
- Change the interest rate directly, this will have the same effect.

Process of money creation by commercial banks

The process of money creation is called *credit creation*. Credit creation occurs when commercial banks lend money to individuals or business. They do this by making loans based on the deposits that they receive from customers:

1. Say someone deposits $100 in the bank. The central bank of the country insists that 10% of the deposit should remain as a reserve (this is called the reserve requirement). This leaves the bank with $90 that is not being used.
2. A business customer now asks the bank for a loan of $90 to fund investment in a new oven. The bank decides the firm is credit worthy and agrees to the loan. The unused $90 will now become new money circulating in the economy!
3. Eventually, the $90 will find it's way into another bank, where 10% will be held in reserves. This leaves $9 dollars in reserves, and a remaining amount of $81 to be lent out. The $81 is now new money supply.
4. The next customer to loan will take the $81 and spend it. Eventually, $81 will make it's way into another bank where $8.10 is held and $72.90 is loaned out. The same thing will repeat, again and again.
5. In the end, the initial deposit of $100 will have created $900 of new money. This can be easily calculated using the Money Multiplier:

$$\text{Money Multiplier} = \frac{1}{\text{Minimum Reserve Requirement}}$$

E.g. With a reserve requirement of 10%: $\frac{1}{0.1} = 10$

Tools of monetary policy

Methods the government could use to affect the size of the money supply, and thus the interest rate.

Minimum Reserve Requirements (MRR) Percentage of deposits that banks are legally required to hold in order to meet future cash requirements of depositors.

The larger the MRR, the smaller the money multiplier.

If the government increases the MRR, this will reduce the ability of banks to create credit. This reduces the money supply and leas to the increase of interest rates, thus lowering AD as consumption and investment fall.

Open market operations The buying and selling of government securities (bonds) in the open market by the central bank.

Selling securities reduces the money supply
Buying securities increases the money supply

If the central bank wants to lower the money supply, they will sell securities to institutions. This reduces the supply of money that commercial banks have to lend. A fall in supply increases the cost of borrowing, thus increasing interest rates. This will lower AD as consumption and investment fall.

Changes in the central bank minimum lending rate (base rate) The minimum lending rate is the rate of interest the central bank charges on loans to commercial banks.

Raising the minimum lending rate increases the interest rate
Lowering the minimum lending rate decreases the interest rate

If the minimum lending rate is increased by the central bank, commercial banks will also increase their own lending rates as well as interest rates paid to people who save. This encourages consumers to save more and discourages them from borrowing. This reduces overall consumption and investment, reducing AD.

Quantitiative Easing The introduction of new money into the money supply by the central bank. This aims to expand the economy (expansionary monetary policy).

The central bank *injects new money* into the economy by *purchasing assets (securities)* from commercial banks with *newly created electronic cash*.

- Increases reserves of commercial banks when they sell securities: increases liquidity and encourages more lending to households and firms (increase consumption and investment, increasing AD)
- Lowers interest rates: reduces borrower's debt (increase consumer and business confidence)
- Lower interest rates cause exchange rates to fall: Exports become less expensive, imports become more expensive (increase in X–M, decreases AD)

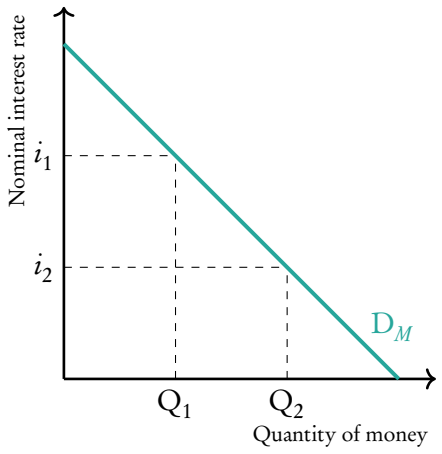
Determination of the equilibrium interest rate

Interest rates Opportunity cost of holding/spending money.

Nominal interest rates Rate of interest available in the money market, not allowing for inflation.

Real interest rates Rate of interest adjusted for inflation.

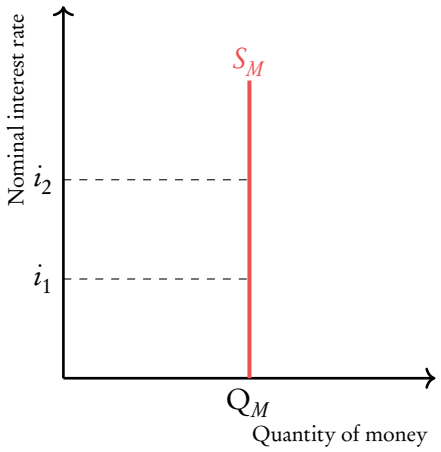
Figure 3.17: The demand curve for money



Demand

The demand curve for money is downward sloping. Why?
If consumers/firms/governments hold or spend money, they forego other things the money could have been used for, namely saving or investment. If nominal interest rates are high, people are less inclined to hold/demand money and choose to instead hold stocks or bonds (investment). If nominal interest rates are low, then the opportunity cost of spending money will be less, and so people will demand more money.

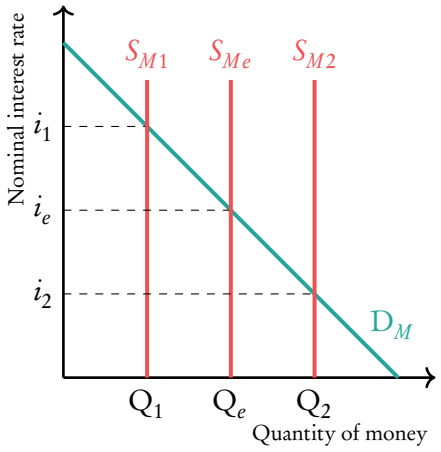
Figure 3.18: The supply curve for money



Supply

The supply of money is controlled by the central bank through monetary policy. As money is controlled by the central bank and not affected by the nominal interest rate, supply is generally considered fixed at any given time (constant at Q_m). Thus, the supply curve of money is usually shown as perfectly inelastic.

Figure 3.19: The money market



Equilibrium

The money market is where demand and supply of money determine the equilibrium nominal rate of interest. The equilibrium happens where the demand for money meets the supply for money (at point i_e Q_e). When the central bank adopts contractionary monetary policy, money supply would fall from Q_e to Q_1 and the new equilibrium nominal interest rate would be at i_1. When the central bank adopts expansionary monetary policy, money supply would increase from Q_e to Q_2 and the new equilibrium nominal interest rate would be i_2.

3.4.3 Supply side policies

Supply side policies Government intervention by affecting the production side of the economy
⇒ changing the quantity or quality of the factors of production.

Two types of supply side policy

Interventionist supply side policies
(focuses on government intervention)

- Investment in human capital (e.g. providing education).
- Investment in new technologies.
- Investment in infrastructure.
- Policies that favour industrial companies, e.g. tax cuts, subsidies.

⇒ These policies allow companies to produce more efficiently, which may lead to an increase in production. In the graph this will shift the LRAS curve to the right ($LRAS_1 \Rightarrow LRAS_2$).

Market based supply side policies
(reduce competition, encourage free markets)

- Reforming the labour market to increase flexibility, this may make it easier for companies to find the right personnel.
- Incentivise working of labourers by cutting income tax. Incentivise investment by firms by cutting corporate tax.

⇒ These policies allow firms to produce more efficiently, which may lead to an increase in production. In the graph this will shift the LRAS curve to the right ($LRAS_1 \Rightarrow LRAS_2$).

3.4.4 Evaluation of policies

Fiscal Policy

+ Positively affects growth
+ Ability to target specific sectors
+ Direct impact on AD
+ Works well in a recession

– It takes time to work (time lag)
– Can't influence the supply side of the economy
– Negatively influences government budget
– Raise in government spending can increase interest rates ⇒ less consumption and investment (crowding out)

Monetary Policy

+ Easy to increase interest rates
+ Interest rates can be increased step-by-step (incrementally)
+ Positively affects growth

– Takes time to work (time lag)
– Doesn't work well in a recession
– Conflict of interest with inflation targets

Supply-side policies

+ Positively affects growth
+ Creates employment
+ Reduces inflationary pressure

– Takes time to work (time lag)
– Can negatively influence equity
– May be politically undesirable
– May negatively influence the environment

GLOBAL ECONOMY

4

4.1. Trade 99

This section will discuss a wide array of subjects concerning international trade. First the *Advantages of free trade* and the theory of *Absolute and comparative advantage*. Next *The World Trade Organisation* will be discussed. What follows is an explanation of *Trade protectionism* and of *Arguments for and against protection*. Finally *Economic integration* is discussed.

4.2. Exchange rates 107

This section discusses how the value of a currency is determined. It can be done using one of three different regimes: *Freely floating exchange rates*, *Fixed exchange rates* and *Managed exchange rates*. In this section the theory behind each regime is explained.

4.3. The balance of payments 111

All inflows and outflows of money of a certain country can be found on the balance of payments. This section will first discuss *The structure of the balance of payments*, before going into *Current account deficits and surpluses*.

4.4. Sustainable development 114

4.5. Measuring development 118

This final section will evaluate the policies that can be used to help developing countries develop. We will first evaluate the *Market oriented policies*, before going into the *Interventionist policies*.

4.1 Trade

4.1.1 Advantages of free trade

International free trade may have the following advantages:

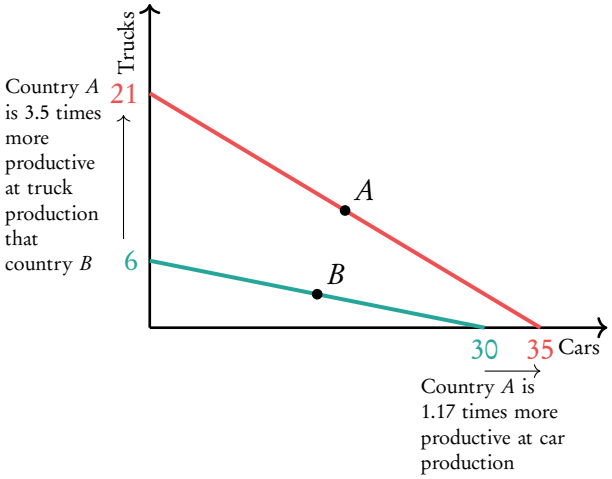
Lower prices for consumers: due to free trade consumers can import the goods they want from the country that can make them the cheapest. They do not necessarily have to buy the good domestically.
Greater choice for consumers: consumers can choose from goods that are made all over the world, and not just in their own country.
The ability for producers to benefit of economies of scale: producers can sell to a larger market (the whole world instead of just one country) which allows them to grow and to further exploit economies of scale to produce more efficiently.
The ability to acquire needed resources: firms may now have access to resources which cannot be found domestically.
A more efficient allocation of resources: resources can now be used in the country that can make most efficient use of them.
Increased competition: free trade opens up the world market to a large number of firms that will compete. Competition will lead to more diverse products, more quality and lower price.
Source of foreign exchange: countries can use free trade to get foreign currency or make dispose of domestic currency (foreign countries can pay for goods they import in their own currency).

4.1.2 Absolute and comparative advantage

In general, economists say that the country that has advantage in the production of a good should produce that good, rather than a country that does not have this advantage. There are two theories on how to determine which country has the advantage: (1) the *theory of absolute advantage* and (2) the *theory of comparative advantage*:

1. A country has absolute advantage in the production of a good when it can produce it using fewer resources than another country.
2. A country has comparative advantage in the production of a good when it can produce it at lower opportunity cost than another country.

Figure 4.1



On the left you can see the production possibilities frontiers of 2 countries *A* and *B* for cars and trucks.
Country *A* has the absolute advantage in both products, because it can make more trucks and more cars than country *B*.
The opportunity cost of cars for country *B* is 0.2 trucks, the opportunity cost of cars for country *A* is 0.6 trucks; therefore country *B* has comparative advantage in cars.

The opportunity cost of trucks for country *B* is 5 cars, the opportunity cost of trucks for country *A* is 1.67 cars; therefore country *A* has comparative advantage in trucks.

- The curve on the inside has comparative advantage in the good that is on the axis with the smallest gap with the other curve.
- The curve that intersects with the axis the furthest away from the origin, has absolute advantage in the production of the good on that axis.

Limitations of the theory of comparative advantage

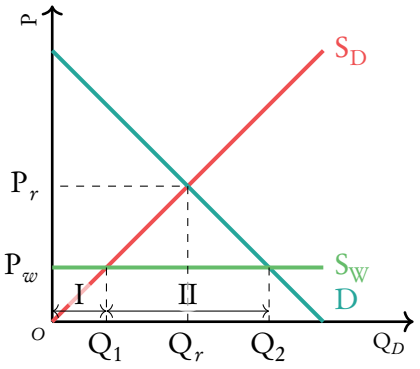
1. Perfect knowledge is assumed, but it is impossible that everyone knows everything.
2. It is assumed that there are no transport costs, while in reality this is not the case.
3. It is assumed that there are only two economies producing two goods, while in reality there are a lot of economies producing a lot of goods.
4. It is assumed that costs of production do not change and that the returns to scale are constant, while in reality this won't be the case.
5. It is assumed that the goods that are being traded are completely identical, while in reality differentiation within goods is possible.
6. It is assumed that factors of production remain in the country, while in reality factors of production can travel between countries.
7. It is assumed that there is perfect free trade among countries, while in reality trade barriers exist.

4.1.3 Trade protectionism

Different forms of trade protection exist. In this section we will first look at a graphical depiction of a free trade situation. Then, we will show what happens to the free trade equilibrium in case of (1) a tariff, (2) a subsidy and (3) a quota.

Market with free trade

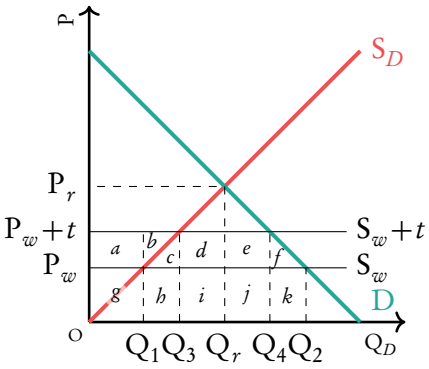
Figure 4.2



In this market with free trade the product is both produced domestically and imported (world production).
The domestic production is represented by the S_D curve and the world production by the S_W curve.
S_W is a horizontal line, the world production is not affected by the price on the domestic market, because the domestic market is only a small fraction of the world market.
In the case of free trade, producers will produce Q_1 (I).
Beyond Q_1, the price of world production will be below the price of domestic production, Q_1Q_2 (II) will be imported.

Tariff Tax charged on imported goods.

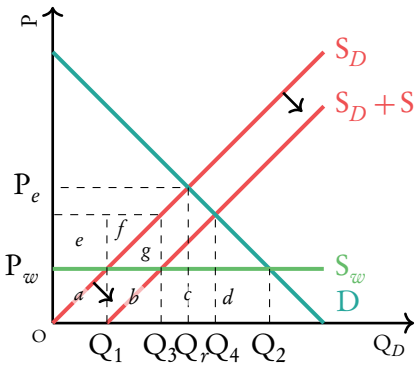
Figure 4.3



- S_{world} will shift upwards, because foreign producers have to pay the tariff in order to sell their goods in the country. Domestic consumers will face a higher market price.
- Import is reduced from Q_1Q_2 to Q_3Q_4.
- Foreign producer revenue is $d+e+i+j$ minus the tax of $d+e$, so $i+j$ in total.
- Domestic production increases from Q_1 to Q_3.
- Domestic revenue increases from g to $a+b+c+g+h$.
- Government revenue is represented by $d+e$.
- The tariff causes a welfare loss of $c+f$.

Subsidy Sum of money given to producers.

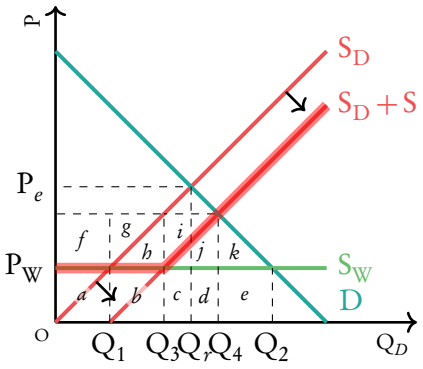
Figure 4.4



- The subsidy will increase the domestic production so S_D will shift to the right to S_{D+S}.
- Domestic production increases from Q_1 to Q_3.
- Domestic revenue increases from a to $a+b+e+f+g$ of which $e+f+g$ is the subsidy.
- Import decreases from Q_1Q_2 to Q_3Q_2.
- Foreign revenue decreases from $b+c+d$ to $c+d$.
- The government spending on the subsidy is represented by $e+f+g$.
- The subsidy results in a welfare loss represented by g. This area represents the net loss in producer and consumer surplus.

Quota Limit on imported goods.

Figure 4.5



- A quota is imposed at Q_1Q_3, meaning that the country can not import any further than point Q_3.
- Domestic production will be Q_1 and Q_1Q_3 will be imported.
- Beyond this point, the excess demand will cause domestic producers to be willing to produce more (at a higher price), S_D will thus shift to the right.
- Domestic revenue increases from a to $a+c+d+f+i+j$.
- Foreign revenue decreases from $b+c+d+e$ to $b+g+h$.
- The welfare loss is represented by $j+k$.

In addition to quota, tariffs and subsidies, countries can also set administrative barriers such as:

- Requiring a lot of paperwork before a good can be imported (this form of administrative barriers are often referred to as "red tape").
- Setting high health and safety standards that products have to comply to in order to be imported.

4.1.4 Arguments for and against protection

Arguments for protectionism

- Domestic jobs are protected because domestic consumers are more dependent on domestic production.
- Protection can reduce dependence on international trade and can this way protect national security.
- Infant industries can freely develop when they do not face competition from foreign established producers.
- Maintenance of health, safety and environmental standards.
- Foreign producers can use the market of other countries to dump excess production at extremely low prices. Protectionism protects domestic producers for this kind of unfair competition.
- Protectionism limits imports, this way a balance of payments deficit can be overcome.
- The government can profit out of tariff revenues.

Arguments against protectionism

- It raises prices because its limits free trade.
- Import is limited, which limits the diversity of goods being supplied on the domestic market, limiting consumer choice.
- Competition diminishes, which reduces the positive effects of competition such as improved quality and diversification of products.
- Foreign countries may retaliate with trade barriers of their own, harming the exporting companies of the domestic country (trade wars).
- Resources may not be used in the country that can make most efficient use of them: misallocation of resources
- Because governments can earn major sums of money by using tariffs there is great potential for corruption, especially in less developed countries.
- Domestic companies may focus more on the domestic market due to the barriers, thereby reducing their export competitiveness.
- Increased cost of imported factors of production, because tariffs and quota may also apply to these.

4.1.5 Economic integration

Economic integration The unification of economic policies between different states through the partial or full abolition of tariff and non-tariff restrictions on trade taking place among them prior to their integration.

Advantages and disadvantages of monetary union

Advantages

- Elimination of exchange rate uncertainty and fluctuations, increasing investment into the union
- A common currency is more stable against speculation
- Lower perceived currency risk increases business confidence in member countries
- Elimination of transaction costs between member countries that now use the same currency
- Price transparency across member countries, as all prices are now expressed in the common currency

Disadvantages

- The power to set interest rates and monetary policy is transferred from the member states to a common central bank
- Irresponsible spending or debt accumulation by some member countries could hurt the entire union
- Individual countries cannot influence their exchange rate to boost the competitiveness of their exports or lower the price of their imports
- Initial costs of converting the individual currencies into one currency are extremely large

In general six degrees of economic integration can be recognised:

1. **Preferential trade agreements** — Agreements that give preferential access to certain products from certain countries by reducing tariffs or by other agreements related to trade. These agreements can be:
   Bilateral: between two countries
   Multilateral: between three or more countries
2. **Free trade areas** — Countries are able to trade freely among themselves, but are able to trade with countries outside the free trade area in anyway they like.
3. **Customs union** — Countries are able to trade freely among themselves and also agree to adopt common external barriers against any country outside the union.

4	**Common market**	A customs union with common policies on product regulation and free movement of goods, services, capital and labour.
5	**Monetary Union**	Common market with common currency and common central bank.
6	**Complete economic integration**	Countries have no control of economic policy, full monetary union with complete harmonisation of fiscal policy.

Advantages

- Lower transaction costs
- Certainty
- Price comparison
- Trade creation (see later)
- Transparency
- Helps attract foreign direct investment due to larger market

Disadvantages

- Loss of economic sovereignty
- Interest rate might not fit the situation of all countries involved
- Asymmetrical shocks affect different countries within the union differently

The further down the road of economic integration, the higher the potential for companies to benefit of economies of scale.

Some notes to economic integration

In a customs union there can be trade diversion and trade creation:

Trade creation With the entry of the country into the customs union, countries can regain comparative advantage which was hindered by previous trade barriers. Now this country can trade more by exploiting this advantage and producing more of the good.

Trade diversion Before entry into the customs union, the country imported from country x without barriers. With entry into the union, tariffs are imposed on country x (non-member) and the product is therefore imported from member countries at higher price instead of from country x.

4.1.6 The World Trade Organisation

The World Trade Organisation (WTO) is an international organisation that sets the rules for global trading and resolves disputes between its member countries.

Objective

Increase international trade by lowering trade barriers and provide a forum for negotiations.

Functions of the World Trade Organisation

- Administer Wto trade agreements that the Wto has set up between countries.
- Be a forum for trade negotiations and facilitate in setting up trade deals.
- Handle trade disputes among member states.
- Monitor national trade policies.
- Provide technical assistance and training for developing countries.
- Cooperate with other international organisations in order to increase trade.

Factors that limit the effectiveness of the WTO

- Some economies, especially the USA and the EU are said to have too much power in the Wto and its trade negotiations
- Trade rules that are unfair toward developing countries and fail to protect their "infant industries"
- Growing number of trade deals are negotiated outside of the WTO

4.2 Exchange rates

4.2.1 Freely floating exchange rates

Figure 4.6: Demand and Supply for a currency (the euro).

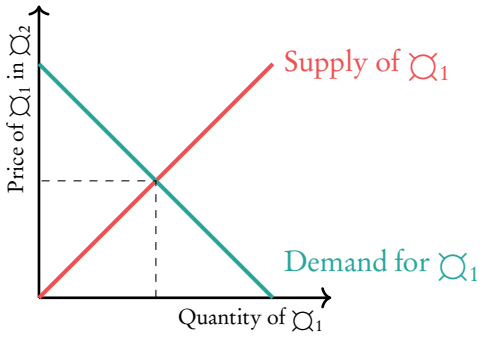


Figure 4.7: An increase in demand for the currency leads to an increase in the price (value of the currency): an appreciation.

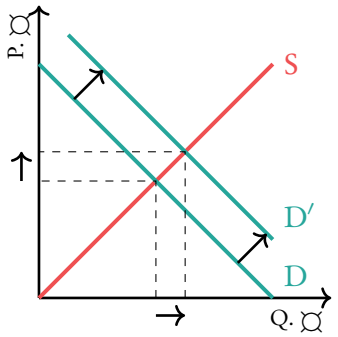
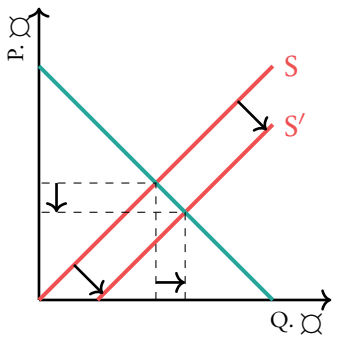


Figure 4.8: An increase in supply of the currency leads to a decrease in the price (value of the currency): a depreciation.



The exchange rate is the value of one currency expressed in terms of another currency. (e.g., 1€ = 1.15$).

In a freely floating exchange rate regime, the value of an exchange rate is determined by the demand for and supply of that currency. At the equilibrium point the price and quantity of the currency on the market is determined (see graph).

Demand for and supply of currency can change due to shifts in the supply and demand curves. This will lead to a change in exchange rate as well. These changes in exchange rates due to market shocks are called depreciations and appreciations.

If the supply of the € decreases (supply curve shifts to the left) or the demand for the € increases (demand curve shifts to the right), the value of the € will go up, and the exchange rate will increase; we call this an appreciation of the €.

If the supply of the € increases (supply curve shifts to the right) or demand for €s decreases (demand curve shifts to the left), the value of the € will go down and the exchange rate will decrease; we call this a depreciation of the €.

Note: we only call it appreciation or depreciation if the shift in demand/supply is caused by market forces (and not when it is caused by government intervention).

Calculating with exchange rates

You may be asked to make various, simple calculations relating to exchange rates in papers 2 and 3!

1. If the Japanese yen is currently trading against the Canadian dollar at a rate of 1 JPY = 0.010 CAD. What is the rate for 1 CAD ($) in JPY (¥)?

   If 1¥= 0.010$, then 1$ = 10.01 = 100¥.

2. With the above exchange rate, calculate the cost in Canadian dollars for a good that is selling for 2075¥

   $2075 \times 0.01 = 20.75\$$

3. If the exchange rate changes from 1 JPY = 0.010 CAD to 1 JPY = 0.020 CAD, what would happen to the price of a Japanese kimono in Canadian dollars that is exported to Canada with the price of 5000¥?

   Price with the initial exchange rate would have been $5000 \times 0.01 = 50\$$.
   Price with the new exchange rate is $5000 \times 0.02 = 100\$$.

   With the new exchange rate, the value of the Canadian dollar has depreciated against the Japanese yen. It now costs more dollars to buy the same amount of yen.

What factors influence supply of and demand for a currency?

Foreign demand for exports: when foreign demand for exports increases, demand for the currency will increase because foreign nations will need to buy the exports in the domestic currency.

Domestic demand for imports: when domestic demand for import increases, the supply of the domestic currency increases because domestic consumers will need to buy the import in the foreign currency. They will need to exchange the domestic currency for the foreign currencies.

Domestic interest rates relative to foreign interest rates: when the domestic interest rate increases relative to the foreign interest rates, foreign investors will bring their money into the domestic country. They can only deposit money of the domestic currency on the domestic country's banks, so demand for domestic currency (in order to exchange their foreign currencies) will increase.

Investment from overseas in domestic firms: when foreign investors invest more in domestic firms the demand for domestic currency will increase, because these investments must be made in the domestic currency.

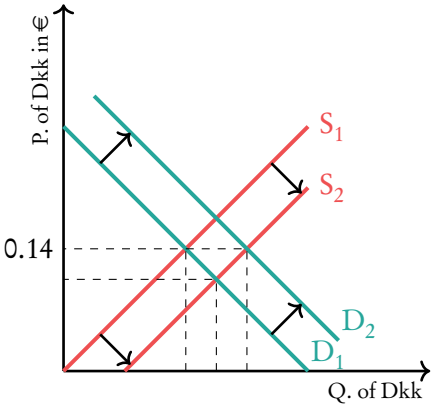
Speculation: investors may spread rumors about the future development of exchange rates and speculate on future value. Anything can happen to the value of the currency, depending on the content of the rumors.

What happens if the domestic currency appreciates?

- Domestic products will be more expensive to buy for foreign nations so exports will decrease.
- This will result in decreased employment, because people producing goods for exports will be needed less, and less economic growth.
- Foreign products will be cheaper to buy for the domestic nations so imports will increase.
- This will result in less inflation due to decrease in price of imports.
- Because exports decrease and imports increase the current account balance (X—M) decreases.

4.2.2 Fixed exchange rates

Figure 4.9: The revaluation of a currency.



A fixed exchange rate regime is an exchange rate regime in which the value of the currency is pegged to the value of another currency e.g. 1 Danish krone (DKK) will always be 0.14€.
But what if due to a shock the price of DKK decreases? e.g. due to an increase in supply of DKK because the Danes suddenly buy more? ($S_1 \Rightarrow S_2$).
The government will have to increase demand for DKK in order to keep the exchange rate fixed at 0.14€. (How the government can do this is discussed later on in this chapter).
The demand curve for the currency will therefore shift to the right ($D_1 \Rightarrow D_2$).
This rise in value of the currency caused by government is called a revaluation; a decrease in value caused by the government is called a devaluation.

4.2.3 Managed exchange rates

Under a managed exchange rate regime the exchange rate is freely floating but there is periodic government intervention to influence the value of the exchange rate. For example there is a bandwidth within which the value of the currency can freely float but if the value of the currency goes outside this bandwidth, the government will intervene.

How does the government influence demand for and supply of a currency?

1. Using reserves of money (the central bank has in them in the vaults) to buy or sell foreign currencies:
   - Selling foreign currencies in exchange for domestic currency decreases the supply of and increases the demand for domestic currency.
   - The opposite is true for buying foreign currency in exchange for domestic currency.
2. Changing interest rates:
   - If a government were to increase the domestic interest rate this would draw (the money of) foreign investors to the country and they would have to exchange their foreign currency for domestic currency. This increases demand for domestic currency and decreases supply of domestic currency.
   - The opposite is true for a decrease in interest rate.

Overvalued currency Keeping the value of the exchange rate artificially high through periodical government intervention in the foreign exchange market.

4.2.4 Overvalued currency, evaluation

Benefits

- Downward pressure on inflation, as imported final goods are cheap
- Increased purchasing power on imported materials and goods
- Forces domestic producers to improve their efficiency in order to compete in the world market with a relatively higher selling price

Possible drawbacks

- Damage to export industries
- Damage to domestic industries as domestic consumers switch to consuming imports

Undervalued currency Maintaining an artificially low value of the exchange rate.

Undervalued currency, evaluation

Benefits

- Exports appear more competitive in the world market
- Increased employment in export industries
- Increased employment in domestic industries

Possible drawbacks

- Imports become expensive
- The increased price of imported materials may spur cost-push inflation

4.2.5 Fixed vs. floating exchange rate systems

Advantages

Fixed exchange rate

- Reduced uncertainty for all economic stakeholders in the country
- Government has the pressure to keep inflation as low as possible, because rising price levels cannot be "eased" by an overvalued currency
- Reduced speculation in foreign exchange markets (in theory)

Floating exchange rate

- Interest rate may be adjusted more freely in monetary policy
- The exchange rate should adjust itself in order to keep the current account balanced
- No need to keep high reserves of foreign currencies

Disadvantages

Fixed exchange rate

- The exchange rate is maintained by the manipulation of interest rates, which causes uncertainty upon the national economy
- The country must maintain high levels of reserves of foreign currency
- Setting the fixed level of an exchange rate is highly complicated

Floating exchange rate

- Uncertainty on international markets
- Floating rates are prone to speculation and world events, and do not necessarily adjust to eliminate current account deficits.
- A floating rate may worsen existing levels of inflation

4.3 The balance of payments

4.3.1 The structure of the balance of payments

The balance of payment is a record of all money entering the country (credit, +) and leaving the country (debit, —). It consists of different sub-accounts, which can be summarised in the following schedule:

I. Financial account

The inflows from investments from abroad (credit) against investment to abroad (debit). These investments can be placed into three categories:

- Direct investment: purchase of long-term assets (such as buildings or factories).
- Portfolio investment: purchases of stocks and bonds.
- Reserve assets: purchases of reserves of gold and foreign currencies.

II. Capital account

Miscellaneous income (credit) or expenses (debit) that can't be placed in any other category.

- Capital transfers: miscellaneous (e.g. death duties, debt forgiveness).
- Transactions in non-produced non-financial assets: purchases of intangible assets (trademarks, patents, rights etc.).

III. Current account

Inflows of trade and income (credit) against outflows (debit)

- Balance of trade in goods: exports of goods minus import of goods.
- Balance of trade in services: exports of services minus import of services.
- Income: earnings from investment leaving (—) and entering (+) the country.
- Current transfers: net payments to governments without retribution (e.g. gifts, aid etc.).

The financial account and capital account add up to the current account.

But it is almost impossible to measure exactly how much money is leaving and entering a country. That is why the formula must also include 'errors and omissions'. The final formula will be as follows:

Current account
= financial account + capital account + net errors & omissions

The relationship between the current account and the exchange rate

A current account deficit causes a downward pressure on the exchange rate, because the supply of the currency (imports) exceeds demand (exports). In a freely floating exchange rate system, the value of the currency should fall, boosting the competitiveness of exports.

This is a problem in a fixed exchange rate regime, although in the short run deficits may be covered by gains in the financial and capital accounts. Downward pressure implies that the value of the currency has been set too high. In the long-run, the currency may have to be *devalued*.

A current account surplus causes upward pressure on the exchange rate. In a freely floating regime, the currency appreciates. In a fixed regime, this implies that the value of the currency has been set too low. In the long-run, the currency may have to be *revalued*.

4.3.2 Current account deficits and surpluses

A (persistent) current account deficit may cause:

Downward pressure on the domestic currency exchange rate: more imports than exports lead to relatively more supply than demand for the domestic currency.
Increase in indebtedness: to finance the net outflow of money the country must borrow money, resulting in more indebtedness and higher interest rates. this can result in declining international credit ratings.
More foreign ownership of domestic assets: a current account deficit can be financed with a financial account surplus, meaning the net ownership of foreign countries of domestic country's assets will increase.

The opposite of the above may happen in case of a current account surplus.

A government can use several strategies to tackle a persistent current account deficit:

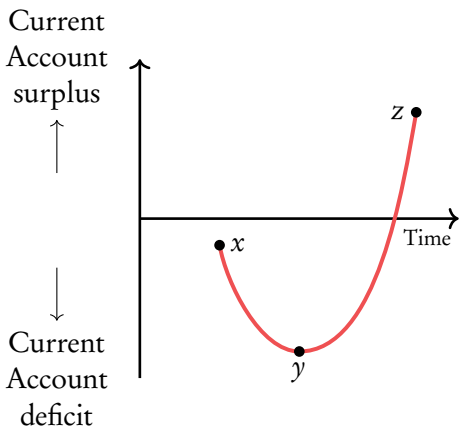
Expenditure switching methods**:** making sure people buy more domestic products instead of foreign goods so import is reduced. This can be achieved by using protectionist measures.
Expenditure reducing methods**:** making sure people spend less in general which will also reduce imports. This can be achieved by using contractionary fiscal or monetary policy.
Supply side policies**:** boosting supply and therefore exports. This can be achieved using supply side policies.

Marshall-Lerner and the J-curve effect

When this is the case we will see the J-curve effect, which is depicted in the graph in Figure 4.10:

- x: starting point, the currency will depreciate from this point because there's a current account deficit.
- y: prices have fallen but it takes time for consumers to act on this due to delays in communication and long term contracts.
- z: consumers start to act on new prices, the deficit disappears rapidly.

Figure 4.10: J-curve.



When there is a Current Account deficit, the exchange rate depreciates (see above). Normally this would lead to more exports and less imports which would fix the problem. In real life though, this is often not the case.
Why? Because demand for exports and imports are often inelastic, meaning a price change (due to the depreciation of the currency) doesn't affect them that much. Depreciation of currency only works when the price elasticity of exports and imports are sufficiently elastic and the Marshall-Lerner condition holds:

$$PED_{exports} + PED_{imports} > 1$$

The possible implications of persistent current account deficits and surpluses

	Persistent current account surplus	Persistent current account deficit
Exchange rates	Increase (currency appreciates)	Decrease (currency depreciates)
Export competitiveness	Decreases	Increases
Employment	Decrease (in export sector)	Increase (in export sector)
Domestic consumption	Decreases	Increases
Inflationary pressures	Decrease	Increase

4.4 Sustainable development

Economic growth Increase in GDP.

Economic development Improvement in living standards. This includes wealth but also quality of life.

The bottom line in development economics is that *economic growth is not equivalent to economic development*.

For economic development to occur, growth must be *inclusive*. That is, it must benefit everyone partaking in the economy.

To dive further into the distinction between growth and development, let us look at the sources of each one.

4.4.1 Sources of economic growth

Increases the quantity or quality of factors of production. As the quantity of, say land, is difficult to increase, most economies focus on improving the quality. Better planning, the use of fertilizers, or improved technology are all factors that may improve the quantity of land and therefore lead to increases in potential growth.

Increases in the quantity or quality of human capital. Policies that increase population growth or encourage new immigration will increase the pool of human capital in the long term. Improving the quality of education and investing in public health care will boost the quality of human capital.

Increases in the quantity or quality of physical capital. Increases in the number of factories, machines, shops, offices, and motor vehicles. Investments in higher education, research and development and access to foreign expertise improve the quality of physical capital.

Capital widening Extra capital is used with an increased pool of labor. Total production will rise, but productivity is unlikely to change, as the ratio of capital per worker remains unchanged.

Capital deepening Exists when there is an increase in the amount of capital per worker. Usually leads to improvements in labor productivity and total production. Capital deepening often means that the level of technology has improved.

Improving the institutional framework. Improving national institutions such as the banking system, the educational system, the legal system, as well as public infrastructure are understood as a prerequisite for meaningful economic growth. Investments in national institutions include promoting political stability and building good international relationships.

4.4.2 Sources of economic development

- Reducing widespread poverty improves welfare.
- Raising living standards improves welfare.
- Reducing income inequalities this increases overall welfare.
- Increasing employment opportunities which may increase incomes and therefore welfare.

4.4.3 Common characteristics of developing economies

Low standards of living The vast majority of a developing country's population tend to experience low incomes, high inequality, and insufficient education. Other indicators of low living standards include extremely poor housing, high infant mortality rates, high levels of malnutrition, and low standards of health and sanitation.

High levels of poverty

Low levels of productivity Measured by output per capita, low productivity is mainly caused by inadequate education and the lack of access to correct technologies in production.

High rates of population growth, spurring dependency burdens The crude birth rate is calculated as the annual number of live births per 1000 of the population. In developing countries, crude birth rates are on average more than double than the rates in developed countries.

A high crude birth rate raises the *child dependency ratio*, as adults in the working population have to support more and more children. Supporting large families causes pressure upon the working members of the family, and may cause them to carry out precarious work to make ends meet.

However, developed countries tend to have a much higher *old age dependency ratio* than developing countries. This means that developed countries have a high number of population over the age of 64 that need to be supported by the working population.

$$\text{Child dependency ratio} = \frac{\%\text{ of population under 15}}{\%\text{ of population between 15 and 64}}$$

$$\text{Old age dependency ratio} = \frac{\%\text{ of population above 64}}{\%\text{ of population between 15 and 64}}$$

High and increasing levels of unemployment and underemployment. Developing countries are characterized by high levels of unemployment, typically between 10 and 20%. However, the figures omit the part of the population that have given up the search for a job and are no longer featured in the statistics. Additionally, hidden unemployment such as an informal job on a family farm is not included in the unemployment figure.

The issue of underemployment in developing countries is massive. Many individuals who would like to get a full-time job get to work only part-time with precariously low wages and, often, dangerous and unsanitary conditions.

Dependence on the primary and agricultural sector. Many developing countries are heavily dependent on the exports of one or two primary commodities, making their economies extremely vulnerable to price volatilities and natural catastrophes that might ruin the crops. These circumstances, out of control for the country itself, make it highly difficult to plan effectively for the future.

Prevalence of imperfect, informal markets and limited information. The recent decades have revealed a neoliberal trend, where market-oriented growth is promoted to developing economies by international organisations such as the IMF and World Bank. However, this approach is possibly problematic, as developing

countries often lack the necessary factors that facilitate free markets to function efficiently. The lack of adequate infrastructure, a stable financial system, and a developed legal system all act as barriers to efficient allocation of resources.

Dependence and vulnerability in international relations. In almost all cases, developing countries are dominated by developed countries. They are dependent on them for trade, access to technology, aid, and investment. For these reasons, developing countries are vulnerable in global trade and often harmed by the decisions made by developed countries.

4.4.4 The sustainable development goals

The 17 SDGs were created at the UN Conference on Sustainable Development in Rio de Janeiro in 2012. They came into effect in 2016 and will continue until 2030.

Their objective is to act as a set of universal goals that meet the urgent environmental, political, and economic challenges facing the world. Although the goals may seem as overly broad to be achievable, they are paired with more specific targets.

The 17 SDGs

1. No poverty
2. Zero hunger
3. Good health and well-being
4. Quality education
5. Gender equality
6. Clean water and sanitation
7. Affordable and clean energy
8. Decent work and economic growth
9. Industry, innovation and infrastructure
10. Reduced inequality
11. Sustainable cities and communities
12. Responsible consumption and production
13. Climate action
14. Life below water
15. Life on land
16. Peace and justice, strong institutions
17. Partnerships to achieve the goal

For your IB Economics exam, you should be able to explain current progress towards meeting the SDGs in the context of at least two countries.

4.4.5 The relationship between sustainability and poverty

To understand the relationship between sustainability and poverty, we need to understand the vicious cycle between poverty and environmental damage.

- Poor people rely heavily on the environment for fool, fuel, sanitation, and shelter
- Poor people suffer from low levels of agricultural productivity and crop yields on common-pool, marginal lands
- Poor people are far more vulnerable to floods and other environmental catastrophes as a result of climate change
- Poor people are the least likely to afford the costs of mitigating the climate crisis

4.5 Measuring development

4.5.1 Single indicators

Single indicators are solitary measures that we use to evaluate development. They are divided into economic indicators, health indicators, education indicators, and institutional indicators. The next sections will provide examples of each four.

Economic indicators

Purchasing power parity The exchange rate that equates the purchasing power of currencies in different countries. The PPP is constructed by comparing the prices of an identical product or a service, such as the Big Mac, in different countries.

Health indicators

In the following table, different health indicators are listed that can be used to distinguish between developed countries and developing countries:

Indicator	What does it measure?	Developed Country	Developing Country
Life expectancy at birth	The average number of years a person may expect to live from the time that they are born	High	Low
Infant mortality rate	A measure of the number of deaths of babies under the age of one year per 1000 births in a given year	Low	High
Expected years of schooling	The number of years a child of school entrance age is expected to spend at school	High	Low
Mean years of schooling	The average number of completed years of education of a population	High	Low

Institutional measures

- Economic and social inequality indicators such as wealth distribution, income inequality, asset ownership and access to credit
- Energy indicators like access to electricity or the share of energy bills on the household budget
- Environmental indicators including municipal waste (kgs per capita), level of greenhouse gas emissions and oil spill data

4.5.2 Composite indicators

It is also possible to distinguish between developed countries and developing countries by using *composite indicators*. Composite indicators combine a number of single indicators with weighting. This provides us with a single figure that measures multiple dimensions of economic development.

The Human Development Index (HDI)

The best example is the Human Development Index (HDI), a number between 0 and 1 comprised of:

- Long and healthy life; measured by life expectancy.
- Education; measured by literacy rate and school enrolment.
- Standard of living; measured by GDP per capita at PPP.

Economically developed countries have a very high HDI (> 0.900). Economically developing countries have a medium (0.500–0.799) or low (< 0.500) HDI.

Because HDI takes into account more than just GDP/GNI per capita, a country's GNP ranking may differ from its HDI ranking.

Limitations of the HDI

- Does not show difference between rural and urban populations
- Does not account for differences between men and women
- Does not indicate differences between different ethnic, religious, or social groups within the country

The Gender Inequality Index (GII)

The GII is an inequality index that measures gender inequality in three aspects of human development to better expose disparities in the achievements between women and men. The GII measures:

- Reproductive health, measured by maternal mortality ratio and adolescent birth rates
- Political representation, measured by proportion of parliamentary seats occupied by females and proportion of females and males aged over 25 that have received secondary education
- Economic status, measured by labor market participation rate of female and male populations 15 years and older

Inequality adjusted Human Development Index (IHDI)

This indicator is an HDI that takes also into account the cost of inequality. Each of the three components of HDI; life expectancy, education, and the ability to meet basic needs, is toned down by its level of inequality. The difference between the HDI and the IHDI value then measures the cost to human development owing to inequality.

Happy Planet Index (HPI)

Measures sustainable wellbeing through a combination of four elements: wellbeing (satisfaction), life expectancy, inequality of outcomes, and ecological footprint.

The HPI like many indices can also be used to measure economic growth in developed economies, and it was was covered in the Macroeconomics §3.1.2 on page 69

The Multidimensional Poverty Index (MPI)

The MPI measures the deprivations experienced by the poor in the population in three key areas that are the same as in the HDI.

- Health, measured by nutrition and child mortality
- Education, measured by years of schooling and school attendance rates
- The ability to meet basic needs, expressed by access to cooking fuel, sanitation, drinking water, and electricity, as well as the level of housing and the ownership of assets.

The Inclusive Development Index (IDI)

The World Economic Forum's project that constructs an annual assessment of the economic performance of 103 countries in eleven different dimensions. Based on the evaluation, countries are divided into 'Advanced economies' and 'Emerging economies' for comparison.

4.6 Contributions and barriers to development

4.6.1 Domestic factors

In the following table, several domestic factors that can contribute to economic development are listed:

Domestic Factor	Examples
Education and health	Better education can lead to a more productive workforce. Better health care improves life expectancy
The use of appropriate technology	Using technology that fits the skills of the people may lead to higher employment levels
Access to credit and micro credit	Small loans can give people the chance to start a business, which increases income and business productivity
The empowerment of women	Emancipation of women can mean higher employment of women or more educated women contributing to development
Income distribution	More equitable income distribution could lead to less conflict, rebellion and wars, which is good for growth and stability
Capital flight	The movement of large amounts of money out of the country as a response to political or economic instability can spur hyperinflation or a sharp depreciation of the domestic currency.
Indebtedness	The repayment of debt by the local government means that the money cannot be spent on other areas of the economy, hindering development.
Landlocked countries	Landlocked countries trade less and have slower growth rates than coastal countries. Transport costs add to the cost of exports.
Tropical climates and endemic diseases	A tropical climate tends to slow down development in two key areas; agriculture and health. The prevalence of disease is considerably higher in the tropical zone, affecting the quality of human resources.

4.6.2 International trade

Contributions to development

In the following table, several international trade factors that can contribute to economic development are listed together with their advantages and disadvantages.

International Trade factor	Explanation	Advantages	Disadvantages
Import substitution	Producing goods yourself instead importing them	+ Protects jobs + Protects local culture + Less dependence on foreign nations	— Doesn't benefit from comparative advantage — Higher prices — Danger of retaliation
Export promotion	Focussing on exporting goods and using the revenues from this export to boost aggregate demand	+ More efficiency + Increased variety / quality + Quick growth	— Strategy for growth, not development — Inequality — Might not be possible in developing countries
Trade liberalisation	More free trade (see international economics!)	+ Lower prices + Increased variety / quality + Increased efficiency	— May cut jobs in some sectors — Increases dependence
Help of the World Trade Organisation	International organisation which regulates international trade	+ Can help set up trade deals + All free trade arguments	— Gives multinationals a chance to exploit cheap labour in developing countries
Bilateral and regional preferential trade	Trade agreements between countries in a certain region (see international economics!)	+ Lower prices + Increased variety / quality + Increased efficiency	— May cut jobs in some sectors — Increases dependence
Diversification	To move from the production and export of primary commodities and to replace these with production and export of manufactured goods	+ Protection from volatile changes in primary product	— Developing countries often don't have the sophisticated workforce for this

Barriers to development

In the following table several international trade factors that can be barriers for economic development are listed:

International Trade Factor	Explanation
Over specialisation **on a narrow range of products**	This can cause too much dependence on the export of a small set of goods. If the market of these goods collapses, the country may face economic catastrophe.
Price volatility **of primary products**	Since developing countries are very dependent on the export of primary products, volatility in the price of these products (especially decreases in price) can hurt the economy.
Inability to access international markets	Developing countries often can't access the markets of developed countries due to protectionist measures, which leads to less exports and thus limits growth and development potential.
Long term changes in terms of trade	Often TOT is low in developing countries, long term low TOT may lead to inability to buy imports, resource overuse and inability to finance debt (see International economics)

4.6.3 Foreign direct investment

Another factor that may contribute to or form a barrier to development is Foreign Direct Investment:

Foreign Direct Investment (FDI) Long term investments by multinational corporations (MNCs) in foreign countries by either building new plants or expanding existing ones.

Why would companies want to invest in developing countries?

- Developing countries can often provide factors of production at a very low cost (e.g. low wages). This makes it possible to produce goods at a low price.
- Developing countries often have a favourable fiscal (tax) climate, allowing companies to produce while paying little to no taxes.

- Developing countries often have a regulatory framework that makes it easy to bring made profits to the country of origin of the MNC (profit repatriation).

FDI can contribute to development, but can also form a barrier:

Advantages of FDI

- Provide employment and education.
- Provide greater access to Research & Development, technology and expertise.
- Improves infrastructure of the country.
- Drop in consumer prices and more diversity in goods.
- More efficient allocation of world resources.

Disadvantages of FDI

- MNCs may only use low-wage/unskilled workers of the country.
- MNCs may exploit the favourable tax rules leading to less revenue for the country's government.
- MNCs may exploit the weak legislation on pollution of the country, which may lead to unsustainable and polluting production.

4.6.4 Foreign aid

Another factor that may contribute to or form a barrier to development is Foreign Aid. Aid can be extended by:

- Governments (we then call it "Official Development Assistance" (ODA)).
- Non-governmental organisations (NGO's).

In general we can distinguish between humanitarian aid and development aid:

Humanitarian Aid

- Food aid
- Medical aid
- Emergency relief aid

Development Aid

- Grants, sums of money given to invest in development.
- Concessional (= with favourable conditions) long-term loans.
- Project aid (e.g. support for schools and hospitals)
- Programme aid (e.g. support for sectors such as education and financial sector)

NGO's mainly focus on providing aid on a small scale to achieve development objectives.

Aid may also be "tied aid" meaning that the receiving country must spend the aid according to guidelines of the donor country.

Why do economically more developed countries give aid?

Social factors:
- to relieve the suffering in the developing country
- to improve the standard of living in the developing country

Economic factors:
- Developed countries can benefit financially as a result of interest being paid on loans.
- Companies in developed countries may get better prices for product it buys from the recipient developing country, because the aid has helped the developing country to produce more efficiently.

Political factors:
- The developed country can use the aid to encourage a preferred political system (democracy) in the developing country.
- The developed country can make a political ally out of the recipient country.
- Providing foreign aid may give the donor country prestige within the international community.

4.6.5 Multinational development assistance

Multilateral development assistance is mostly provided by two international organisations: the International Monetary Fund and the World Bank. In the following table the most important characteristics of the two organisations are listed:

International Monetary Fund (IMF)

1. Surveillance
   - Monitoring economic development.
   - Providing policy advice to developing countries.
2. Loans
   - to provide temporary financing.
   - to support policies to fix underlying problems.
   - to reduce poverty.
3. Technical assistance & training
   - to educate government officials.

World Bank

Goals:
- End extreme poverty
- Promote shared prosperity

1. Loans
   - to support a wide array of development projects (e.g. education, infrastructure)
2. Knowledge sharing
   - Policy advice to governments of developing countries.
   - Research and analysis of policies and economic situations in developing countries.
   - Technical assistance to governments of developing countries.

4.6.6 International debt

A final factor, which is mostly a barrier to economic development, is international debt.

Foreign debt Outstanding loans that a country owes to other countries or other countries' institutions.

Countries often borrow internationally in order to finance government expenditure, a negative balance of trade or fees for goods and services.

In some cases developing countries have become so heavily indebted that rescheduling of debt payments and/or conditional assistance from international organisations is required.

Debt is a barrier to development because it costs a lot of interest which could also be spent on development projects (opportunity cost of interest) and which can cause balance of payment problems.

The burden of debt often forces developed countries to cancel a part of the debt owed to them by developing countries in order not to jeopardise repayment of the rest of the debt.

4.7 Evaluation of development policies

4.7.1 Market oriented policies

Market oriented policies Policies that minimise the role of government and maximise free market operation (e.g. liberalised trade and capital flows, deregulation, privatisation).

Strengths

- More efficient allocation of resources
- Economic growth

Weaknesses

- No government intervention may still lead to market failure (see microeconomics).
- No government intervention may lead to income inequalities
- Not intervening may lead to the creations of dual economies within the country (= developing countries where one sector focuses on local needs and another on the global export market, the two economies have different levels of development and technology).

4.7.2 Interventionist policies

Interventionist policies Policies that promote an active role by the government and manipulation of the workings of the market.

Strengths

- A strong government can provide infrastructure.
- A strong government can invest in human capital (e.g. through education).
- A strong government can provide, monitor and maintain a stable macroeconomic economy.
- A strong government can provide a social safety net (e.g. unemployment benefits)

Weaknesses

- A large government may lead to excessive bureaucracy
- A large government may lead to poor and inefficient planning because the government does not face market incentives.
- A large government in developing countries which have a weak judicial system may lead to corruption.

When considering interventionist policies, good governance is crucial. You need a good government in power to make well informed decisions.

Due to strengths and weaknesses of both policies, the general view is that what's best is a combination of market oriented and interventionist policies.

4.7.3 Evaluating real-world progress in meeting the Sustainable Development Goals

Now that we've reached the end of the Global Economy chapter, let's engage in a quick research into the progress in the fulfillment of Sustainable Development Goals (SDG's). Remember that in your exam you should be able to explain the progress of achieving SDGs in the context of two countries!

1. Go to the website: www.sdg-tracker.org
2. Choose one of the 17 SDG's. Click on the icon to further examine it. What are the specific targets defined for this goal? What indicators are used to measure these targets?
3. The website allows you to examine a world map that shows in colors how well countries are performing with regard to specific targets. Find your two countries of interest and make notes below.
4. Evaluate the success of one developed and one developing country in achieving the targets of this goal. Compare and contrast the progress of these two countries. What would change if you were to compare two developed countries? What about two developing ones?
5. Repeat the steps for more SDGs. You may use the table below to mark down your findings.

Developed country: _____

Developing country: _____

SDG	Targets defined for the SDG	Progress in *developed* country in achieving the SDG targets	Progress in *developing* country in achieving the SDG targets
Goal:			
Goal:			
Goal:			
Goal:			

DEFINITIONS

5

5.1 Microeconomics

Ad valorem tax A tax whose amount is based on the value of a transaction.

Allocative efficiency A state in which suppliers are producing the optimal mix of goods and services required by consumers. Allocative efficiency occurs when the company produces at the point where cost and value to consumers is at the same level.

Asymmetric information A market failure in which one party in a transaction possesses more knowledge of the transacted product than the other party.

Average product An output that is produced on average, by each unit of the variable production factor.

Average revenue The revenue a firm receives per unit of sales.

Average total costs Costs per unit of output.

Barriers to entry Ways of preventing entry of a company to the industry.

Branding A process in which a company develops a name, term, sign, symbol, design or any other feature that allows consumers to identify the goods and services of a business and to differentiate them from those of competitors.

Break even price The price at which a firm is able to make normal profit (zero economic profit) in the long run.

Cap and trading schemes Government-mandated, market-based approach to controlling pollution by providing economic incentives for achieving reductions in the emissions of pollutants: a central authority (usually a governmental body) allocates or sells a limited number of permits to discharge specific quantities of a specific pollutant per time period. Polluters are required to hold permits in amount equal to their emissions. Polluters that want to increase their emissions must buy permits from others willing to sell them.

Carbon tax A tax on fossil fuels intended to reduce the emission of carbon dioxide.

Cartel A group of firms making price arrangements.

Ceteris paribus Latin expression meaning 'when all else remains equal'.

Collusion The collaboration of firms to charge the same price.

Common access resources Resources that everyone has access to so it is very hard to exclude people from using them.

Community surplus Total welfare created in the economy; the sum of consumer and producer surplus.

Complementary good A good that is consumed along with another good.

Concentration ratio A measure of the percentage market share in an industry held by the largest firms within that industry.

Constant returns to scale The situation in which an average cost is constant when production is increased.

Consumer surplus The extra satisfaction gained by consumers from paying a price that is lower than the price they were prepared to pay.

Corporate social responsibility (CSR) The responsibility that a business has towards all stakeholders in which it follows a set of ethical guidelines on how the company should conduct its business.

Cross price elasticity of demand A measure for the effect a change in price of one product has on the demand for a certain other product.

Decreasing returns to scale The situation in which an average cost is increasing when production is increased.

Demand curve A curve showing how the demand for a commodity or service varies with changes in its price.

Demerit goods Goods of which the consumption has negative consequences on society.

Differentiated products Products that do not have perfect substitutes.

Diseconomies of scale A situation that occurs when the long term average costs of production increase as the scale of operations increases beyond a certain level.

Economic cost The opportunity cost of all resources employed by the firm (including entrepreneurship).

Economic profit or abnormal profit A situation in which total revenues exceed total cost.

Economies of scale A situation that occurs when an output increases due to ability to sell to a larger market, reducing the costs per unit of output.

Elastic demand The percent change in demand is more than the percent change in price.

Elastic supply The percent change in supply is larger than the percent change in price.

Equilibrium price The market price where the quantity of goods supplied is equal to the quantity of goods demanded.

Equilibrium quantity The quantity of goods that will be demanded at the point of market equilibrium.

Excess demand A situation in which the quantity of a good or service demanded is higher than the quantity supplied.

Excess supply A situation in which the quantity of a good or service supplied is higher than the quantity demanded.

Excludable characteristic of a good People can be excluded from the use of the good.

Explicit cost The opportunity cost of the money spent on resources not currently owned by the company.

Externality A situation in which production or consumption of a good has an effect on a third party for which the latter does not pay or does not get compensated.

Factors of production All the inputs that are used in the production of final goods and services. They include land, labour, capital and enterprise.

First degree price discrimination Charging consumers the maximum price that they are willing to pay.

Fixed costs Costs that always remain constant and do not change in the short run.

Formal collusion When firms secretly agree on a price and all firms participating in the collusion know that they are participating and know the negotiated price.

Free rider problem A market failure that occurs when people take advantage of being able to use (public) goods without paying for it.

Homogeneous products Products that are exactly the same.

Implicit cost The opportunity cost of the usage of resources currently owned by the company.

Incentive function of a price A higher price is an incentive for producers to produce more to increase profit.

Income elasticity of demand is used to measure the effect that a change in income of consumers has on the demand for a certain product.

Income elastic The percent change in demand for a good is larger than the percent change in income.

Income inelastic The percent change in demand for a good is smaller than the percent change in income.

Increasing returns to scale The situation in which an average cost is decreasing when production is increased.

Indirect taxes Taxes imposed on certain goods to discourage the consumption of goods that can create externalities (demerit goods).

Indirect taxes Taxes levied on the sale of goods.

Indivisibilities A state in which some production factors cannot be divided into smaller pieces.

Inelastic demand The percent change in demand is less than the percent change in price.

Inelastic supply The percent change in supply is less than the percent change in price.

Inferior good Goods for which demand decreases when income increases.

Interdependence Mutual dependence between two parties.

Law of demand The economic law that states that when price goes up, ceteris paribus, quantity demanded goes down.

Law of diminishing returns A phenomenon in which the more of the variable factor is added, there is a point beyond which total product only rises at a diminishing rate.

Law of supply The economic law that states that higher prices will, ceteris paribus, increase quantity supplied.

Legal barriers The government's attempts to prevent entry into the market by law.

Long-run Time period in which all factors of production are variable but the state of technology is fixed. All planning takes place in the long run.

Loss A negative economic profit, when total cost exceeds total revenue.

Luxury good A good for which demand increases more than proportionally as income rises.

Manufactured commodities Products that have been made (manufactured) from a raw material.

Marginal costs The amount of the increase in total cost when producing one more unit of output.

Marginal private benefits Benefits the individual enjoys from the consumption of an extra unit of a good.

Marginal private costs Costs of production that are taken into account in a firm's decision making process.

Marginal product An extra output that is produced by using one extra unit of the variable factor.

Marginal revenue The extra revenue that a firm gains by selling one more product in a given time period.

Marginal social benefit The benefit of consumption of one extra unit to society.

Marginal social cost The cost of production of one extra unit to society.

Market equilibrium A state where the supply in the market is equal to the demand in the market.

Market failure Failure of the market to achieve allocative efficiency resulting in an overallocation or underallocation of resources.

Market price The current price at which goods or services can be bought or sold.

Market segment A group of people who share one or more common characteristics.

Merit goods Goods of which the consumption has positive consequences on society.

Monopolistic competition A market structure in which there is a large number of firms that sell similar, but slightly differentiated products. Barriers to entry and exit are absent.

Monopoly A market structure characterized by a single seller who has a complete control of the entire supply of goods or of a service in a certain area or market. There are significant barriers to entry and exit and there are no close substitutes to the good the monopolist firm sells.

Monopoly power A market failure in which one party (the monopolist) controls a large share (typically 25% or more) of a particular market.

Nationalisation The process of transforming private assets into public assets by bringing them under the public ownership of a national government.

Natural monopoly A situation in which there are only enough economies of scale to support one firm.

Necessity goods Goods whose consumption is essential to human survival.

Negative externalities The costs that are suffered by a third party (that does not get compensated) as a result of an economic transaction.

Negative externality of consumption A negative externality (see: 'negative externality') caused by the consumption of goods.

Negative externality of production A negative externality (see: 'negative externality') caused by the production of goods.

Non-excludable characteristic of a good People cannot be excluded from the use of the good.

Non-price competition The rivalry between suppliers based on other aspects than price e.g. quality of service, packaging, advertising etc.

Non-price rationing The use of methods other than price that have the effect of limiting consumption or demand.

Non-rivalrous characteristic of a good More people can use the good at the same time.

Normal good Any good for which demand increases when income increases.

Normal profit A situation in which total revenue equals total cost.

Perfect competition A market structure in which there are a lot of producers that have no market power and produce and sell a homogeneous product, barriers to entry or exit ar absent, there is perfect information and perfect resource mobility.

Perfect information A feature of perfect competition in which everyone knows everything.

Perfectly elastic demand The percent change in demand is infinite when price changes; when price increases demand will drop to zero, when price decreases demand will increase to infinity.

Perfectly elastic supply The percentage change in supply is infinite when price changes; when price decreases supply will drop to zero, when price increases supply will increase to infinity.

Perfectly inelastic demand Demand does not change when price changes.

Perfectly inelastic supply Supply does not change when price changes.

Perfect resource mobility Resources can move from location to location at zero cost.

Positive externalities The benefits that are enjoyed by a third-party (that does not pay for them) as a result of an economic transaction.

Positive externality of consumption A positive externality (see: 'positive externality') caused by the consumption of goods.

Positive externality of production A positive externality (see: 'positive externality') caused by the production of goods.

Price ceiling A price set by the government above which the price may not rise.

Price-competition The rivalry between suppliers based solely on price.

Price control A measure by the government that forces producers to sell goods for a fixed price of for a price within a certain range.

Price discrimination The practice of charging different prices to different groups of consumers for the same product, where the price difference is not justified by differences in cost.

Price elasticity of demand A measure of the effect a change in price has on the demand for a certain good.

Price elasticity of supply A measure of the effect a change in price has on the supply for a certain good.

Price floor A price (set by the government) above the equilibrium price below which the price may not fall.

Price maker A firm that has the power to influence the price on the market.

Price rigidity The situation in which prices stay the same over long periods of time.

Price taker An individual or company that must accept prevailing prices in a market.

Primary commodities Materials in a raw or unprocessed state.

Producer surplus The excess of actual earnings that a producer makes from a given quantity of output above the amount a producer would be willing to accept for that output. The producer surplus is equal to producer profits.

Productive efficiency A state in which suppliers produce the product at the lowest possible unit cost.

Public goods Goods that one individual can consume without reducing its availability to another individual, and from which no one can be excluded.

Queuing Form of non-price rationing in the situation of a shortage in which the goods are distributed to the consumers who were willing to wait the longest time in a queue.

Revenue maximisation Producing at a level of output at which the amount of revenue is at its maximum level ($MR = 0$) for the firm, ignoring increases in costs..

Rivalrous characteristic of a good The good can't be used by more people at the same time.

Satisficing A goal of a firm in which the firm tries to perform satisfactorily rather than to a maximum level.

Second degree price discrimination Charging a different price for different quantities consumed.

Shortage A situation in which demand for a good or service exceeds the available supply.

Short-run Time period in which at least one factor of production is fixed and the firm cannot quickly change the quantity produced. All production takes place in the short run.

Shut down price A point of operations where a company experiences no benefit for continuing operations and earns just enough revenue to cover its total variable costs. When the price drops below the shut down price, the company will shut down its operations.

Signalling function of a price A signal to producers that consumers want to buy the good.

Specialisation (1) A method of production where a business focuses on the production of a limited scope of products or services to gain higher productive efficiency or

(2) Division of labour, the specialization of cooperative labour in specific, circumscribed tasks and roles.

Specific tax A tax that is defined as a fixed amount for each unit of a good or service sold.

Subsidy A sum of money given to producers by the government to encourage production and consumption.

Substitute good A good that is consumed instead of another good.

Supply curve A curve showing the relationship between the price of a good or service and the quantity supplied for a given period of time.

Tacit collusion When firms charge the same price by looking at each other and there is no formal agreement involved.

Tax burden (1) The amount of tax paid by a person, company, or country in a specified period considered as a proportion of total income in that period. or (2) The total welfare loss of society due to taxation.

Tax incidence The division of a tax burden between buyers and sellers; the tax burden on a specific group in the economy.

Third degree price discrimination Charging different prices depending on a particular market segment.

Total costs The complete costs of producing output.

Total product The total output that the firm produces using its fixed and variable factors in a given time period.

Total revenue The total amount of money a firm receives from selling goods or services in a given time period.

Trade liberalization Removing barriers to trade between different countries and encourage free trade.

Underground parallel market or black market A market where transactions occur without the knowledge of the government, letting participants to avoid government price controls or taxes.

Unit elastic demand The percent change in demand is equal to the percent change in price.

Unit elastic supply The percent change in supply is equal to the percent change in price.

Variable costs Costs that increase when production is increased.

5.2 Macroeconomics

Absolute poverty See 'poverty'. The inability to fulfil the basic economic needs.

Aggregate demand curve The curve representing the relationship between aggregate demand and the price level.

Aggregate demand The total demand for goods and services in an economy at a given time.

Aggregate supply The total amount of goods and services that all industries in the economy will produce at every given price level.

Balanced budget A (government) budget in which revenues are equal to expenditures.

Boom The phase of a business cycle characterised by high economic activity and low unemployment.

Business confidence The degree of optimism or pessimism that business managers feel about the prospects of their companies.

Business cycle The fluctuation of economic activity around the long term growth path; consists of different phases of real GDP growth and decline.

Capital (1) The cash or goods used to generate income either by investing in a business or a different income property, or (2) All man-made tools used in the production process e.g. machines.

Capital expenditures One-time payments of governments (e.g. building a new school).

Central bank A bank which controls a country's money supply and monetary policy.

Circular flow of income model The economic model that illustrates the exchange between households and firms.

Closed economy A self-sufficient economy, meaning no imports are brought in and no exports are sent out, the goal being to provide consumers with everything they need from within the economy's borders.

Consumer confidence The degree of optimism of consumers on the current and expected state of the economy, which determines their spending and saving decisions.

Consumer expenditure The expenses incurred in consumption.

Consumer Price Index (CPI) An index that measures the purchasing power of consumers in a country, by comparing the prices of a basket of goods in different years.

Contractionary fiscal policy A form of fiscal policy that involves increasing taxes and decreasing government expenditures.

Contractionary monetary policy A monetary policy which slows the rate of growth in the money supply in order to control inflation.

Cost-push inflation Inflation which occurs when an increase in the cost of production pushes the average price level up.

Current expenditures The recurring expenditures of governments, such as wages of civil servants, interest on government debt.

Cyclical unemployment Unemployment that results when the overall demand for goods and services in an economy cannot support full employment.

Deflationary gap Shows the difference between the full employment level of output and actual output.

Deflation The persistent fall in the level of prices.

Demand deficient unemployment See 'cyclical unemployment'.

Demand-pull inflation Inflation which occurs when an increase in AD pulls up average price level.

Direct taxes Taxes that are imposed directly on income, wealth and profit.

Disinflation A persistent fall in the rate of inflation.

Disposable income Personal income actually available for spending.

Easy monetary policy A monetary policy that increases the money supply, usually by lowering interest rates.

Economic activity The production and consumption of goods and services.

Economic growth An increase in GDP.

Enterprise Entrepreneurship; the skill set of the entrepreneur to combine capital, land and labour in order to make a profit.

Equality The equal distribution of income.

Equilibrium The state in which demand is equal to supply.

Equity The fair distribution of income.

Expansionary fiscal policy A form of fiscal policy that involves reducing taxes and increasing government expenditures.

Expansionary monetary policy A policy used to expand money supply and boost economic activity.

Exports The goods and services that are made in the domestic country and transmitted (sold) to foreigners (foreign countries).

Factors of production All the inputs that are used in the production of final goods and services. They include land, labour, capital and enterprise.

Fiscal policy The government intervention by either adjusting taxes or adjusting government spending.

Frictional unemployment Unemployment due to people changing jobs when some sectors of the economy grow and other contract.

Full capacity The maximum level of output that a company can sustain to make a product or provide a service.

Full employment A state in which producers are producing at full capacity and maximum employment is reached.

GDP or Gross Domestic Product The total income earned by the factors of production in a country, regardless the assets owner.

Gini index A measure of inequality of a distribution. A value of 0 (0%) for the Gini index denotes complete equality, and a value of 1 (100%) denotes maximal inequality.

GNI or Gross national income The total income earned by a country's factors of production, regardless the assets location.

GNP or Gross national product The total market value of all final goods produced in a country.

Government debt Debt owed by the government.

Government deficit A government's income is less than the money it spends.

Government spending The overall public spending carried out by the government.

Government surplus A government's income is greater than the money it spends.

Green GDP GDP minus the environmental costs, such as pollution; it measures sustainability.

Hidden unemployment Unemployment of potential workers that is not captured in official unemployment statistics.

Human capital The stock of knowledge, skills and abilities that determine the labour productivity of an individual or individuals.

Imports The goods and services that are made in a foreign country and transmitted (sold) to the domestic country.

Income Money received as a compensation for providing factors of production to firms. Income includes wage, rent, interest and profit.

Indirect taxes Taxes that are imposed over consumer spending.

Inflationary gap (1) The situation where the economy is (in equilibrium) at a level of output that is greater than the full employment level of output or above potential output; or (2) A situation in which an increase in aggregate demand (when the economy is at full employment) results in an increase in the average price level with no increase in real GDP.

Inflation A sustained increase in the level of prices.

Inflation rate A measure of how fast prices for goods and services rise over time.

Injections Additions to the value of economic activity due to investment, government spending or exports.

Interest A fee paid for the use of another party's capital or money.

Interest rate The price or cost of borrowed money; the reward for saving; the percentage paid on borrowed money.

Interventionist supply side policies Supply side policies focused on government intervention.

Keynesian economics The analysis of economic activity based on the fundamental premises that economic activity is largely based on aggregate demand and that recessions can be restrained by fiscal stimulus in order to increase aggregate demand.

Labour force Everyone that can, wants to, and is allowed to work.

Labour Human resources; human beings as factors of production.

Land A natural resource employed as a factor of production.

Leakages Outflows from the circular flow of income model, due to saving, taxation and imports.

Long-run aggregate supply curve The curve representing the relationship between long-run aggregate supply and the price level.

Lorenz curve A curve used to measure the degree of equity.

Marginal propensity to consume (MPC) The percentage of additional government expenditure that consumers use to consume.

Marginal propensity to import (MPM) The percentage of additional government spending that consumers use to import goods.

Marginal propensity to save (MPS) The percentage of additional government expenditure that consumers save.

Marginal rate of taxation (MPT) The percentage of additional government expenditure that consumers have to pay back in taxes.

Market based supply side policies Supply side policies focused on encouraging free markets and reduce competition.

Monetary policy The macroeconomic policy laid down by the central bank which involves management of money supply and interest rate to influence the economy.

Money demand The amount of money people wish to hold.

Money supply The amount of money that exists in an economy.

Natural capital The world's stocks of natural resources.

Natural rate of employment The rate of unemployment when the labour market is in equilibrium.

Neoclassical economics The analysis of economic activity based on the fundamental premises that all participants on the market have rational preferences, all consumers maximize utility, firms maximize profit and all choices are made taking into account relevant constraints.

Nominal value At current prices.

Open economy An economy where goods and services are traded with other countries.

Output The amount of something produced.

Per capita Per head of the population.

Phillips curve A curve showing the connection between inflation and unemployment in the short and long run.

Physical capital The capital in form of physical goods.

Potential output The output that could be produced by an economy if all its resources were fully employed.

Poverty The inability to fulfil the basic economic needs.

Producer Price Index (PPI) An index that measures the price of an average bundle of inputs for producers in different years.

Production capacity The volume of products or services that can be produced by an enterprise using given resources.

Production-possibility frontier A curve which shows the maximum possible output combinations of two goods or services an economy can achieve when all resources are fully employed.

Profit Income received from enterprise; the financial gain occurred when the amount of revenue gained from a business activity exceeds the expenses, costs and taxes.

Progressive tax scheme A tax scheme in which the higher the income, the higher the average tax rate.

Proportional tax scheme A tax scheme in which the same tax rate for all incomes is charged.

Protectionism The restriction of international trade with the goal of preventing losses in industries threatened by imports.

Purchasing power The amount of real goods and services each unit of money will buy.

Real value The nominal value adjusted for inflation.

Recession An overall decline in economic activity during which trade and industrial activity are reduced; is often defined as real GDP falling for two successive quarters.

Recovery The phase of a business cycle when output and employment are moving back from their lowest point towards normal levels.

Regressive tax scheme A tax scheme in which the higher the income, the lower the average tax rate.

Relative poverty A Measure of poverty in relationship to other members of a population.

Rent A payment made for the use of land as a factor of production.

Saving Income not spent; deferred consumption.

Seasonal unemployment Unemployment due to seasonal variations in the demand for labour.

Short-run aggregate supply curve The curve representing the relationship between short-run aggregate supply and the price level.

Stagflation A state in which a country persistently suffers from both high inflation and high unemployment.

Structural unemployment Unemployment due to a lack of capital equipment which unemployed workers could use; lack among unemployed workers of the skills necessary to produce.

Subsidy A sum of money given to producers by the government to encourage production and consumption.

Supply-side policy A policy intended to increase the aggregate supply available in an economy.

Sustainability Development that meets the needs of the present generation without compromising the ability of future generations to meet their needs.

Taxes Fees levied by states upon their citizens and firms to finance government expenditure.

The Keynesian multiplier The factor by which gains in total output are greater than the change in spending that caused it.

Tight monetary policy See 'contractionary monetary policy'.

Transfer payments Payments made by the government as a way to redistribute money through programs such as pensions, student grants etc.

Trough The phase of the business cycle in which the low point of GDP is reached. GDP is stable at this point.

Unemployment A phenomenon that describes all people of working age that are not working and are actively looking for a job.

Unemployment benefits The income support payments to the unemployed.

Unemployment rate The total number of people unemployed as a percentage of the corresponding total labour force.

Wage A payment for work performed by the workforce.

Wealth The total value of a person's net assets.

Withdrawals Reductions to the value of economic activity due to savings, taxes or imports.

5.3 Global

Absolute advantage The ability of a party (an individual, or firm, or country) to produce a greater quantity of a good, product, or service than competitors, using the same amount of resources.

Administrative barriers Bureaucratic procedures and practices that make it more difficult to trade.

Adult literacy rate An education indicator used to measure the proportion of the adult population (15+) that knows how to read.

Appreciation An increase in the value of a currency caused by market forces.

Balance of payments A record of all money entering the country and leaving the country.

Bilateral and regional preferential trade Trade agreements between countries in a certain region.

Bilateral preferential trade agreements Preferential trade agreements formed between two countries.

Capital account A financial statement which shows miscellaneous income or expenses that cannot be placed in any other category. Part of the balance of payments.

Common market A customs union with common policies on product regulation and free movement of goods, services, capital and labour between member states.

Comparative advantage The ability of a party (an individual, or firm, or country) to produce a good, product of service at a lower opportunity cost than competitors.

Complete economic integration The form of economic integration where countries have no control of economic policy. It is the full monetary union with the complete harmonisation of fiscal policy.

Composite indicators Indicators which contain more than one measure and so are considered to be better indicators of economic development.

Concessional long-term loans Loans that are extended on terms substantially more generous than market loans. The concessionality is achieved either through interest rates below those available on the market or by grace periods, or a combination of these.

Current account A financial statement which shows inflows of trade and income against outflows. Part of the balance of payments.

Customs union A degree of economic integration in which countries are able to trade freely among themselves and also agree to adopt common external barriers against any country outside the union.

Debt cancellation The process of a creditor cancelling a debt previously owed by a debtor.

Depreciation A decrease in the value of a currency caused by market forces.

Devaluation A decrease in value of a currency caused by government intervention.

Development aid Aid given to support the economic, social and political development of developing countries.

Diversification Moving from the production and export of primary commodities to the production and export of manufactured goods.

Economic development An increase in welfare, which includes wealth but also quality of life.

Economic growth An increase in GDP.

Economic indicators Indicators that distinguish between countries using economic data; used to distinguish between developed countries and developing countries and to predict future economic activity.

Economic integration The unification of economic policies between different states through the partial or full abolition of tariff and non-tariff restrictions on trade taking place among them prior to their integration.

Economies of scale The cost advantages that enterprises obtain due to size, output, or scale of operation, with cost per unit of output generally decreasing with increasing scale as fixed costs are spread out over more units of output.

Education indicators Indicators used to distinguish between countries on the basis of education.

Exchange rate The value of one currency expressed in terms of another currency.

Expenditure reducing method A government strategy to tackle a persistent current account deficit by making sure people spend less in general which will reduce imports. This can be achieved by using contractionary fiscal or monetary policy.

Expenditure switching method A government strategy to tackle a persistent current account deficit by making sure people buy more domestic products instead of foreign goods and therefore reducing import. This can be achieved by using protectionist measures.

Export promotion Focussing on exporting goods and using the revenues from this export to boost aggregate demand.

Factors of production All the inputs that are used in the production of final goods and services. They include land, labour, capital and enterprise.

Financial account A financial statement which shows the inflows from investments from abroad against investment to abroad. Part of the balance of payments.

Fixed exchange rate regime An exchange rate regime in which the value of the currency is pegged to the value of another currency.

Foreign Direct Investment The long term investments by multinational corporations (MNCs) in foreign countries by either building new plants or expanding existing ones.

Foreign aid Resources given from one country to another out of charity.

Foreign debt Outstanding loans that a country owes to other countries or other countries' institutions.

Free trade area A degree of economic integration in which countries are able to trade freely among themselves, but are able to trade with countries outside the free trade area in anyway they like.

Freely floating exchange rate regime An exchange rate regime in which the value of an exchange rate is determined by the demand for and supply of that currency.

GDP per Capita at Purchasing Power Parity GDP per capita corrected for differences in prices and exchange rates between countries; compares purchasing power (how much can you buy from your money) between countries.

GDP per Capita Total income earned by the factors of production in a country regardless the assets owner per head of the population.

GNI per Capita Total income earned by a country's factors of production, regardless the assets location per head of the population.

Good governance A term used to describe how public institutions conduct public affairs and manage public resources. This should be done in a responsible, hence 'good', way.

Health indicators Indicators used to distinguish between countries on the basis of health or healthcare.

Human Development Index (HDI) A composite indicator that measure country's overall achievement in its social and economic dimensions, such as long and healthy life, education and standard of living.

Human capital The stock of knowledge, skills and abilities that determine the labour productivity of an individual.

Humanitarian aid Aid provided for humanitarian purposes; it involves food aid, medical aid and emergency relief aid.

Import substitution refers to producing goods yourself instead importing them.

Infant industry A new industry in its early stages of development, often in need of protection against international competitors.

Infant mortality rate A health indicator used to measure the number of deaths of babies under the age of one year per 1000 births in a given year.

International Monetary Fund (IMF) An international organization created for the purpose of standardizing global financial relations and exchange rates.

Interventionist policies Policies that promote an active role by the government and manipulation of the workings of the market.

J-curve effect is a "J" shaped section on a graph in which the curve falls into negative territory and then gradually rises to a higher level than before the decline. This shape can be seen when reviewing the development of the current account balance. Usually a current account balance that is negative will first slowly worsen due to the time it takes for prices to adjust to the new situation. After time, prices will have changed, making the current account balance positive again.

Life expectancy at birth A health indicator used to measure the average number of years a person may expect to live from the time that he is born.

Managed exchange rate regime An exchange rate regime in which the exchange rate is freely floating but there is periodic government intervention to influence the value of the exchange rate.

Market oriented policies Policies that minimize the role of government and maximize free market operation.

Marshall-Lerner condition An economical condition which states that a currency devaluation will only lead to an improvement in the balance of payments if the sum of demand elasticity for imports and exports is greater than one.

Monetary union A common market with common currency and common central bank.

Multilateral development assistance Assistance provided by international organizations, mostly the International Monetary Fund and the World Bank.

Multilateral preferential trade agreements Preferential trade agreements formed between three or more countries.

Net enrolment in primary education An education indicator used to measure the ratio of children of primary school age enrolled in primary education to the total number of children who are of primary school age in the country.

Non-governmental organisations Non-profit organizations that are independent from states and international governmental organizations.

Official Development Assistance (ODA) The foreign aid extended by the government.

Over specialization A narrow range of products can cause too much dependence on the export of a small set of goods. If the market of these goods collapses, the country may face economic catastrophe.

Perfect knowledge The state in which a consumer, producer or government has all possible information he needs in order to make a decision.

Physical capital The capital in form of physical goods.

Poverty trap A situation in which poor communities are unable to invest in physical, human and natural capital due to low or no savings, thus poverty is being transmitted from generation to generation.

Preferential trade agreements Agreements between two or more countries that give preferential access to the markets of the participating countries by reducing or eliminating tariffs or by other agreements related to trade.

Price volatility The (relative) rate at which the prices move up and down. If prices are volatile, they change rapidly over time.

Primary products Goods that are made of cultivating raw materials without a manufacturing process.

Production-possibility frontier A curve which shows the maximum possible output combinations of two goods or services an economy can achieve when all resources are fully employed.

Profit repatriation Bringing profit earned in a foreign country into the borders of one's own country.

Programme aid Aid provided to accomplish tasks in a particular area or sector (e.g. support for sectors such as education and financial sector).

Project aid Aid provided to accomplish a specific purpose (e.g. support for schools and hospitals).

Quota A governmental restriction on the quantities of goods that may be imported into the country within a specific period of time.

Resource endowment The amount of resources that a country possesses and can exploit.

Revaluation A rise in value of a currency caused by government intervention.

Subsidy A sum of money given to producers by the government to encourage production and consumption.

Supply side policy A government strategy to tackle a persistent current account deficit through boosting supply and therefore exports. This can be achieved using expansionary supply side policies.

Tariff A tax charged on imported goods.

Terms of trade An index that shows the value of a country's average export prices relatively to their average import prices.

The Millennium goals Global goals for the development of developing nations, established by the United Nations.

Tied aid A type of aid that the receiving country must spend according to guidelines of the donor country.

Trade creation Welfare gain of a country due to an increase in the volume of exports of the country due to becoming a member of a customs union in which trade barriers are abolished. The abolition of trade barriers can make a country regain the comparative advantage is lost due to the trade barriers.

Trade diversion Decrease in the welfare of a country due to an increase in the prices of imported goods. Before entry into the customs union, the country imported from country X without barriers. With entry into the union, tariffs are imposed on country X (non-member) and the product is therefore imported from member countries at higher price instead of from country X.

Trade liberalization Removing barriers to trade between different countries and encouraging free trade.

Trade protectionism The measures used by countries to limit competition from foreign industries.

World Bank An international organization dedicated to providing financing, advice and research to developing nations to aid their economic advancement.

World Trade Organisation (WTO) An international organisation that sets the rules for global trading and resolves disputes between its member countries.

ABBREVIATIONS

6

AD	**Aggregate demand.** Total demand for goods and services in an economy at a given time.
AEP	**Index Average Export Price.**
AFC	**Average fixed costs.**
AIP	**Index Average Import Price.**
AP	**Average product.** Output that is produced on average, by each unit of the variable production factor.
AR	**Average revenue.** The revenue a firm receives per unit of sales.
AS	**Aggregate supply.** The total amount of goods and services that all industries in the economy will produces at every given price level.
ATC	**Average total costs.** Costs per unit of output.
AVC	**Average variable costs.**
CPI	**Consumer Price Index.** Economists compile a basket of goods that is representative for the economy, they then compare the cost of this basket over time. The increase in price of the basket is the inflation rate.
CR	**Concentration Ratio.**
CSR	**Corporate Social Responsibility.** The business includes public interest in its decision making. This may be that the company wants to produce as environmentally friendly as possible, provide good service for consumers, employ workers under favourable conditions etc. Different firms may adopt different approaches to CSR.
CS	**Consumer surplus.** The extra satisfaction gained by consumers from paying a price that is lower than the price they were prepared to pay total welfare gained from being able to consume.
C	**Consumer expenditures.** The expenses incurred in consumption.
FC	**Fixed costs.** Costs of fixed assets such as rent for company space. These costs will always be a constant amount and they won't change in the short run.
FDI	**Foreign Direct Investment.** Long term investments by multinational corporations (MNCs) in foreign countries by either building new plants or expanding existing ones.

GDP	**Gross Domestic Product.** Total income earned by the factors of production in a country, regardless the assets owner.
GNP/GNI	**Gross National Product / Gross National Income.** The total income earned by a country's factors of production, regardless the assets location.
G	**Government spending.** The overall public spending carried out by the government.
HDI	**Human Development Index.** A composite indicator that measure country's overall achievement in its social and economic dimensions, such as long and healthy life, education and standard of living.
IMF	**International Monetary Fund.** An international organization created for the purpose of standardizing global financial relations and exchange rates.
I	**Investment.**
J	**Injections.** Additions to the value of economic activity due to investment, government spending or exports.
LRAC	**Long run average cost curve.** It is a combination of all short run average cost curves (SRAC) that are present at fixed levels of production at fixed levels of factors of production.
LRAS	**Long run aggregate supply.**
LR	**Long-run.** All factors of production are variable in the long run but the state of technology is fixed. All planning takes place in the long run.
MC	**Marginal costs.** The increase in total cost when producing one more unit of output.
MNCs	**Multinational corporations.**
MPB	**Marginal Private Benefits.** Benefits the individual enjoys from the consumption of an extra unit of a good.
MPC	**Marginal Private Cost.** Costs of production that are taken into account in a firm's decision making process.
MPC	**Marginal propensity to consume.** The percentage of additional government expenditure that consumers use to consume.
MPM	**Marginal propensity to import.** The percentage of additional government spending that consumers use to import goods.
MPS	**Marginal propensity to save.** The percentage of additional government expenditure that consumers save.

MPT	**Marginal rate of taxation.** The percentage of additional government expenditure that consumers have to pay back in taxes.
MP	**Marginal product.** Extra output that is produced by using one extra unit of the variable factor.
MR	**Marginal revenue.** The extra revenue that a firm gains by selling one more product in a given time period.
MSB	**Marginal Social Benefit.** Benefit of consumption of one extra unit to society.
MSC	**Marginal Social Cost.** Cost of production to society.
MS	**Money supply curve.**
M	**Imports.** The goods and services that are made in a foreign country and transmitted (sold) to the domestic country.
NGO's	**Non-governmental organisations.** Non-profit organizations that are independent from states and international governmental organizations.
ODA	**Official Development Assistance.** The foreign aid extended by the government.
PED	**Price elasticity of demand.** It is used to measure the effect a change in price has on the demand for a certain good.
PES	**Price elasticity of supply.** It is used to measure the effect a change in price has on the supply for a certain good.
PPF	**Production Possibilities Frontier.** A curve that shows the theoretical maximal combination of two goods that an economy can produce if full use is made of all factors of production.
PPI	**Producer Price Index.** Economists compile a basket of factors of production representative for the economy, they then compare the cost of this basket over time. The increase in the price of the basket is the inflation rate.
PS	**Producer surplus.** The excess of actual earnings that a producer makes from a given quantity of output above the amount a producer would be willing to accept for that output — total welfare gained from being able to produce; equal to producer profits.
SRAC	**Short run average cost curve.**
SRAS	**Short run aggregate supply.**
SR	**Short-run.** At least one factor of production is fixed and the firm cannot quickly change the quantity produced. All production takes place in the short run.

S	**Savings.** Income not spent; deferred consumption.
TC	**Total costs.** The complete costs of producing output.
TFC	**Total fixed costs.**
TOT	**Terms of Trade.** An index that shows the value of a country's average export prices relatively to their average import prices.
TP	**Total product.** Total output that the firm produces using its fixed and variable factors in a given time period.
TR	**Total revenue.** Total amount of money a firm receives from selling goods or services in a given time period.
TVC	**Total variable costs.**
T	**Taxes.** Fees levied by states upon their citizens and firms to finance government expenditure.
UN	**The United Nations.**
VC	**Variable costs.** Costs of variable assets. Variable costs increase when production is increased.
V	**Variable production factor.**
WTO	**The World Trade Organisation.** Is an international organisation that sets the rules for global trading and resolves disputes between its member countries.
W	**Withdrawals.** Reductions to the value of economic activity due to savings, taxes or imports.
XED	**Cross price elasticity of demand.** It is used to measure the effect a change in price of one product has on the demand for a certain other good.
X	**Exports.** The goods and services that are made in the domestic country and transmitted (sold) to foreigners (foreign countries).
YED	**Income elasticity of demand.** It is used to measure the effect that a change in income of consumers has on the demand for a certain product.

ESSAY GUIDE

7

Exam:	Time:	Marks:	% of total:
Paper 1	75 minutes	25 marks	30%

Choose and answer 1 question from a choice of three (Micro, Macro, and Global Economy). Answer both part a and b.

7.1 Time management

Managing your time well guarantees that you can address each question at the exam, to at least score the easier marks from each question. So when time allotted to the question runs out, finish the sentence and leave some space to finish the question later. Then, if you have time left at the end of the exam you can go back to complete your answers.

Keeping to a strict schedule ensures that you will not waste time by getting stuck on a question, and securing enough time to answer each question. This will help you stay relaxed throughout the exam, especially if you also remember that you do not have to write perfect answers to get a good grade: rather get as many marks for each question within the time you have. Plus, the answers to the question you are stuck on will often come to you while working on a different question.

The next section lists how much time you should spend on each part of the exam. Do all your practice from now on by sticking to these times, because doing so will familiarize you with how much and at what pace you need to be able to write in paper 1.

Choose 1 question out of a choice of 3. You can choose to answer a question about microeconomics, macroeconomics, or about global economy. Time: 75 min.

Use 5 minutes to plan for each part. (10 minutes for planning in total)

part a) 10 marks, max. 26min

part b) 15 marks, max. 39min

Part a) in paper 1 is really to get you started, part b) is worth more marks and requires more detail!

7.2 Essay writing style

7.2.1 DEED

Define First, define any key terms that arise in the question itself and in your answer. *Any* key terms that are introduced by the question or that you introduce should be defined! Remembering to do this is a really easy way to gain points. Also once you have defined terms, and there is an abbreviated version, place this behind- e.g. Aggregate Demand (AD). This way now in your text you can save time by just writing "AD".

Explain Then after all is defined, explain your answer to the question. Make sure to properly elaborate on the economic theory that you are using to answer the question.

Diagram Provide a diagram. The diagram is there to help you explain the concept: *so use it!*
You should draw a diagram next to where the theory is explained as you write it, or you can leave space for it and come back to it at the end.

7.2.2 DEED & CLASPP

The structure of part b) differs from part a) in two significant aspects: students must **evaluate** their arguments throughout the paper, as well as provide a relevant and true real-world **example** to support their explanation of the theory. The two E's of evaluating and explaining make up the extended version of DED – the DEEDE (Define, Explain, Example, Diagram, Evaluate).

To help you with acing the evaluation part, let us go over another helpful acronym; the CLASPP.

Conclude Make a weighted concluding statement e.g. So the best policy is a combination of Monetary policy and fiscal policy, rather than both in isolation etc…) Justify/reason why this is the stance you have taken.

Limitations to the theory Provide insight into the drawbacks of your conclusion or an alternate solution (i.e. this solution works, but it doesn't work all the time, this other solution would also be a good option, and which we choose depends on more information). This will show the examiner that you have a thorough understanding of the topic.

Assumptions of the theory Some economic theories rely on certain assumptions. Mention these assumptions and reflect on their significance for the conclusions that you make from them (e.g. we assume rational human behaviour, however humans may not always act economically rational)

Stakeholders Mention the stakeholders involved in the problem and describe the effect on each of them.

Priorities Explain what is most important: which effect is most important, which stakeholder is most important, etc.

Pros and Cons Evaluate the advantages and disadvantages of the theory.

Please note that evaluation should **not** only occur at the end of your paper. Instead, you should evaluate the case that you are building throughout the essay. Evaluation is required in each markband. Use the CLASPP!

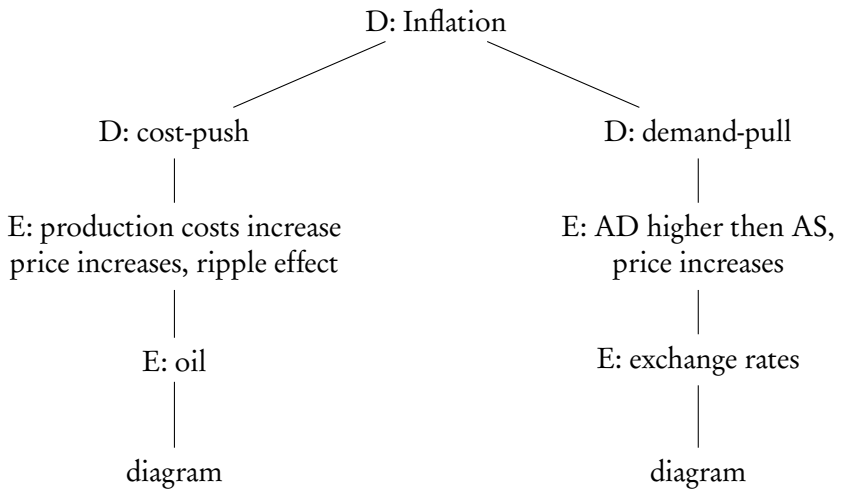
For paper 1 part b, the IBO requires students to use a "real" real-life example. Your essay response should use the real life example throughout the paper as the context and building block of the essay.

For instance, for a micro paper asking about solving a negative externality of consumption, you could use the example of the European Union banning menthol and flavored cigarettes as of 2020 in order to discourage the consumption of cigarettes. For a macro question about expansionary monetary policy, you could evaluate the response of the European Central Bank and the US Federal Reserve to the economic downturn caused by the covid-19 pandemic.

When going over the syllabus, make sure that you have a real life example for all the topics covered in micro, macro, and global economy! It might be helpful to make a table of all topics and the corresponding examples.

7.3 Worked example

a) Using two AD/AS diagrams, explain cost-push and demand-pull inflation.

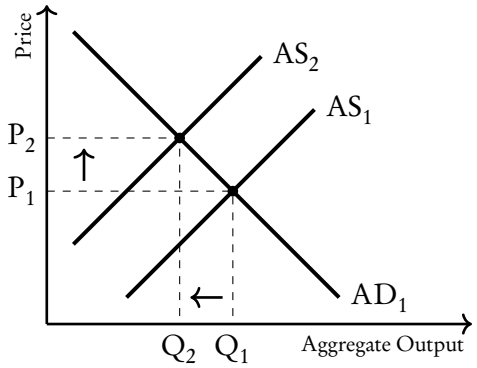


Define: Inflation can be defined as a persistent increase in the average level of prices in an economy.

Define: There are two main types of inflation, namely cost-push inflation and demand-pull inflation. Cost-push inflation is a situation in an economy where there is a persistent rise in prices due to production costs increasing.

Explain: When production costs of one firm increases, they may consequently have to increase prices. If they increase prices, this means that a firm who depends on this now has higher costs. The increase in production costs thus ripples through the economy and results in persistent increases in prices across many industries.

Diagram: In the case of cost-push inflation, the rise in the production costs will lead to a leftwards shift of the Aggregate Supply Curve (AS_2 to AS_1), effectively raising the price level (from P_2 to P_1). This will also reduce output (Q_2 to Q_1). This can be seen in the diagram below.



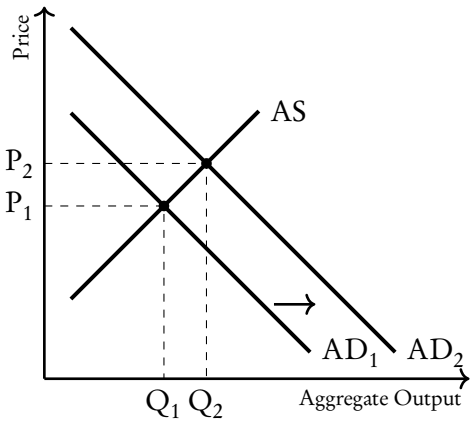
All axes and curves are labelled and all points identified. Now you can just refer to the points i.e. price decreases (P_2 to P_1). This will be very helpful in your explanations and examiners love this!

Define: Demand-pull inflation is inflation caused by consistently higher levels of aggregate demand over aggregate supply in the economy.

Define: Aggregate demand (AD) referring to the total demand for final goods and services in an economy at a given time.

Explain: Here this means that as AD increases, because supply remains fixed, the price has to increase to keep up.

Diagram: In the case of demand-pull inflation, the increase in AD will lead to a rightwards shift of the AD curve (AD_2 to AD_1), effectively raising the price level (P_2 to P_1). This rise in general price level is in some ways counteracted by the increase in output (Q_2 to Q_1). This is illustrated in the diagram below:



b) "The rate of inflation can be most effectively reduced through the use of monetary policy." to what extent do you agree with this statement?

Note: Typically, it would be necessary to define *'the rate of inflation'*, but as it was already defined in part (a) it is sufficient to simply refer to it.)

Define: Monetary policy can be defined as policies that the central bank makes to manipulate the rate of interest, exchange rates and the quantity of money. Monetary policy is an example of a demand-side policy, which is a policy that attempts to alter the level of aggregate demand (AD) in an economy.

Define: Monetary policy is a very important tool to manage the economy. There are two general strategies- contractionary and expansionary monetary policy. Expansionary monetary policy aims to increase the total supply of money in the economy (or more rapidly than usual). On the other hand, contractionary policy expands the money supply more slowly than usual or even shrinks it.

Example: The records of the Dutch central bureau of statistics indicate that the price of goods and services rose by 11.6 percent on average during the year 2022. The rate of inflation measured in the Netherlands ties in with a Europe-wide trend of high inflation in 2022, caused by a mix of factors; the war in Ukraine, the apparent end of the covid-19 pandemic, and bottlenecks in global supply chains after the pandemic.

Explain (using example as the context): to tackle post-pandemic high inflation, the European Central Bank (ECB) has implemented contractionary monetary policy measures. The bank does this by increasing the interest rate. The commercial banks in the Eurozone must follow suit, providing consumers with higher interest rates. In theory, if interest rates increase, there is less demand for investment and more incentive for people to increase their savings. Contractionary monetary policy thus reduces AD, shifting the AD curve to the left (AD1 to AD2). We experience the desired result of a lower general level of prices (P1 to P2). A fall in the general price level is a fall in the rate of inflation, as defined above in part (a).

Evaluate: Monetary policy may reduce inflation, but higher interest rates discourage investment by firms. Long term productivity/competitiveness domestically and internationally may be harmed in the aftermath. Moreover, the fact that monetary policy for all Eurozone countries is handled by a single central bank often leads to a situation where the policy is more optimal for some member countries, while hurting the economies of others.

Define: However, monetary policy is not the only tool that can be used to manage an economy. Fiscal policies are a type of demand-side policy (also targets altering AD in the economy as discussed earlier) that entails the government altering government expenditure and/or taxes to influence the AD curve. The government can use expansionary fiscal policy (to "expand" or increase AD) or contractionary (to "contract" or reduce AD).

Example: In response to high inflationary pressures and a looming recession, the Dutch government has also imposed fiscal measures in 2022. Through contractionary fiscal policy, the Dutch government has increased taxes and cut government spending. Increased taxes leave households with less money to spend on goods and services. Some workers employed in the public sector may be laid off due to

spending cuts. Unemployment reduces the ability to spend significantly.

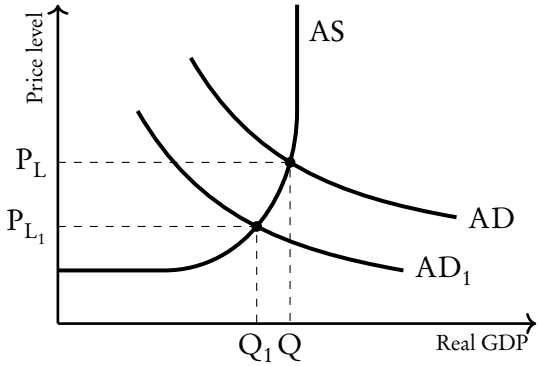


Diagram: In theory, less demand for goods and services shifts AD to the left (AD1 to AD2). This, as a result, reduces the general price level (P1 to P2), reducing inflation.

Evaluate: As shown by the diagram, contractionary fiscal policy can combat demand-pull inflation but as the primary effect is on AD, the policy has little power over cost-push inflation. Moreover, contractionary fiscal policy may reduce inflation, but higher taxes and less government expenditure are not politically desirable; they may make the government very unpopular.

Evaluate: (Stakeholders): to choose only short term solutions to inflation (monetary policy and fiscal policy) lowers the level of inflation immediately, but comes at the price of lower output. Lower output means higher levels of unemployment and potentially reductions in living standards.

Define: Monetary policy implemented by the ECB and fiscal relief offered by the Dutch government are both demand-side policies. When inflation arises from the supply-side, as is the case in global, post-pandemic supply chain bottlenecks, supply-side policies can come in handy.

Example: In 2022, the Dutch government promised to channel close to 3.5 billion euros into public infrastructure and railway projects. In the long-run, improved railway systems will improve the mobility of labor and increase the reachability of new housing developments. In the long-run, these factors should improve the quality of labor in the Netherlands.

Evaluation: However, in the short-run, increased government spending may act against contractionary fiscal policy goals. Pouring more money into the economy may spur inflation instead of taming it.

Diagram: The Dutch investment in public infrastructure influences the long-run aggregate supply of the economy. If labor becomes more effective due to increased mobility, each person can now produce more output. This is what then causes the increase in LRAS, and therefore shift the curve to the right (LRAS1 to LRAS2). Shifting the LRAS curve means that the AD curve now intersects the LRAS curve at a much lower general level of prices (P1 to P2), therefore again solving the problem of inflation.

Evaluate: (Assumptions of theory) When talking about the LRAS curve, we are working with the neoclassical framework. Economists in the Keynesian school of thought argue that the long-run is too far ahead to play a relevant role in economic policy considerations. Arguably, the time lags in the implementation of supply-side policies make them less effective in reducing inflation in the short- and medium-term.

Conclusion: In this essay, the Netherlands was used as the primary example. The conclusion of the most effective tool to combat inflation is therefore dependent on the country in question and the current state of the economy. Fiscal policy will reduce inflation, but higher taxes and less government expenditure may not be politically desirable. Monetary policy can also reduce inflation but it harms investments through a higher interest rate. Moreover, high interest rates have detrimental effects on long-term productivity and/or competitiveness, both domestically and internationally. Last, the implementation of a supply-side policy such as an investment in public infrastructure can reduce inflation, but only in the long-run. In the long run, this is the only way to reduce inflation. However, to bring about immediate alleviation, fiscal and monetary policy prove more pertinent. In conclusion, a mix of policies seems most appropriate.

Limitations to theory: Finding the right balance between these three policies so that they all coordinate is often easier said than done.

Priorities, Pros and Cons: The coordination of the three policies requires massive efforts, especially in countries with a weak government and limited institutional power. Moreover, in the case of the Netherlands, monetary policy is implemented by the ECB while fiscal and supply side policies are set by the national government. The needs of other Eurozone countries influence monetary policy decisions, making coordination of the three more difficult on a national level.

Ultimately, a small spread of problems is preferred over the other extreme. A small group of dissatisfied citizens due to an increase in taxes or a slight decrease in current output when implementing a long-term infrastructure project can be seen as healthy side-effects of business cycle fluctuations. On the other hand, a significant drop in domestic and foreign investment or a precarious period of stagflation are neither politically nor economically desirable for an economically developed country such as the Netherlands.