

CA
PAKISTAN



The Institute of
Chartered Accountants
of Pakistan

2015

INTRODUCTION TO ECONOMICS AND FINANCE

STUDY TEXT

CAF-02

ICAP

P

Introduction to economics and finance



The Institute of
Chartered Accountants
of Pakistan

CA
PAKISTAN

Second edition published by
Emile Woolf International
Bracknell Enterprise & Innovation Hub
Ocean House, 12th Floor, The Ring
Bracknell, Berkshire, RG12 1AX United Kingdom
Email: info@ewiglobal.com
www.emilewoolf.com

© Emile Woolf International, January 2015

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, scanning or otherwise, without the prior permission in writing of Emile Woolf International, or as expressly permitted by law, or under the terms agreed with the appropriate reprographics rights organisation.

You must not circulate this book in any other binding or cover and you must impose the same condition on any acquirer.

Notice

Emile Woolf International has made every effort to ensure that at the time of writing the contents of this study text are accurate, but neither Emile Woolf International nor its directors or employees shall be under any liability whatsoever for any inaccurate or misleading information this work could contain.



Contents

| | <i>Page</i> |
|--|-------------|
| Syllabus objective and learning outcomes | v |
| Chapter | |
| 1 Economic concepts | 1 |
| 2 Microeconomics | 25 |
| 3 Demand and supply: elasticities | 51 |
| 4 Utility analysis | 83 |
| 5 Costs, revenues and firms | 109 |
| 6 Macroeconomics: An introduction | 151 |
| 7 Consumption, savings and investment | 181 |
| 8 Multiplier and accelerator | 197 |
| 9 Money | 217 |
| 10 Growth and taxes | 245 |
| 11 Monetary policy | 259 |
| 12 Credit | 273 |
| 13 Balance of payments and trade | 285 |
| 14 Financial markets | 303 |
| Index | xxx |



Syllabus objectives and learning outcomes

ASSESSMENT OF FUNDAMENTAL COMPETENCIES

INTRODUCTION TO ECONOMICS AND FINANCE

Objective

To enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

Learning Outcome

The candidate will be able to:

| | |
|---|---|
| 1 | understand the nature of micro-economics and its basic concepts |
| 2 | understand the nature of macro-economics and its relation with the measurement of economic growth |
| 3 | understand how the balance of payments of a country is worked out |
| 4 | understand the nature of banking systems |
| 5 | understand the basic function of financial markets. |

| Grid | Weighting |
|---|------------|
| Concepts of economics | 5-10 |
| Microeconomics | 25-35 |
| Macroeconomics | 25-35 |
| Introduction to banking system, financial markets and international trade | 25-35 |
| Total | 100 |

| Syllabus Ref | Contents | Level | Learning Outcome | |
|--------------|------------------------------|--|------------------|---|
| A | Concepts of economics | | | |
| | 1 | The economic problem - wants, resources, scarcity | 1 | <p>LO1.1.1: Understand the fundamental nature of economics</p> <p>LO1.1.2: Describe the scope and objectives of economics.</p> <p>LO1.1.3: Describe, with examples, the concept of economic problem and its implications for an economy.</p> <p>LO1.1.4: Explain with examples the four factors of production.</p> <p>LO1.1.5: Discuss the production possibility curve and its relevance to the concept of opportunity cost</p> |
| | 2 | Economic systems - planned, market and mixed economies | 1 | <p>LO1.2.1: Describe the major functions of an economic system</p> <p>LO1.2.2: Explain the salient features of planned, mixed and market economies</p> <p>LO1.2.3: Provide examples of mixed, planned and market economies</p> <p>LO1.2.4: Describe the shortfalls of a market economy</p> |
| | 3 | Islamic economic system | 1 | <p>LO1.3.1: Describe the main features of the Islamic economic system</p> <p>LO1.3.2: Compare the Islamic economic system with other economic systems.</p> |

| B Microeconomics | | | | |
|-------------------------|---|---|---|--|
| | 1 | Microeconomics – nature | 2 | LO2.1.1: Define micro economics and discuss its scope and limitations. |
| | 2 | Demand and supply | 2 | LO2.2.1: Define law of demand and explain its assumptions, limitations and exceptions LO2.2.2: Define law of supply and explain its assumptions. |
| | 3 | Equilibrium of demand and supply | 2 | LO2.3.1: Explain the determination of price by equilibrium of demand and supply LO2.3.2: Explain the effect of changes in demand and supply LO2.3.3: Discuss the determination of price of perishable and durable goods. |
| | 4 | Elasticity of demand and supply | 2 | LO2.4.1: Describe the concept of elasticity of demand and its practical application LO2.4.2: Explain the determinants of the elasticity of demand LO2.4.3: Demonstrate the measurement of price, income, point, arc and cross elasticity of demand LO2.4.4: Describe the concept of elasticity of supply and explain the percentage and graphical methods of measurement of elasticity of supply LO2.4.5: Describe the determinants of supply elasticity. |
| | 5 | Utility analysis and indifference curve | 2 | LO2.5.1: Explain the law of diminishing marginal utility and discuss its assumptions and limitations LO2.5.2: Explain the law of equi-marginal utility LO2.5.3: Discuss the meaning and characteristics of indifference curves LO2.5.4: Explain consumers' equilibrium through indifference curve analysis. |

| B Microeconomics (continued) | | | | |
|-------------------------------------|---|---|---|---|
| | 6 | Cost and revenue curves | 2 | <p>LO2.6.1: Discuss short run curves of total cost, total fixed cost, total variable cost, average cost and marginal cost</p> <p>LO2.6.2: Derive a long run average cost curve from a short run average cost curve</p> <p>LO2.6.3: Derive a long run marginal cost curve</p> <p>LO2.6.4: Discuss revenue curves under perfect and imperfect competition</p> <p>LO2.6.5: Discuss the concept of economies and diseconomies of scale.</p> |
| | 7 | Equilibrium of firm in the short and long term under perfect competition, monopoly, oligopoly and monopolistic conditions | 2 | <p>LO2.7.1: State the features of perfect and imperfect competition</p> <p>LO2.7.2: Discuss the short and long run equilibrium of firms under perfect and imperfect competition.</p> |
| | 8 | Laws of increasing and diminishing returns | 2 | <p>LO2.8.1: Explain the law of increasing returns and its application and assumptions</p> <p>LO2.8.2: Explain the law of diminishing returns and its application and assumptions</p> |
| C Macroeconomics | | | | |
| | 1 | Measurement of national income including knowledge of basic concepts like GDP, GNP, NNP | 2 | <p>LO3.1.1: Define macro- economics and discuss its scope and limitations</p> <p>LO3.1.2: Define gross national product, gross domestic product and net national product</p> <p>LO3.1.3: Explain the product approach, income approach and expenditure approach to the measurement of national income</p> <p>LO3.1.4: Explain circular flow of Income</p> <p>LO3.1.5: State the difficulties usually faced in measuring National Income.</p> |

| C | | Macroeconomics (continued) | | |
|---|---|---|---|--|
| | 2 | Consumption, saving and investment functions; | 2 | <p>LO3.2.1: Understand the meaning of consumption and saving and its relationship with the income</p> <p>LO3.2.2: Identify how Keynes' Psychological law of consumption explains the relationship between consumption and income with the help of average propensity to consume and marginal propensity to consume curves</p> <p>LO3.2.3: Understand the determinants of the consumption function</p> <p>LO3.2.4: Understand the stability of consumption and saving functions in the short run and discuss the reasons thereof</p> <p>LO3.2.5: Understand the meaning of investment, induced investment and autonomous investment</p> <p>LO3.2.6: Explain the relationship of investment with marginal efficiency of capital and interest rate.</p> |
| | 3 | Marginal propensity to consume and save | 2 | <p>LO3.3.1: Discuss the marginal propensity to consume and save</p> |
| | 4 | Multiplier and accelerator; | 2 | <p>LO3.4.1: Comprehend the effect of the multiplier on the level of national income</p> <p>LO3.4.2: Understand the assumptions and limitations of the multiplier concepts</p> <p>LO3.4.3: Comprehend the principle of acceleration of derived demand</p> <p>LO3.4.4: Understand how the multiplier and accelerator interact</p> |

| C | | Macroeconomics (continued) | | |
|---|---|------------------------------|---|--|
| | 5 | Money and its value | | <p>LO3.5.1: Understand the main functions of money</p> <p>LO3.5.2: Understand credit money and its advantages and disadvantages</p> <p>LO3.5.3: Understand sources of the money supply</p> <p>LO3.5.4: Understand the quantity theory of money</p> <p>LO3.5.5: Understand the measurement of the value of money</p> <p>LO3.5.6: Understand inflation and its kinds and impacts</p> <p>LO3.5.7: Understand the causes of inflation and measures for overcoming inflation</p> <p>LO3.5.8: Understand the unemployment and its types and Phillips Curve</p> |
| | 6 | Growth and recession | 2 | <p>LO3.6.1: Understand different phases of the business cycle</p> <p>LO3.6.2: Understand the indicators of growth and recession</p> |
| | 7 | Fiscal budget | 2 | <p>LO3.7.1: Explain the fiscal policy and its objectives and how they are achieved through fiscal budgets</p> <p>LO3.7.2: Discuss the limitations of fiscal policy</p> |
| | 8 | Direct and indirect taxation | 2 | <p>LO3.8.1: Define direct and indirect taxation,</p> <p>LO3.8.2: Understand functions of taxation, types of taxes and characteristics of good tax policy</p> <p>LO3.8.3: Explain the advantages and disadvantages of direct taxation</p> <p>LO3.8.4: Explain the advantages and disadvantages of indirect taxation</p> |

| D | Introduction to banking system, financial markets and international trade | | | |
|----------|--|--|---|--|
| | a | Banking system | | |
| | 1 | Credit formation by banks | 1 | LO4.1.1: Explain the process of creation of credit money by the banks LO4.1.2: Discuss the limitations on the creation of credit |
| | 2 | Role of Central Bank; | 1 | LO4.2.1: Describe the functions of a central bank |
| | 3 | Monetary policy | 1 | LO4.3.1: Understand the meaning of monetary policy LO4.3.2: Understand the objectives of monetary policy and the mutual conflict of the objectives |
| | 4 | Types of banks and financial institution | 1 | LO4.4.1: Define a bank and describe its kinds. |
| | b | Financial markets-Meaning | | |
| | 1 | Money market | 1 | LO5.1.1: Describe the main features and objectives of money markets |
| | 2 | Capital markets. | 1 | LO5.2.1: Describe the main features and objectives of capital markets |
| | 3 | Derivative market | | LO5.3.1: Describe the main features and objectives of derivatives and derivative markets |
| | c | International trade | | |
| | 1 | Balance of trade and payment | 2 | LO6.1.1: Discuss the concept of exchange rate, its determination and government's policy to influence it. LO6.1.2: Understand the nature of items that are accounted for in the concept of balance of trade and payment LO6.1.3: Understand the different parts of balance of payment |

Economic concepts

Contents

- 1 The economic problem
- 2 Economic systems
- 3 Economic systems: Islamic

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO Understand the basic concepts of economics.

- LO1.1.1: *The economic problem - wants, resources, scarcity:* Understand the fundamental nature of economics
- LO1.1.2: *The economic problem - wants, resources, scarcity:* Describe the scope and objectives of economics
- LO1.1.3: *The economic problem - wants, resources, scarcity:* Describe, with examples, the concept of economic problem and its implications for an economy
- LO1.1.4: *The economic problem - wants, resources, scarcity:* Explain with examples the four factors of production
- LO1.1.5: *The economic problem - wants, resources, scarcity:* Discuss the production possibility curve and its relevance to the concept of opportunity cost
- LO1.2.1: *Economic systems - planned, market and mixed economies:* Describe the major functions of an economic system
- LO1.2.2: *Economic systems - planned, market and mixed economies:* Explain the salient features of planned, mixed and market economies
- LO1.2.3: *Economic systems - planned, market and mixed economies:* Provide examples of mixed, planned and market economies
- LO1.2.4: *Economic systems - planned, market and mixed economies:* Describe the shortfalls of a market economy
- LO1.3.1: *Islamic economic system:* Describe the main features of the Islamic economic system
- LO1.3.2: *Islamic economic system:* Compare the Islamic economic system with other economic systems.

1 THE ECONOMIC PROBLEM

Section overview

- Definition
- How economics is studied
- Microeconomics and macroeconomics
- Participants in an economy
- Circular flow of income
- Scarcity and Choice
- Factors of Production
- Opportunity Cost

1.1 Definition

Economics is important! It is arguably one of the more important disciplines in the world as it aims to provide guidance on how the scarce economic resources of the world can be allocated to the greater good.

The importance of economics is emphasised by the fact that all governments have economic advisers and that there are articles about the economy on an almost daily basis in all television news programmes and newspapers etc.



Definition: The economic problem

The allocation of scarce resources to satisfy potentially unlimited needs.

In a utopian world everybody would have everything they ever needed. Everything (food, water, shelter, consumables, holidays, computers) would be plentiful and available to all. Everyone's needs would be met. If resources were unlimited, then there would be no problem for economists to solve and there would be no need for economic study.

However, we do not live in Utopia. It is not possible to have everything that we desire. In response, society must make decisions to make the best of what it can, with what scarce resources it has.

This is a very complex and subjective issue and requires answers to complex questions:

- How do we distribute resources in such a way that is fair and equitable?
- How do we ensure that incentives promote desirable behaviour?
- How do we manage our scarce resources in a sustainable way?

The aim of this text is to provide fundamental toolkit needed to undertake economic analysis.

There is a plethora of different opinions on how to solve the economic problem in the innumerate ways that it presents itself. There is a joke that says "if you put 10 economists in a room, you will get 11 different opinions". This does not mean that economists are stupid or that the study of economics is worthless. Rather it indicates that economists are trying to provide guidance on complex issues that exist in a complex and dynamic environment.

That says, there are many things that economists agree on. There is often just one way of correctly reaching a conclusion based on the evidence presented before you. Nevertheless, disagreements are numerous and in cases where there are conflicting opinions, both will be presented.

1.2 How economics is studied?

Economics seeks to solve problems that exist in the world. However, the world is a complex place, meaning it is rarely possible to conduct scientifically fair experiments.

A scientist can investigate a problem experimentally. For example, a food biologist might be interested in how a new fertiliser might improve crop yield. She could set up an experiment where two plants were grown in identical conditions except that one was given the new fertilizer. Any difference in yield might then be inferred to be due to the fertilizer.

Economists cannot work in this way (an economist could hardly increase the interest rates in Pakistan just to see what would happen). As an alternative approach, economists construct models to try to gain insight into the workings of an economy. These models are often based on simplifying assumptions.

For example, if an economist is interested in the market for corn, he will be looking to test only a certain aspect of that market. Just as a scientist tries to eliminate other influences (by keeping them constant) the economist does this by assuming certain parts of the model will remain constant.

Whilst this is evidently not necessarily a fully accurate representation of the corn market, it allows the economist to test what might happen if the conditions change.

So, conceptually, it may help to think of process in the following way:

- ❑ The topography of the world is immensely complex.
- ❑ Economists look to draw simplified maps of the world to test various theories about it.
- ❑ These maps will be different for each economist, and most of the debate between them is down to the accuracy of the maps, and what should and shouldn't be included.

Always try to think of an economic theory in terms of how it is a representation of the real world, and consider where debate might come in terms of its applicability.

1.3 Microeconomics and macroeconomics

The subject of economics is split into two broad topics:

- ❑ Microeconomics; and
- ❑ Macroeconomics

The following table provides a flavour of the different emphasis of these topics.

| | Microeconomics | Macroeconomics |
|------------------------|--|---|
| Derivation of the term | Micros is the Greek word for small | Macros is the Greek word for large |
| Deals with | Markets | The economy in aggregate (as a whole) |
| Focus | The behaviour (how they make choices) of individual consumers, households and firms | Government policy |
| Typical questions | <p>What determines the price of rice?</p> <p>What will happen to demand if price falls?</p> <p>What will happen to the supply if price increases?</p> <p>What will happen to demand if incomes rise?</p> | <p>What will happen to inflation if interest rates rise?</p> <p>How can unemployment be reduced?</p> <p>How can the standard of living be improved?</p> |

1.4 Participants in an economy

The economic problem affects different agents within an economy in different ways. In the simplest form of an economy, the three main types of agent are as follows:

Households (consumption units): Allocating its scarce income between different goods and services to satisfy its needs.

Firms (production units): Allocating scarce factors of production (labour, equipment, raw materials) between different potential products to increase its profits.

Governments: Allocating its resources (tax revenue, staff etc.) between different social needs.

Before we go into this further, first let's clarify the terms we have used.



Definition: Agent

An actor or decision-maker within an economic model.

'Agent' will be used a lot throughout this text to signify a piece of the economic model that is presented. It is a generic terminology that can be applied to many of the people that exist within an economy. Agent is a more precise form of explanation.



Definition: Households

The collective group of individuals not only consuming goods and services, but also providing labour for firms.

We don't restrict this to people who only live in particular houses, or for families. Instead this is used to collectively summarise the segment of society which acts as consumers.



Definition: Firms

The collective group of organisations producing goods and services in an economy

Again, despite the infinitesimal variety between firms, they are categorised as the same, in order to analyse a segment within the economy.



Definition: Government

Also known as "the state", the organisation that governs over society through a combination of customs, exercises and laws.

The government is assumed to have a different set of incentives to the other agents, and they are looked upon to provide basic needs and provisions to society.

With our three sets of agents, we have a representation of an economy that is totally independent from the rest of the world. Of course, barring a few exceptions, each country in the world has some element of international engagement. This therefore means that we must include a fourth agent to the model:

Foreign traders: Exchanging resources between the circular flows of different economies.



Definition: Foreign traders

The collective group who exchange goods and services between different economies

The inclusion of foreign traders to the economic model brings with it a higher degree of complexity, as it is more difficult to track the interactions that are made. Nevertheless, their inclusion gives a more accurate description of how the world works.

Examples from this group in the economy include firms that buy from other countries and sell in their own and to domestic firms that are placed in another country.

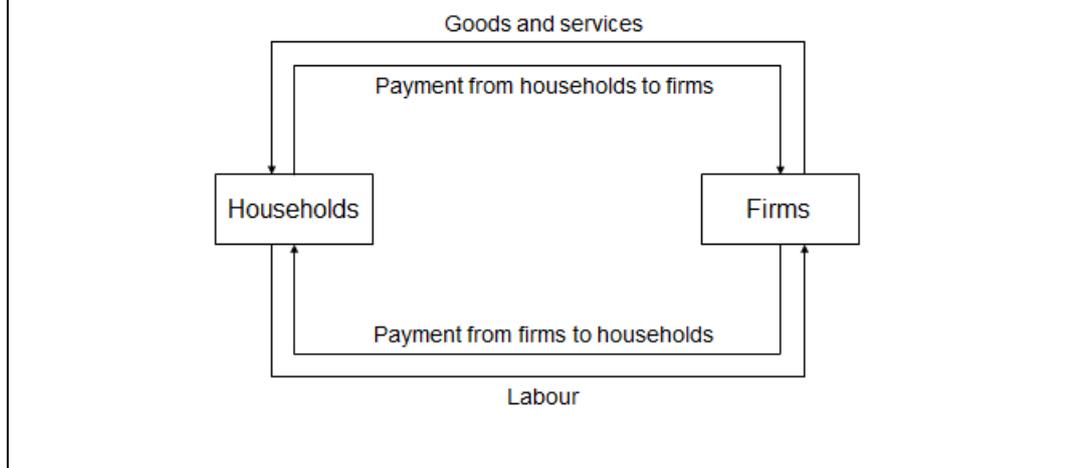
1.5 Circular flow of income

One of the most important models used by economists to describe an economy is the circular flow of income. Circular flow of income diagrams are used to illustrate the different sectors and markets within an economy.

Money flows between households and firms through the purchase of goods and services. There are two sides to every transaction. The business sector uses labour provided by the household sector to produce goods and services and pays for this labour. These are then sold to other firms within the business sector and to households.



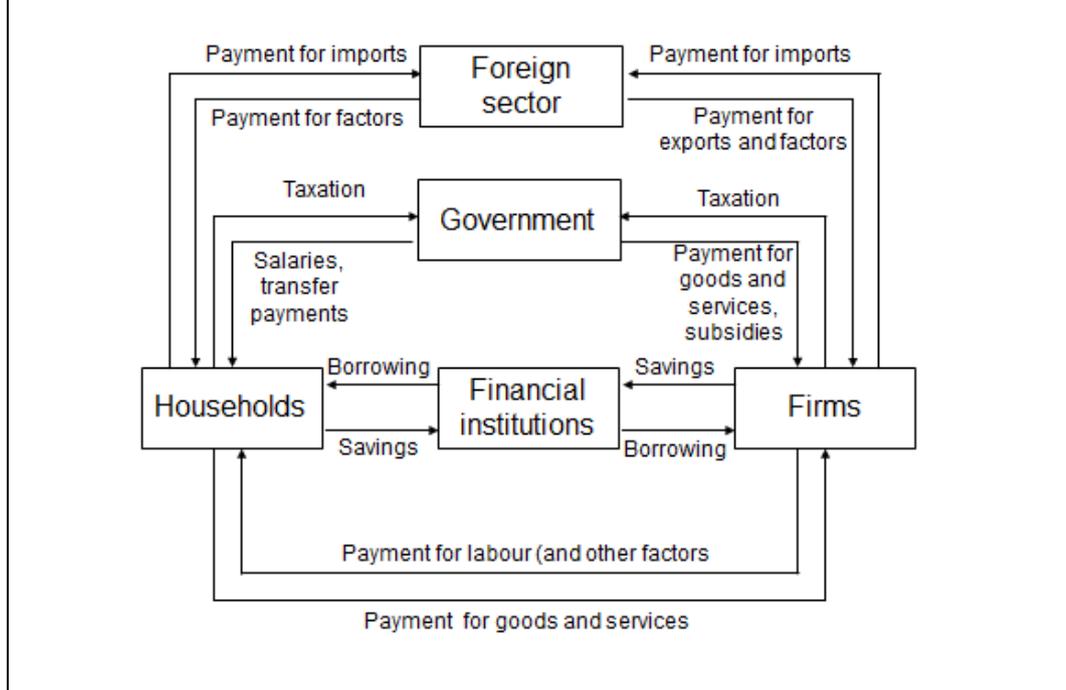
Illustration: Circular flow of income (2 sectors)



Further sectors can be included to provide a more complete picture of an economy.



Illustration: Circular flow of income



1.6 Scarcity and choice

This then leads us into a few more concepts regarding the use of the economic problem.



Definitions

Scarcity: Where resources are insufficient to satisfy all of one's competing demands

Choice: The process of allocating resources between competing alternative uses.

We have been introduced to scarcity earlier on in the text. It is effectively a means of explaining how something is finite, and there is not enough of it for everyone to be satisfied.

Therefore, as stated before, agents in the economy must make choices over how they act, seeing as it is not possible for everyone to be totally satisfied.

This leads us to choice. In which way does an agent decide to do something? An example here would be a farmer deciding whether to plant corn or trees in his 4 fields. Each would have their merits (providing food, or material for shelter); however due to the scarcity that exists – in utopia he could have a million fields – a choice must be made.

In the economic world how this decision is arrived at is noteworthy. Of course, each individual in the world will be different, and probably have different preferences. However, these are impossible to model; and hence conduct proper analysis. Therefore assumptions are made with regard to how agents will come to a decision, based upon the conditions they are set in.



Definition: Rational behaviour (rationality)

Decisions made that result in the optimal level of benefit for the agent undertaking them.

Rationality is a particularly contentious issue within economics, and many recent economists have begun attempting to disprove this assumption. Nevertheless, it is still applicable in many economic models.



Example:

If someone was asked to choose between two envelopes: one with \$10 and one with \$20, we would assume he would choose the latter.

Slightly more complicatedly, if John says he prefers Apples to Bananas, and Bananas to Carrots – does he prefer Apples or Carrots?

Assuming rationality, an economist would not need to ask that question. If John has stated that if faced with a Banana and a Carrot, he would choose Banana, and yet if asked to choose between Banana and Apple, it would be Apple, then the chain of logic would imply that under no circumstances would he prefer a Carrot.

This is just a very rudimentary introduction to the concept of rationality. In short, you can think of it as – if someone is going to yield more benefit from taking one action, compared to another, we can safely assume that they will take it.

1.7 Factors of production

The factors of production are the resources used in producing any goods and services. These are classified as:

- Land: this categorises the natural resources on the planet
- Labour: this is the human input into the process
- Capital: Man-made resources used to produce other goods and services
- Enterprise: An entrepreneur organises the 3 other factors, and also takes on the risk in the venture.

Different goods and services use different combinations of the factors of production.



Example:

To understand this further, let's look at the factors of production in making a textbook:

Land: raw materials to make paper, string, and other parts

Labour: author writing the words

Capital: machine to compile the book

Enterprise: owner of the company that energised the factors of production to make a textbook

This exercise can be done with almost every other good and service in an economy. For example, a house cleaner:

Land: raw materials to make cleaning products

Labour: cleaner using his skill to clean a house

Capital: the products that he uses to clean

Enterprise: combining the 3 factors to create an enterprise

It is important that economic resources are used efficiently because they are scarce. The demand for factors of production is a derived demand. This means that they are required to help meet the demand for other goods. For example, the value of agricultural land derives from demand for what can be grown on it.

Land

This refers to all of Earth's natural resources including:

- Non-renewable resources (natural gas, oil, coal, minerals, precious metals etc.)
- Renewable resources (wind power, tidal power, hydro-electric power, geothermal power, as well as wood and agricultural produce)
- Water
- Animals

Almost every factor that falls into this category is scarce. In other words, there are not enough natural resources to meet demand.

Note that many renewable resources must be managed carefully if they are to be sustainable. For example, in commercial forestry, trees must be replanted and allowed to mature to replace those that are harvested.

Labour

This refers to the work done by those who contribute to the production processes.

Many people not in paid employment also provide things that are needed by people. For example, a woman might not hold a job in order to raise her children and look after the home.

Some people are more productive in the work place than others because they have different levels of education, training and experience. They are said to possess a greater amount of human capital.

This implies that this factor can be enhanced in an economy through educational initiatives and investment in training.

Capital

This refers to man-made resources. It includes machinery, equipment, factories, commercial buildings, hospitals, schools, roads, railways, docks etc.

A great deal of the capital in an economy is paid for by government. For example, transport networks (roads, railways and airports) hospitals schools and universities.

Enterprise

This refers to the people who take the risk of production using the other three factors. These people are known as entrepreneurs.

Entrepreneurs set up businesses. If the business fails they can lose a lot of money. However, if the business is successful they can achieve great wealth. They are rewarded for their risk taking by the profits of the company.

Entrepreneurs are very important in an economy. They create businesses provide a return to the other factors of production.

1.8 Opportunity cost

The opportunity cost is another important concept in economics.

It is used as a measure for how economic agents make decisions, and form the backbone of economic theory.

In every decision that an economic agent makes, there will be some alternate use for his scarce resources. What these scarce resources could have been utilised for, is a way of measuring the cost of making that decision.

This will become clearer with some examples:



Example:

The opportunity cost of buying a car, is what else that money could have bought.

The opportunity cost of a firm buying a new machine, is a wage increase for all of the workers.

The opportunity cost of the government investing in a social benefits scheme is an infrastructure project.

The opportunity cost of deciding not to work, is the forgone wages that could have been earned.

The opportunity cost of being bought lunch by a friend (which lasts 2 hours), is the value of that time (it could have been used to earn \$50 in wages).

There will often be several alternatives to making a certain choice. When calculating the opportunity cost, it is important that only the highest-value alternative that has been sacrificed is considered.



Definition: Opportunity cost

The cost of one economic decision expressed in terms of the next best alternative foregone.

It is helpful to look at some alternatives that someone may be faced with to assess what is the true opportunity cost that they would face.



Example:

The opportunity cost of buying a car, is what else that money could have bought

Richard may be faced with a number of options with what to do on a Sunday evening. He could:

- Go out for a meal with his friends
- Decorate the spare room in his house
- Spend time watching a film with his girlfriend
- Go to the gym and exercise

He thinks about it and believes he'll get the following benefit from each action:

- Go out for a meal with his friends (10)
- Decorate the spare room in his house (4)
- Spend time watching a film with his girlfriend (7)
- Go to the gym and exercise (8)

Richard therefore talks to his friends and organises to go out for dinner.

What is the opportunity cost of this decision to him?

Is it the combination of all the other activities he could have done? No. It is the value of the next best alternative.

Had the option of going for a meal with his friends not been taken, the benefit he would have got from the next best alternative would have been 8.

The opportunity cost of going for a meal with his friends was not going to the gym and exercising.

Applications

Opportunity costs can be applied to all of the agents that we have discussed so far in a number of different ways.

Households: The satisfaction foregone by consuming Good A rather than spending the money on Good B.

Firms: The revenue foregone by using productive resources to supply Good A rather than using them to supply Good B.

Governments: The social needs foregone by using resources to provide Service A (e.g. education) rather than Service B (e.g. health).

Nations: Choosing what types of industry to focus on.

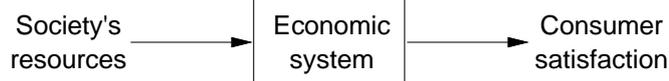
2 ECONOMIC SYSTEMS

Section overview

- Introduction
- The Production Possibility Frontier
- Three types of economic system
- Planned economies
- Market economies
- Mixed economies
- Conclusion

2.1 Introduction

The graphic shows the simple way that an economy is set up for allocating resources.



There are economics questions that need to be considered in the functioning of any economic system. These come about due to the inherent problem that society has unlimited wants, but limited resources.

Three central economic questions

What will be produced and in what quantities?

Scarce resources within a society can produce an almost infinite amount of outputs. There needs to be some system that prioritises certain outputs over others: goods that are produced versus individuals wants not being met.

How will it be produced and using what combination of resources?

Each good produced will have the opportunity to be made using a different combination of resources. Whether this is weighted more towards capital versus labour, or more units of low-skilled labour versus a few units of high-skilled labour is decided via the economic system

Who will enjoy the goods and services produced?

Once a good is produced, a mechanism is necessary to decide upon how it will be distributed throughout society. Only some individuals will be able to enjoy the benefits of a good, and it is the economic system that settles this.

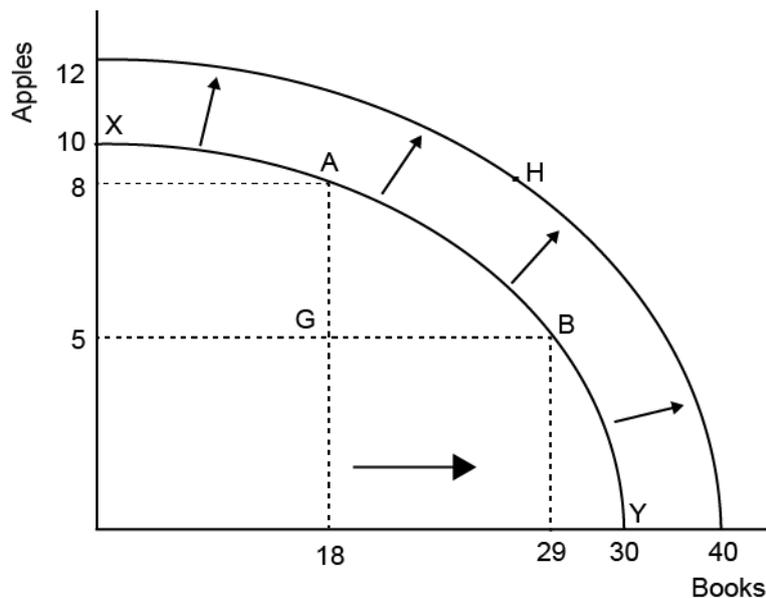
2.2 The Production Possibility Frontier

The Production Possibility Frontier (PPF; also known as the Production Possibility Curve, PPC) represents the maximum combinations of two alternative goods an economy can produce with the resources available to it within the given state of technology.

In the simple form of the diagram below, it shows what can be produced using varying amounts of two inputs. Because it is the maximum that can be produced, it is referred to as a "Frontier". It offers the best selection of goods that society can pick from and occurs when the economy is fully efficient.



Illustration: production possibility frontier



The PPF has two characteristics that should be noted:

1. It is downward sloping
2. It is concave to the origin

The reason for being *downward sloping* is that in order to increase the production of one good, resources must be diverted from the other, hence decreasing the production of that good.

The reason for being *concave to the origin* is because some of the economy's resources are better at producing Good A, and some are better at producing Good B.

If an economy only produces one type of good, then a lot of these resources aren't being used efficiently.

By producing different goods, resources can be utilised more effectively, and therefore the overall combination of both goods increases.

**Example:**

For the purposes of this exercise, Good A is apples, and Good B is books.

At Point X, all the resources are devoted to growing apples, even though some of them may not be suited to apple production.

At Point A, it produces a combination of the two, because now these resources that aren't suitable for growing apples, can now be used for making books. Doing so reduces the amount of apples by 2, and increases the amount of books by 18.

At Point B, society makes an extra 11 books, and even though this is less than the previous increase, the opportunity cost of doing so is greater, this time 3 apples.

At Point Y, society uses all of its resources (some of which would more efficiently be used to grow apples) to make books.

In numbers, this is what has happened:

| Point | Good A | Good B |
|-------|--------|--------|
| X | 10 | 0 |
| A | 8 | 18 |
| B | 5 | 29 |
| Y | 0 | 30 |

You can see how to get from X to A, a reduction of 2A lead to an increase of 18B.

To get from A to B, 3A is needed, and the increase is only 11B.

This change in the opportunity cost of producing each good, at various levels of production, is what causes the curve to be concave.

It will be straight if all resources contribute towards production equally. For example if all the resources in an economy could be used to make either red paint or white paint, and if the costs and resources were equal, then the PPF would be a straight line.

This measurement of the choice between two goods is termed the marginal rate of product transformation (MRPT).

**Definition: Marginal rate of product transformation**

The amount of one good which must be foregone to gain one unit of the alternative.

This is another name for **opportunity cost**.

The opportunity cost concept is particularly important for the countries making these decisions. If they wanted to increase the amount of apples they produced, they will assess this through the amount of books that they must forgo.

There are some other points to note about the diagram:

- ❑ Each point on the frontier represents resources being utilised in the most efficient manner. Every point within the frontier is attainable with the current resources.
- ❑ At Point G on the diagram the economy is making 5A and 18B. This point is inefficient in production because the economy can make more of one or both goods without sacrifice of the alternative 8A & 18B or 5A & 29B perhaps. Point H is not attainable because of lack of resources.

For Point H to be attainable would require an increase in the production capacity of the economy: more output could be achieved. This is evidenced by the second frontier, outside of the first, on the diagram. At all points, there is potential for society to increase its output.

This expansion (reaching point H) would represent **economic growth** caused by

- increased resources;
- increased efficiency; or
- technological progress

Economic growth is one of the primary economic objectives of government. It is usually measured as the GDP (Gross Domestic Product) of a country. The GDP figure can be expressed as the GDP per capita (i.e. the GDP per head of population) in order to compare different economies. GDP is discussed further in chapter 6 and growth is discussed further in chapter 10.

2.3 Three types of economic system

Moving now from the types of goods that a country can produce, we turn our attention to the different ways in which countries choose to run their economic system.

Real world economies all differ according to the extent to which they rely on the free-market to allocate resources, and the extent to which they rely on the state to take these decisions.

Economists employ *ideal type analysis* to evaluate the likely impacts of relying on a market as opposed to relying on the state.

| System | Comment |
|--|---|
| Command (or centrally planned) economy | All economic decisions taken by a central planning body |
| Free market (or laissez-faire) economy | All economic decisions taken by the free interplay of market forces |
| Mixed economy | Combination of market forces and central planning |

2.4 Planned economies

In a planned economy allocation of resources is decided by the government rather than markets.

This type of economic system is completely dependent on the state. The motivations for this are not certain; however this style of economic system was prevalent throughout the Soviet Union, with some countries only fully abandoning it at the turn of the 2000s. North Korea, remains staunch to this method of conducting the economy, whereas all others have abandoned such a rigid form of planning.

Features

- A central planning body decides questions of what, how and whom.
- Productive resources are state owned and the state decides how they should be used for the common good (and indeed, decides what the common good is to be).
- Resources are allocated by decree through an administrative system.
- Factor prices are set by central planning body.

| Benefits | Drawbacks |
|---|--|
| Production is carried out for the needs of society and not for the benefit of the few. | Lack of profit motive and competition makes the economy inefficient. |
| The social costs of production and consumption are fully accounted for in economic decisions. | Bureaucratic and slow to respond to changing needs or technology. |
| Full employment of the workforce is possible. | Loss of consumer sovereignty to planners reduces welfare. |
| Less duplication and waste of resources. | Likelihood of corruption. |
| Permits long term industrial and social planning fostering economic stability. | Lack of economic and political freedom |
| Considered a more equal, classless system with equality of opportunity. | |

2.5 Market economies

The key concept within market economies is 'Laissez Faire'.



Definition: Laissez faire

A term that describes a hands-off approach to government. A belief that there should be only minimum intervention with what the state does within the economy.

This style of thinking was conjured in the 18th Century as an argument for government to not intervene with market forces. For example, this could mean no influence on what the price of fuel should be, and no minimum wage for workers.

It comes from the French language, and translates to "leave alone".

Features

- Reliance on the market and price mechanism to allocate resources
- Private ownership and control of factors of production
- Self interest and profit motive motivate economic decisions
- Wages and other factor payments set by market.

| Benefits | Drawbacks |
|--|--|
| Retains consumer sovereignty | Inequalities of income will lead to socially undesirable resource allocation |
| No costly planning bureaucracy | Ignores social costs of production and consumption decisions |
| Dynamic and responsive to changes in the technological environment | Danger of emphasis on luxuries rather than necessities |
| Freedom of choice | Failure to plan long-term |
| Freedom of enterprise | Danger of the growth of monopolies |
| Auto-adjusted price mechanism | Exploitation of weak economic agents |

2.6 Mixed economies

This is the main, and arguably only, form of economic system in today's global economy.

For example, most countries adhere that the children's education sector shouldn't be left solely to market forces; however there is a difference in, say, what role the state should play in higher education. Some countries offer a university education for free, in some the state subsidises, and in others it must be purely privately funded.

Features

The market mechanism plays an important role throughout society but economic decisions are taken by a mixture of the public and private sectors.

The state plays a key role in the operation of the economy.

Role of the state

The state acts to maintain a framework of law within which commerce can operate and hopefully thrive for the benefit of society.

The government regulates and controls commercial activity to prevent possible excesses that might occur in completely free market without any form of government influence. For example, a government might introduce legislation setting out:

- ❑ minimum legal standards for treatment of employees (minimum wage, entitlement to holidays, maternity leave, health and safety etc.)
- ❑ rules on minimum acceptable standards for quality of goods sold
- ❑ rules to protect investors.

Governments reallocate income through the tax system. Often this involves raising taxes to pay for services that might be deemed too important to be left in the hands of the private sector. For example, defence, education and health care.

Governments sometimes act to control prices for certain essential goods and services, either by becoming the supplier for such commodities or imposing strict regulation on suppliers. For example, water supply and public transport.

Governments might act to ensure a minimum level of supply of goods and services by introducing subsidies into a market that was not providing incentive for suppliers to produce the desired quantity. For example, the US government pays subsidies to farmers who grow crops that can be converted into biofuels.

Governments introduce economic policies to control inflation, unemployment and encourage economic growth. The policy tools used can have a profound effect. For example, a government might increase interest rates to try to combat inflation.

| Benefits | Drawbacks |
|---|--|
| Retains dynamism of private sector. | State may regulate economy for political ends. |
| Public interest guarded by legislation and state provision. | Responsibility for economic performance blurred. |
| | Government intervention creates costs and uncertainty. |

Almost all countries in the world come under this category with differences in the extent to which the state imposes itself on the markets.



Example:

In many countries healthcare is a universal entitlement to all citizens and is provided by the government free of charge.

This was not the case in the USA (until the introduction of President Obama’s healthcare legislation which may yet be repealed by the next government). Traditionally in the USA it was up to citizens to buy health insurance or take employment that provided it.

The benefits and drawbacks of a mixed economy lie between the two extremes of a planned and free market system.

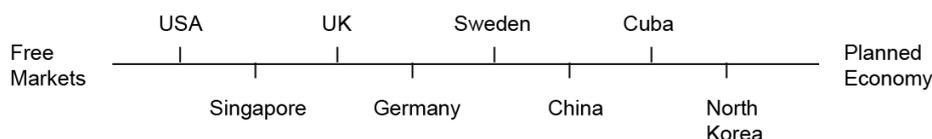
As is often the case, there is rarely an opportunity to absolutely define one country’s outlook. However it is possible compare countries against each other in terms of their approach to the economic system.

2.7 Conclusion

Almost all countries in the global economy, in the true sense of the definition, are mixed economies. However, countries fit into a spectrum, with the theoretical economic systems at each end. Every country will occupy a place on this spectrum depending on the degree of control the state exerts over the economy.



Illustration: Mixed economy spectrum



3 ECONOMIC SYSTEMS: ISLAMIC

Section overview

- Introduction
- Features of economic system
- Islamic vs. capitalist economic systems
- Sharia law and Islamic financing

3.1 Introduction

Relevance

With over 1.5 billion Muslims worldwide (around 25% of the world's population) the relevance of Islamic influence on global economic systems is material. Despite geographic concentration in Asia-Pacific and Middle-East-North Africa the globalisation of economic systems, booming international trade and increasing ease of performing business across the world supported by truly global capital markets mean that Islamic economic systems and Islamic finance are now common concepts and highly relevant to modern business.

Other factors that enhance the relevance and importance of Islamic economic systems include:

- Increasing integration between Muslim and non-Muslim nations;
- Muslim nations control a substantial share of the world's oil resources which are as critically important to Western, Eastern, developing and developed economies alike;
- The booming oil price in the mid-1970's led many Muslim nations to experience a significant surge in national income. This resulted in significant cash becoming available for investment throughout the world by Muslim nations.

Economic science and the economic system

The Islamic economic system differs from traditional economic theory in that its religious principles are deeply intertwined. With capitalist economies there is conversely a separation between the church and state, or between the 'Creator' and life's affairs.

Freedom is fundamental in a capitalist state (within the boundaries of law) but this freedom leads society to pursue apparent unlimited needs through limitless freedom without significant accountability beyond the law. Consider that the alcohol and drug industry is one of the most profitable in a capitalist system.

Islamic economics differentiates through analysing the production and distribution of resources and considers the following points as separate:

- **Economic science:** improving manufacturing efficiency, productivity and the properties of inflation
- **The economic system:** how to distribute resources

It views the principles of economic science as constant, regardless which economic system/ nation it operates within.

However, there are certain standards by which its economic system is run, and these are fundamentally based on a fair distribution of resources.

3.2 Features of economic system

A number of features in the Islamic economic system will be shared with those of a mixed economy. Though there might be idiosyncrasies between different Islamic nations, in aggregate there are a number of features that are consistent throughout Islamic economies.

The core features are as follows:

- ❑ **Allah is the sustainer:** This describes the belief that God created all the resources available to man and is responsible for feeding and nourishing all the creatures and human beings. Islamic economics encourages people to do their best to earn a livelihood using all lawful (Halal) and fair means whilst dissuading idleness.
- ❑ **God is the true owner of everything:** Man is merely a trustee of resources but has authority for using them in fair support of his existence on earth. This compares to the capitalist belief that humans are owners of resources they 'possess'.
- ❑ **State ownership:** There is no ban on the state owning an enterprise. However, a free market still exists where entrepreneurs can profit so long as they abide by the other rules of the Islamic economic system.
- ❑ **Practising moderation:** Islam aims for a fair distribution of resources and so the population is taught to share wealth where they can. They are also taught to abstain from extremes aiming for the 'middle way'.
- ❑ **Prohibition of charging interest (Riba):** It is forbidden for a lending party to earn interest from a transaction without taking on as much risk. Instead there is a system whereby both parties must gain or lose from the transaction.
- ❑ **Earnings:** Earnings must only be made from goods which are allowed in Islamic teachings.
- ❑ **Hoarding of wealth is discouraged:** as resources should be utilised for a good cause rather than remaining in private possession. This is linked to the Islamic view that distinction in wealth should not exist beyond reasonable limits which could threaten the stability of community. Capitalist economics requires no such limitation and allows citizens to continuously increase their wealth and differentiation in society to exist.
- ❑ **Zakat:** This is a financial tax on the wealthy in order to aid the poorer in society. It reinforces the above points.

3.3 Comparing Islamic and capitalist economic systems

The following table helps distinguish Islamic and capitalist economic systems:

| Feature | Capitalist | Islamic |
|------------------------|--|--|
| Distribution of wealth | Full economic liberty and private ownership resulting in significant disparities and concentrated wealth accumulation. | Fair and equal distribution aimed at balancing the distribution of economic resources. Uses mechanisms such as Zakat, Sadaqat and bequest to help re-distribute wealth. Other principles such as prohibition of interest and hoarding help stabilise the system. |

| Feature | Capitalist | Islamic |
|--------------------------|---|---|
| Exploitation | Common exploitation of the weak through relatively unlimited authority for economic freedom and derestricted private ownership. | Attempts to minimise human exploitation through prohibition of activities such as usury, gambling, speculation and taking interest from perceived weaker classes such as labourers, consumers and orphans. |
| Institutions of interest | Large banking institutions facilitate access to capital through intermediation. The bridging of borrowers and lenders allows banks to make a healthy return on the difference between lending and borrowing interest rates (i.e. the 'spread'). | Concept of interest is effectively abolished. Incentivisation for saving and investment exists through profit-share and partnership. |
| Monopoly | Whilst commonly prohibited there is a tendency of businesses to grow and merge and behave in monopolistic and cartel-like activity. This can lead to price inflation and ultimately unemployment. Many former public services and public-interest organisations have been privatised. | Public-interest businesses are generally maintained under joint ownership of the community with direct government intervention to help balance supply and demand. |
| Right to ownership | Unrestricted right for private ownership of property. This leads to wealth accumulation and imbalanced distribution of wealth in society. | Moral obligation that all parts of society have a share in all wealth. This often means that production is often not placed under private ownership. Islamic states normally have the authority to nationalize privately owned organisations to prevent wealth concentration and promote equality. |

| Feature | Capitalist | Islamic |
|------------------|---|---|
| Economic freedom | Unrestricted economic freedom and reluctance of governments to overly legislate in the free markets. Entrepreneurs are free to establish and grow business and spend the proceeds as they wish. | Concepts of halal (permitted being lawful) and haram (forbidden being unlawful) are generally more restrictive than the total freedom found in capitalist economics. Whilst the profit motive and private ownership are still acceptable to a certain extent by Islam they are governed by the unchanging principles of a divine higher power, rather than man itself (whom is susceptible to frequently changing the legal boundaries that are in place in a free capitalist economy). |

Relative scarcity

It may also be argued that capitalism is driven by the theory of relative scarcity. The general belief is that there is a real or perceived insufficiency of commodities to meet societies' needs. This then leads to a minority group hoarding almost all the wealth meaning there are many people left unfulfilled in their basic needs of clothing, food and shelter.

In contrast, Islamic economics does not support the premise of relative scarcity but rather believes that there are more than enough goods and commodities to satisfy the needs of all. The objective is that everyone should be both producing and consuming to ensure total access to food, clothing, shelter, medicine, education and security.

Happiness vs. money

The basic needs of citizens are satisfied in an Islamic economy through a mechanism that measures the distribution of goods by considering how they benefit all in society. It may be argued that people can live a generally happier life as they are able to search for a livelihood that suits them best and makes them the happiest. This becomes a self-fulfilling prophecy as a happier community drives greater success and productivity.

That is not to say that there is sin in high earnings. The Islamic economic system still acknowledges that people have different skills, motivational levels and entrepreneurial desires. However, the key is in the fundamental principles discussed above that underpin the whole system.

Cycles and depression

Capitalist systems are exposed to periodic crises which typically result from a depression. This is normally driven by low wages and the failure of consumption to keep pace with increasing production.

Consider the routes of capitalism which were boosted through the period of mechanisation and automation in the Western world. As the working class's wages did not keep up with the pace of accumulation of wealth of the business owners and the availability of products increased exponentially beyond local demand, capitalists sought to exploit new markets through colonialism.

Underpinning this development was the creation of large banks which facilitated interest-bearing loans to allow businesses to consolidate, grow and arguably

exploit their way towards monopoly. With Islamic economies such banking operations based on usury would be prohibited and there would arguably be greater levers of state intervention to prevent the formation of monopolies and minimise the potential for economic cycles of boom and depression.

3.4 Sharia law and Islamic financing

Sharia law

Sharia law is the branch of statute that formalises the previously discussed principles of Islamic economics into law. For example, under Sharia Islamic law:

- ❑ Making money from money – e.g. charging interest – is usury and therefore not permitted
- ❑ Wealth should only be generated through legitimate investment in assets and legitimate trade
- ❑ Investment in companies involved with gambling, tobacco, pornography and alcohol is prohibited
- ❑ Short selling and non-asset backed derivatives are not permitted

There are now a range of products freely available on the global financial markets that comply with Sharia Islamic law. These include bank current accounts, mortgages and even personal loans.

Islamic financing

The Islamic financial model works on the basis of sharing risk. The bank and customer agree terms on how to share risk of an investment then divide profits between them. Whilst customers risk losing their money if the investment is unsuccessful, the bank will not charge a handling fee unless it secures the customer a profit.

Whilst the range of available financial product types continues to grow, some of the key categories of Islamic finance are:

- ❑ **Mudaraba** – This is where a financial expert offers specialist investment in which the customer and bank share profits.
- ❑ **Musharaka** – This is an investment partnership with profit sharing terms agreed in advance and losses limited to the initial capital invested.
- ❑ **Murabaha** – This is a form of credit that enables customers following Islamic principles to make a purchase without the need to take out an interest bearing loan. The substance of the transaction is that the bank buys an item then sells it to the customer on a deferred basis.
- ❑ **Ijara** – This is a leasing agreement whereby the bank buys an item for a customer then leases it back to them over an agreed time period. The bank makes a fair profit by charging rent on the property.
- ❑ **Ijara-wa-Iqtina** – Similar to Ijara but the customer is able to buy the item at the end of the contract.

Growth

Historically Islamic financial institutions have been concentrated in the Middle East in countries such as Iran, Saudi Arabia and Egypt.

That said, studies performed by the Financial Times (UK) in 2010 estimated that there were over 500 financial institutions offering Islamic Finance in over 80 countries ranging from investment banks to retail banks and asset managers

covering over \$1 trillion worth of assets and a growth rate of 10-15 percent per annum.

International growth in Islamic finance has been limited due to:

- ❑ Relatively higher costs associated with limiting activity to Sharia-compliant activities (which is normally subsidised by states committed to Islamic banking); and
- ❑ The absence of robust regulatory regimes in new markets that would be capable of understanding and monitoring Islamic transactions.

That said, with Islamic finance's ever expanding generally accepted product range, rapid growth and increased maturity the market has been attracting greater interest from the world's leading financial markets. These markets along with their established global banks appear eager to access the massive capital base available from Islamic financing. The next few years could see further rapid expansion in Islamic financing and greater market penetration across the world.

Microeconomics

Contents

- 1 Introduction
- 2 Theory of demand
- 3 Theory of supply
- 4 The price mechanism

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

- LO1** **Understand the nature of micro-economics and its basic concepts.**
- LO2.1.1 *Microeconomics – nature:* Define micro economics and discuss its scope and limitations
- LO2.2.1 *Demand and supply:* Define law of demand and explain its assumptions, limitations and exceptions
- LO2.2.2 *Demand and supply:* Define law of supply and explain its assumptions
- LO2.3.1 *Equilibrium of demand and supply:* Explain the determination of price by equilibrium of demand and supply
- LO2.3.2 *Equilibrium of demand and supply:* Explain the effect of changes in demand and supply
- LO2.3.3 *Equilibrium of demand and supply:* Discuss the determination of price of perishable and durable goods.

1 INTRODUCTION

Section overview

- Definition
- Wants and needs
- Stock and supply
- What microeconomics covers
- What microeconomics doesn't cover

1.1 Definition



Definition: Microeconomics

Microeconomics is the branch of economics that studies the decisions of individual house-holds and firms. Microeconomics also studies the way in which individual markets work and the detailed way in which regulation and taxes affect the allocation of labour and of goods and services.

Within microeconomics, the main method of analysis is through demand and supply. These fundamental theories of firm and household behaviour form the basis for all further study within the area.

1.2 Wants and needs

The first perspective from which to view micro economics is the consumer. Each person has wants and needs which products and services can provide for them.



Definition: Wants

The desires of society. These are often described as perceived needs, and encapsulate the broader sense of what the people in a society wish to have



Definition: Needs

These are the basic requirements for the citizens of society, such as water, food and shelter.

This shows how each person within an economy has certain innate desires which he or she wishes to satisfy. How are these satisfied? This is achieved through the consumption of goods and services.



Definition: Goods

Goods are materials that satisfy human wants.

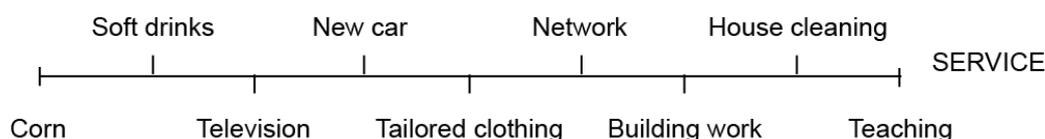
Again, because it is such a broad concept, the terminology has to be just as unspecific. Don't think that it has to be constrained to simply something one can buy from a shop, or a length of cloth. A good is something that provides value to someone, and satisfies them.

A service is very similar, however a distinction is made in that it is *intangible*.

A good is something one can touch and feel (a physical product) whereas a service is not.



Example:



From knowing that people have wants and needs, and that there are goods and services that can meet these, we can build up an idea of how this might manifest itself into an economic theory.

Demand

If there is a good that can solve a want or need for someone, then we say that there is *demand* for that good.



Definition: Demand

The quantity which buyers are willing and able to purchase of a product at the prevailing market price.

This brings into play a few other concepts. As we have learnt already, in society there are unlimited wants, but limited resources. It is natural to think that people may want all kinds of goods, however there needs to be a constraint to what they can have.

The constraints are the quantity of goods that is available to be had, and the price at which it costs to purchase.

These are concepts that we shall explore further in the Theory of Demand section.

1.3 Stock and supply

From a firm's perspective, there are also considerations that should be addressed.

Within the workings of a mixed economy (where market forces can interact) a firm will consider what it should produce, and then sell to consumers who are looking to buy. We say that this is firms *supplying* to the market.

At this stage it is appropriate to revise our initial introduction to the Factors of production.

Once a firm has decided to produce a good, it must utilise the factors of production. Owing to the scarcity of these resources, a cost is necessarily incurred. The combination of these costs will determine the price for which it will want to sell the good.

Supply

There is an important distinction though between *supply* and *stock*.



Definition: Supply

The quantity which firms are willing and able to supply at the prevailing market price.

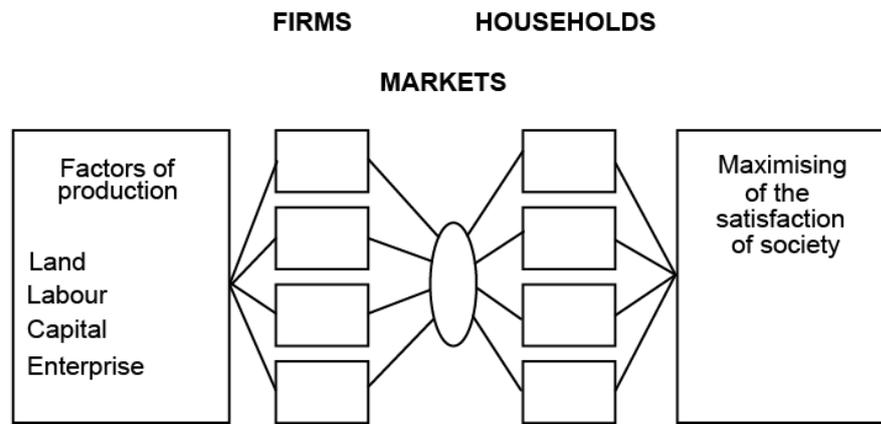
**Definition: Stock**

The quantity of goods available to a firm.

This is an important difference to clarify: just because a firm has a stock of goods, does not mean that it will supply it to the market. This is something we will cover in greater depth in Part 3.

1.4 What microeconomics covers?

Microeconomics looks in detail upon the market balance between consumer tastes and preferences, and the scarcity of total resources.

**Illustration:**

It is the study of the economy in its component parts and means it analyses in detail specific markets, wages, and consumer choices.

It also covers the behaviour of firms; what drives them to make certain choices, and how slight changes in what they are faced with, can impact upon their conduct in the market place.

1.5 What microeconomics doesn't cover?

Microeconomics is not the study of broader, governmental policies (unless specifically impacting on a particular market such as price controls) that look at the economy in aggregate. This is the role of macroeconomics.

The main method of analysis in microeconomics is through demand and supply, and this is why it is known also as Price Theory.

2 THEORY OF DEMAND

Section overview

- Introduction
- Law of demand: definition
- Key determinant: price of the good
- Change in the conditions of demand
- Determinants: price of substitutes
- Determinants: price of complements
- Determinants: level of consumer income
- Determinants: tastes and preferences
- Determinants: expectations of future price changes or shortages
- Exceptions to the Law of Demand

2.1 Introduction

After looking into the background of wants and needs and how, through the market mechanism, this translates into demand for a good, it is necessary to explore the implications for this.

This will start with intuitively considering the idea behind the demand for a good.

It can be widely observed that the quantity of good that people will buy is dependent on the price they are willing to pay it. With all things remaining equal, if the price of the good falls, then we would see an increase in the quantity demanded.

Therefore a relationship can be established.

2.2 Law of Demand: Definition



Definition: Law of Demand

As the price of a product falls, *ceteris paribus*, the demand for the product *extends and conversely...*

As the price of a product rises, *ceteris paribus*, the demand for the good *contracts*.

It is useful to note some of the new terminology introduced here:

- **Ceteris paribus:** a Latin expression which means 'other things remaining equal'
- The use of the terms '**extend**' and '**contract**' to denote changes in the amount demanded of a good as a consequence of the price change. Sometimes called a rise (or fall) in quantity demanded.

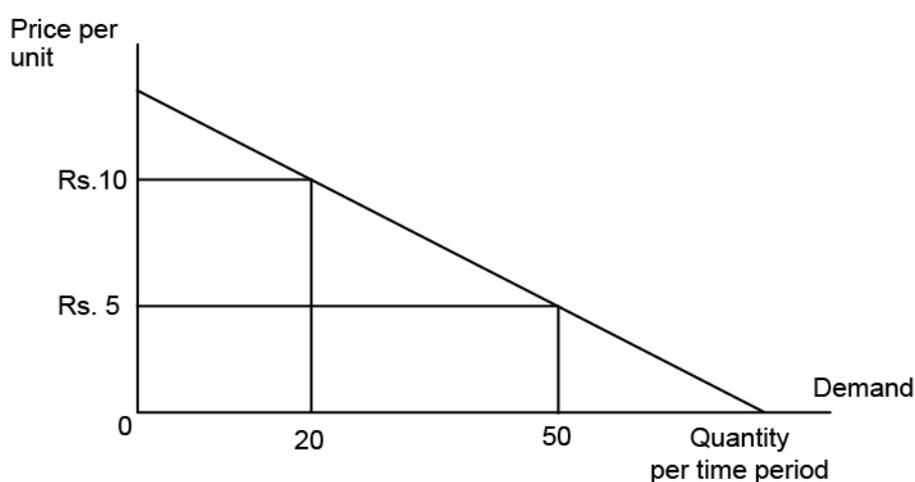
Assumptions underlying the law of demand include:

- There is no change in the income of consumers.
- There is no substitute for the good.
- The prices of related goods are stable.
- There is no change in custom, taste or preference of consumers.
- The size of population is stable.
- The climate and weather conditions are as expected (when considering the demand for goods affected by these).
- The tax rates are stable.

The law can be represented graphically as a downward sloping curve



Illustration: Demand curve



In the above diagram when price is Rs. 10 the quantity demanded is 20. If price falls to Rs. 5 the quantity demanded extends to 50.

All points that lay on the demand curve will be the combination of what quantity is demanded at a particular point.

Often, as is the case here, the demand curve will be drawn as a straight line, purely for ease of presentation in an example. In other cases, the curve may be slightly curved, which is equally correct.

One of the important things to note is that the demand curve is downward sloping. Again, this is a very important concept in economics, and arises for a number of reasons.

Why is the demand curve downward sloping?

When the price of a good is very high, then only the very rich in society can afford to purchase it. As the price of a good is lowered, this increases the pool of potential buyers.

The second, and potentially less obvious reason, is that if the price falls, and the consumer continues to purchase the good, he then has more disposable income, because he is paying less per unit. This might lead to him buying more of the good.

This explains why the quantity demanded falls when the price of a good increases and vice versa.



Example:

Aleem is considering purchasing some lamb to eat. If the price of lamb increases, then the quantity demanded will decrease.

This is because, at a higher price, Aleem now substitutes some of his purchases to cheaper meat, such as mutton.

Also, the lamb that he does continue purchasing is now much more expensive, meaning he has less income to buy all his goods (including lamb) with.

This illustrates the two effects, causing a demand curve to be downward sloping:

- Income effect
- Substitution effect



Definition: Income effect

As price falls, the consumer can maintain the same level of consumption for less expenditure. Some of the increase in real income might be used to buy more of the product.



Definition: Substitution effect

As price of Good A falls, the product is now relatively cheaper than alternative items which might cause consumers to switch, hence increasing demand for Good A.

2.3 Key determinant: price of the good

As touched on in the introduction, the main determinant that affects the quantity demanded of a good, is its own price. We will explore other factors that also impact upon demand afterwards.

Consumers seek to maximise the value for money they derive from the expenditure of their scarce income. This concept can be presented in the following equation:



Equation: consumer value

$$\frac{\text{Satisfaction derived from consuming the good}}{\text{Price per unit of the good}}$$

This is obviously a subjective decision for each consumer. For example, Aleem may gain lots of satisfaction from eating a chocolate bar, whereas Karim might receive minimal. In both cases though, a rise in the price of chocolate bars will decrease the overall value that they both receive.

Conversely, if the price of the goods falls, the value for money available from consuming it will increase. This is for reasons explained by the Income and Substitution Effects, and forms the basis of the Law of demand

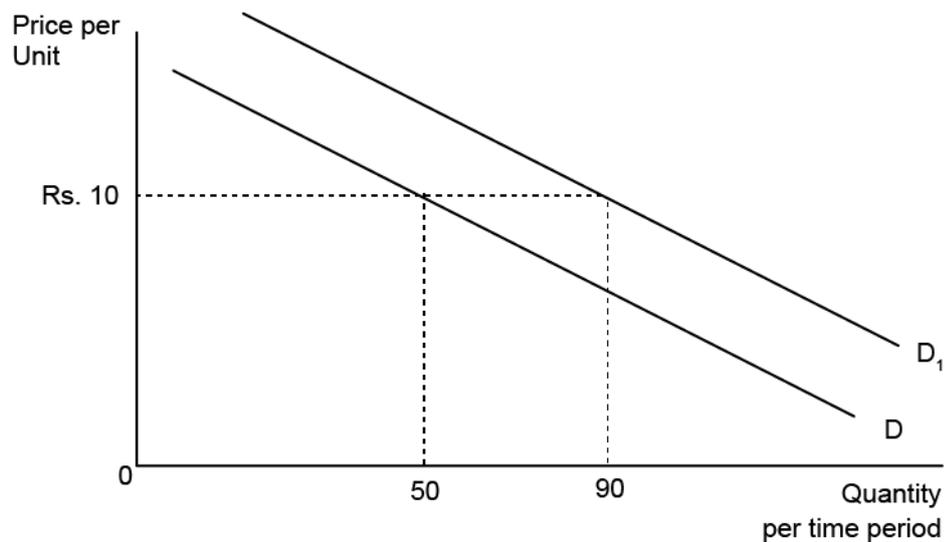
2.4 Changes in the conditions of demand

Any change in demand brought about by a change other than the good's own price is called a change in the conditions of demand.

Changes in the conditions of demand are represented by a *shift* in the demand curve and are referred to as an *increase* or *decrease* in demand. This is diagrammatically shown below:



Illustration:



Changes in the conditions of demand increases demand for the good at price Rs. 10 leading to a rise from 50 to 90 units. This is shown by a shift of the demand schedule from D to D₁

There is a distinction however between this analysis of a *shift in demand* and simply a change in the quantity demanded. If it is merely a change in the quantity demanded (as highlighted when demand 'extends' or 'contracts'), then the movement on the graph will be *along* the curve.

The points below are a number of determinants that could cause a *shift* in demand.

2.5 Determinants: Price of substitutes

It is often the case that movements in the demand for another good will impact upon the demand for the good that is being studied. When these goods are in competition with each other when it comes to the consumer's decision, these are known as substitute goods.



Definition: Substitute goods

Two or more goods which satisfy the same need or compete for the same portion of income.

A rise in the price of a substitute will lead to a rise in demand for the good under examination.



Example:

Consider the market for hot drinks. Let's suppose that initially, both tea and coffee are priced at Rs.200 a cup. If the price of coffee increases to Rs.400, then *ceteris paribus*, the demand for tea will increase, as consumers switch their preferences.

2.6 Determinants: Price of complements

Just as two products being in competition can have an effect on the demand for a good, it is also the case that two goods can be harmonious. If the performance of one is particularly strong, then the other can have similar knock-on effects, which are important to understand.



Definition: Complement good

Two or more goods which are consumed together.

A rise in the price of a complement will lead to a decrease in demand for the good under examination.



Example:

Consider the market for hockey sticks and hockey balls. These products complement each other: If people buy hockey sticks, then they are likely to buy hockey balls too, in order to play a game. Let's suppose that the price of hockey sticks increases from Rs.2000 to Rs.5000. As a result, fewer hockey sticks are purchased, and consequently the demand for hockey balls decreases.

Both substitute goods and complementary goods can be contrasted with independent goods where the price change for one has no effect on demand for the other.

2.7 Determinants: Level of consumer income

How much income consumers have is an important factor in what the likely demand for a product will be. Any change in this level of income will impact upon the level of demand.



Definition: consumer income

The amount of income consumers can allocate to the purchasing of goods.

There are a number of factors then can lead to a change in the level of consumer income, and hence a change in demand for goods. The following would contribute to an *increase* in consumer income:

- Fall in taxation** (i.e. a tax on earnings)
- Higher national** income due to economic growth
- Fall in interest rates** making the costs of mortgages lower, and hence increasing discretionary income.

Not all goods are affected the same by a change in the level of consumer income though.



Example:

Consider the market for cloth. If consumer income rises, then demand for clothes made with silk is likely to increase, as consumers can afford to increase their overall satisfaction by wearing nicer clothes. Conversely the demand for rougher materials, like wool, will fall.

These goods are referred to as following:

- Normal good:** such as silk: When consumer income rises, so too does the demand for this good
- Inferior good:** such as wool: When consumer income rises, consumers no longer desire to purchase this good, and so demand falls.

2.8 Determinants: Tastes and preferences

These are often important factors that impact on the demand for a product, and can be affected by:

- Advertising
- Fashions
- Seasonal and climatic factors
- Health scares or fads

In each instance the impact of the effect can be heightened by feedback loops between consumers

2.9 Determinants: Expectations of price changes or shortages

If prices are expected to rise, or shortages of a good are anticipated, this will lead to an increase in demand in the current time period (*pre-emptive purchasing*).

Consumers will look to increase their consumption (i.e. demand will increase) due to predictions of future market conditions.

2.10 Exceptions to the Law of Demand

Despite being considered a “law”, there is however one exception in particular that should be noted.

This is the Giffen good, named after Scottish economist Robert Giffen, who observed the purchasing habits of poor people.



Definition: Giffen good

A good where quantity demanded increases when price rises.

The example Giffen gave in his study was the demand for bread. In a very poor community, people spend their income on cheap sustenance, like bread, and more expensive types of food, like meat.

If the price of bread increases dramatically, then they can no longer afford bread and meat in the same proportions. Because they require a certain level of sustenance, they will reduce their consumption of meat, and instead increase their consumption of bread.

Due to a price increase in bread, their demand for bread has consequently increased.

Explaining Giffen goods with Income and Substitution Effects

From what we have learnt already about how there are two factors at work when a price changes, we can apply the effect of income and substitution to a change in price.

Let's assess what happens when the price of bread rises:

Substitution effect: Consumer reduces consumption of bread, and seeks cheaper alternatives.

Income effect: Consumers have less disposable income, therefore must reduce consumption of expensive goods such as meat. As they still need sustenance, they spend their income on bread instead.

The fact that a rise in bread prices causes an increase in demand is only possible for a number of reasons:

- Expenditure on food takes up the majority of income.
- There aren't many cheaper alternatives of sustenance than bread.

There are few examples of Giffen goods that have been empirically found. It should be noted that it is an exception to the otherwise stable Law of demand.

Price rises in the housing market

There is also some debate as to whether the housing market sometimes displays characteristics that contradict the Law of Demand.

In a 'housing bubble', where the price of houses continues to rise, there is some thought that demand is higher for houses when the prices rise.

Whilst this may be observed, the reasoning is different to that of a Giffen good.

- Houses are not homogenous products, so it is impossible to fairly and accurately compare prices.
- Factors other than price determine demand. For example, availability of borrowing.

3 THEORY OF SUPPLY

Section overview

- Introduction
- Law of supply: definition
- Key determinant: price of the good
- Changes in the conditions of supply
- Conditions: costs of resources used
- Conditions: imposition of indirect taxes or subsidies
- Conditions: price of substitutes in production
- Conditions: price of complements in production
- Conditions: state of technology

3.1 Introduction

With demand being the representation of consumer choices in an economy, the choices made by firms come under the category of supply.

Just as in demand, where there were a number of factors that affected what quantity was demanded, the same is true also of supply.

Stock and supply

As was described earlier, there is a distinction between the stock levels that a firm has, and what it supplies to the market.

A firm will generate a stock of goods through a combination of the factors of production. Once that stock has been made, the firm then decides whether to enter the market at the prevailing price.



Definition: Reservation price

The minimum price a firm is willing to receive for its good.

If each firm is looking to receive the best price possible for its stock of goods, so if it is offered more than the reservation price, the firm will, of course, take it.

A firm will not sell at a price lower than reservation price. Knowing the reservation price for firms is useful as a way of evaluating firm behaviour.

Reservation price and profitability

A firm does not supply goods to the market out of goodwill or entertainment, it is done as a means of making profit.

In economics, it is assumed that firms, acting rationally, will produce goods up until the point where it is no longer profitable. In almost all firms, there comes a point where producing or selling an additional unit will incur a loss. Firms will produce up until that point.

This is the significance of the reservation price – it indicates the price level below which it is not profitable for a firm to supply to the market.

3.2 Law of Supply: Definition

It is helpful to consider the reasons behind why firms will decide to supply to a market, and establish the relationship between the market price, and the quantity of good that producers are willing to supply.



Example:

Ahmed is a farmer deciding which crops to plant in his fields. As discussed above, he will keep producing up until the point where it no longer becomes profitable.

If the price of corn increases, then he is able to earn more profit on each unit sold than before. This means he can earn more to invest in goods such as fertilizer, and new machinery which in turn allows him to produce even more.

If there was more profit to be made by planting corn than it was to plant wheat, then Ahmed may decide to reduce the number of wheat fields, and increase those of corn.

All of this increases output further, when the price is high.

Leading on from this explanation, we come to a definition that explains the Law of Supply:



Definition: Law of Supply

As the price of a good rises, *ceteris paribus*, supply of the good extends and conversely...

As the price of a good falls, *ceteris paribus*, supply of the good contracts.

Again, it is useful to note some of the terminology used here:

- ❑ **Ceteris paribus:** a Latin expression which means 'other things remaining equal'
- ❑ The use of the terms '**extend**' and '**contract**' to denote changes in the amount supplied of a good as a consequence of the price change. Sometimes called a rise (or fall) in quantity supplied.

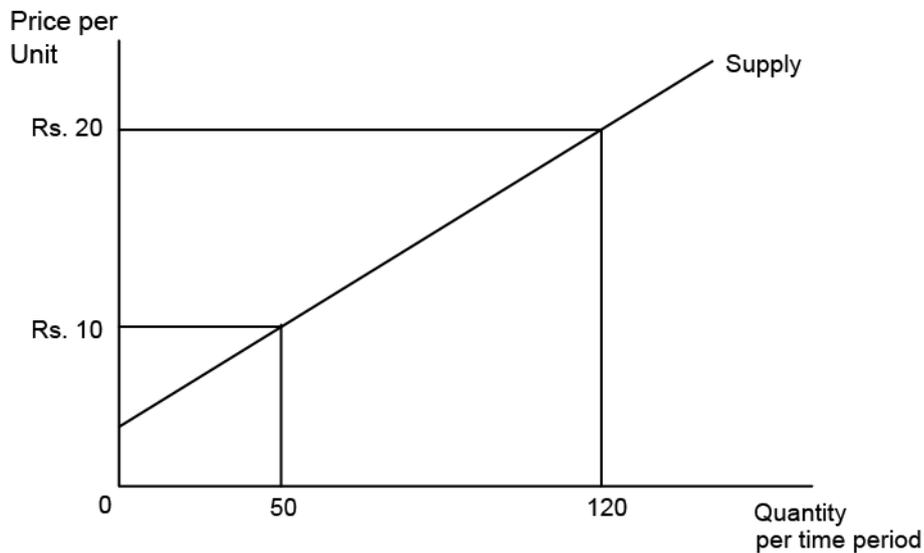
Assumptions underlying the law of supply include:

- ❑ No change in the cost of production
- ❑ No change in technology (as this would affect the cost of production)
- ❑ No change in the climate (for the supply of goods affected by the climate)
- ❑ No change in the prices of substitutes
- ❑ No change in the availability and cost of natural resources
- ❑ No change in the price of capital goods
- ❑ Tax rates are stable

When this is represented graphically, the result is an upward sloping supply curve.



Illustration:



As prices rises from Rs. 10 to Rs. 20 the quantity supplied extends from 50 to 120 units.

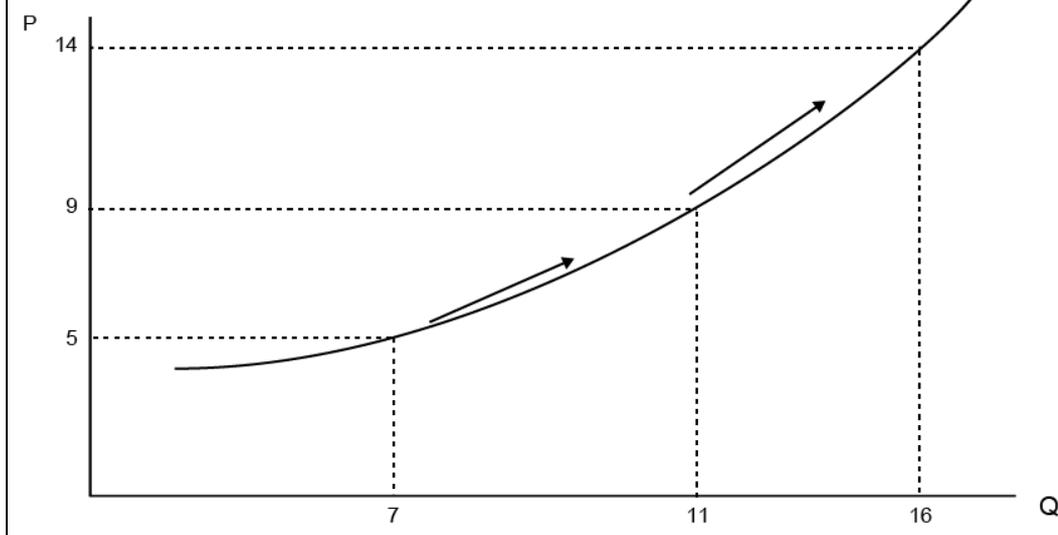
As previously discussed with the demand curve, the fact that it is a straight line is merely for presentation convenience.

3.3 Key determinant: Price of the good

Firms seek to maximise their profits from the allocation of the scarce productive resources at their disposal. They will allocate resources to goods where the profitability is the greatest.

As the price of a good rises it follows that it will become more profitable to produce and so firms will *extend supply* by transferring resources towards it and away from *substitutes in production*.

In graphical terms, we see a change in the price of a good affecting the supply curve in such a way that there is a *movement along the curve*. The supply curve remains the same; it is just that the point where the market is at is on that same line.

**Illustration:**

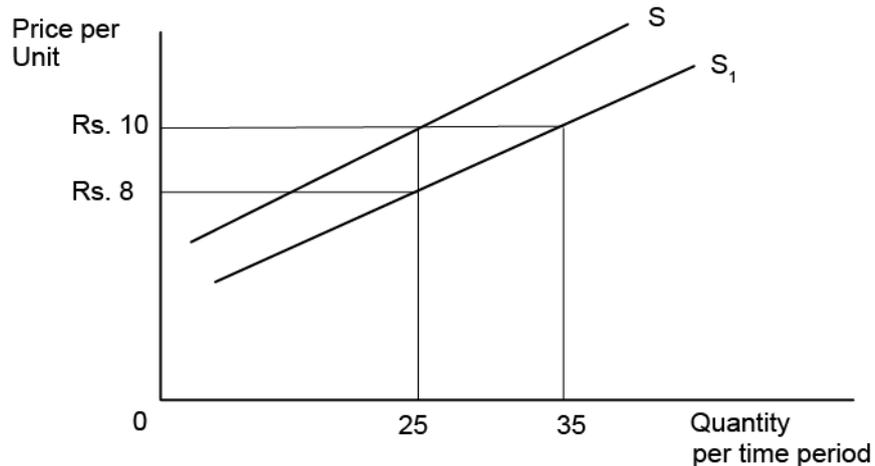
Above, we see how when the price rises from 5 to 9, and then 9 to 14, the quantity produced in the market increases by 7 to 11, and 11 to 16. This is in keeping with an upwards sloping supply curve.

3.4 Changes in the conditions of supply

There are also other factors which will impact upon the supply of a good, besides the price.

These changes in supply from other factors are known as changes in the conditions of supply.

Changes in the conditions of supply are represented by a *shift in the supply curve*. They affect how the market operates in a different way to a change in the price.

**Illustration:**

The increase in supply of the good from 25 units to 35 units at price Rs. 10 is shown by a shift of the supply curve from S to S_1 .

Alternatively

The firm cuts the price of the food from Rs. 10 to Rs. 8 whilst maintaining supply of 25 units.

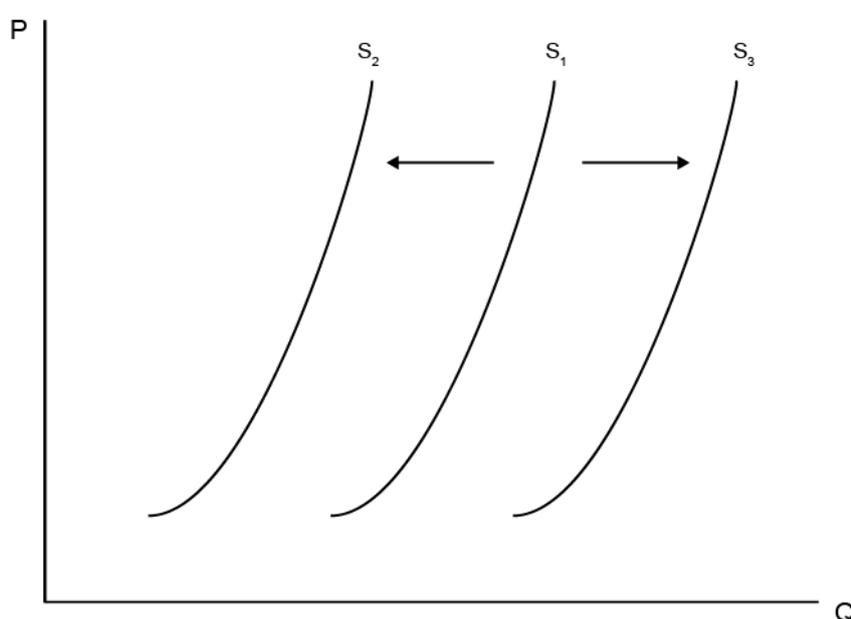
There is a distinction however between this analysis of a *shift in supply* and simply a change in the quantity supplied. If it is merely a change in the quantity supplied (as highlighted when supply 'extends' or 'contracts'), then the movement on the graph will be *along* the curve.

There are a number of factors which can cause a change in the conditions of supply, and hence a shift in supply. The logic behind the movement is as follows, for example:

- ❑ There is a favourable change in the conditions of supply
- ❑ The price at which firms can supply to the market falls
- ❑ Firms can make profit on a greater quantity of goods
- ❑ The supply curve shifts outwards



Illustration:



The shift can be both ways.

S_1 to S_2 is a decrease in supply.

S_1 to S_3 is an increase in supply.

There are a number of explanations as to what causes a shift in the supply, and these are considered here.

3.5 Condition: Costs of resources used

If the prices of the factors used in production rise, then this means that in order to produce the same quantity of output, the price at which it charges must increase.

The price at which they can supply the market will increase at each quantity of output, and therefore the supply curve will 'shift backwards', when represented on a diagram.

3.6 Condition: Imposition of indirect taxes or subsidies

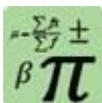
It is not solely market factors that make firms decide to supply their product. The price and quantity at which they supply can be affected by incentives offered by the government in the form of indirect taxes or subsidies.



Definition: Indirect tax

A tax levied on the production or consumption of a product e.g. VAT, excise duty, petroleum revenue tax.

An indirect tax is therefore an additional cost for supplying to the market. Firms will attempt to pass the indirect tax on to consumers as a price rise. It can be calculated how much the government will earn from the imposition of indirect taxes fairly simply:



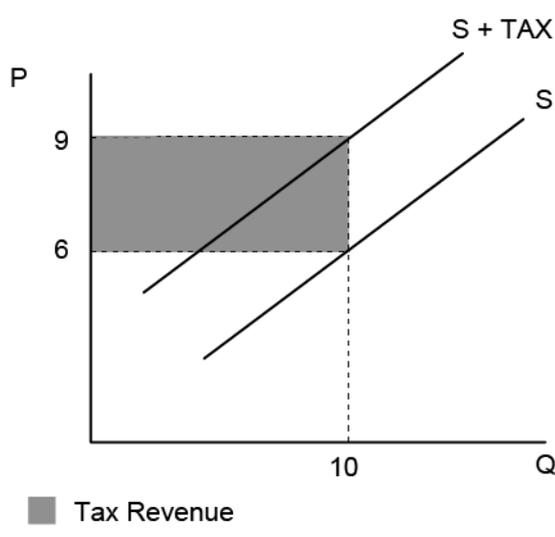
Formula: Revenue from indirect taxes

Total tax revenue = indirect tax per unit × quantity sold

This can be shown in a diagram as follows:



Illustration:



This calculation is much simpler when looking at supply in isolation. As we shall see in the following chapter, when supply interacts with demand, the equation becomes slightly more complex.

As well as imposing indirect taxes, the government can attempt to stimulate supply in a certain industry, by granting a subsidy. These areas are usually those considered as beneficial to society but, however, are not receiving adequate investment via the standard market mechanism.

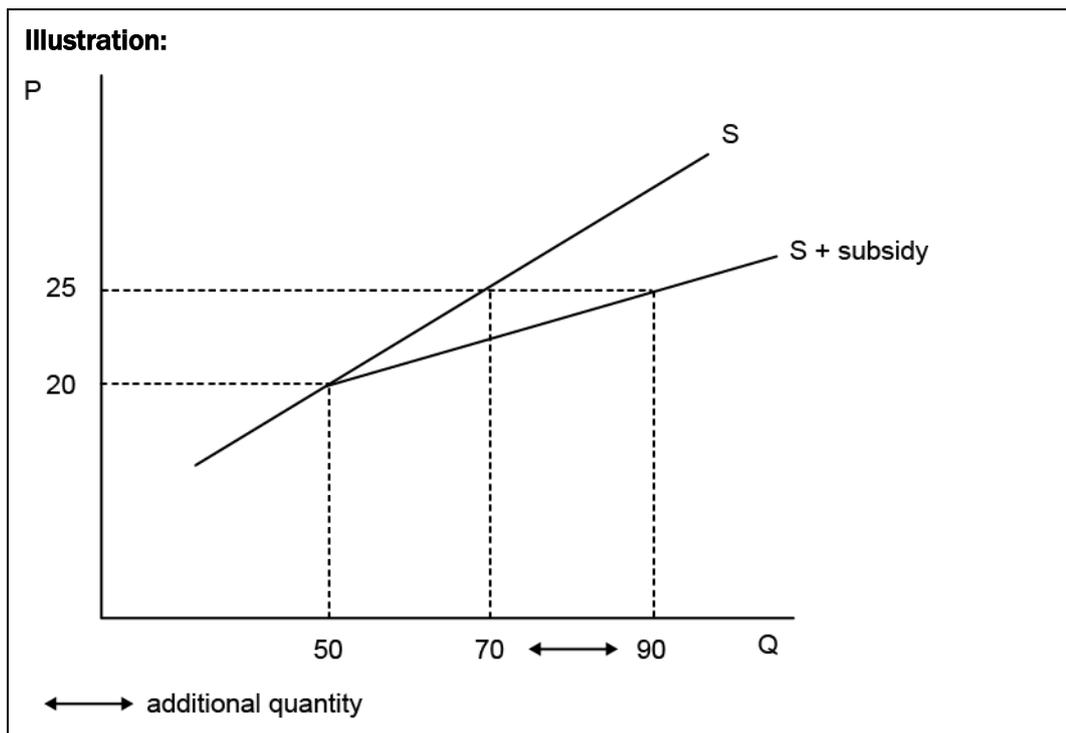


Definition: Subsidy

A contribution to help defray the costs of production and to encourage continued production and consumption. e.g. prescription subsidies, hill farming subsidies.

Most subsidies work whereby once a certain output of production is reached, additional relief will be given. Firms will generally try to increase supply of the product in order to qualify for a greater amount of subsidy.

This is better understood through an illustration:



We will suppose that it is the market for hydrogen cars, something that the government is keen to increase the supply of.

Here we can see that at the initial point of equilibrium, the price is 20, and the quantity is 50. Past 50 units, there is a subsidy to encourage supply.

This subsidy decreases the costs for firms, thereby causing them to increase their production.

With the price at 25, the quantity supplied in the market with a subsidy is 90. Had a subsidy not been installed, then the quantity would only have been 70.

This shows the government policy of encouraging the quantity of hydrogen cars would be successful.

3.7 Condition: Price of substitutes in production

It is rare that firms can only ever produce one good or type of good. Given their resources, they will often have a number of options regarding what to output.



Definition: Substitutes in production (or goods in competitive supply)

Two or more goods which can be produced as alternatives using the same factors of production.

A rise in the price of a substitute in production will cause a decrease in supply for the good under examination.

**Example:**

For example, a firm is producing both monochrome black printers, and colour printers. If the price of colour printers increases then, with finite resources, the firm will produce more colour printers, and less black printers. From the perspective of black printers, the price of its substitute (colour printers) increased, which caused a decrease in supply.

3.8 Condition: Price of complements in production

Just as there can be substitutes in production, there can also be complements. Should a firm choose to increase production of a good, there may be additional benefits to other goods that use a similar process.

**Definition: Complements in production (or goods in joint supply)**

Two or more goods which are produced together as part of the same production process.

A rise in the price of a complement in production will lead to an increase in supply of the good under examination.

**Example:**

Consider a farmer deciding how many cows to rear. Two of the products that can be made from keeping cows are: beef and leather. If the price of leather rises, then the farmer may decide to increase the amount of cows he keeps, thereby increasing the supply of beef also.

3.9 Condition: State of technology

This is arguably the factor which can drive the most change in the choice of firms to supply the market. There is a broad scope for what can be considered as “technology” and it can come in many forms.

**Definition: State of technology**

An improvement in technology increases efficiency and will cause an increase in supply.

**Example:**

A demonstration of technology increasing efficiency in production, and therefore supply, can be seen in the wheat market. If using a horse plough when working the fields, a farmer could only yield a small amount of produce when working, say, 60 hours. With the combine-harvester and other machines, it is possible for the amount of wheat to be supplied to increase substantially using the same 60 hours. This thereby shifts the supply curve outward.

4 THE PRICE MECHANISM

Section overview

- The market price
- Equilibrium diagram
- Reaching equilibrium
- Shifts in supply and demand
- Market for perishable, and durable goods

4.1 The market price

There are two types of price that exist in markets:

1. *Equilibrium market price*: which is determined by market forces, i.e. demand and supply
2. *Regulated market price*: which is determined by the government,

The equilibrium market price is one where both suppliers and consumers are willing and able to exchange a quantity of goods for money. This is at the intersection of the downward sloping demand curve and the upward sloping supply curve.

This price will remain constant, until factors such as those mentioned above, impact on either the supply or demand curves.



Definition: Equilibrium market price

The price at which quantity demanded equals quantity supplied and which will be established and restored by market forces.

There will be times where the market is *not in equilibrium*. At these moments, the price or quantity will be divorced from the demand and supply being at rest, and market forces will act to take this price to its equilibrium level.

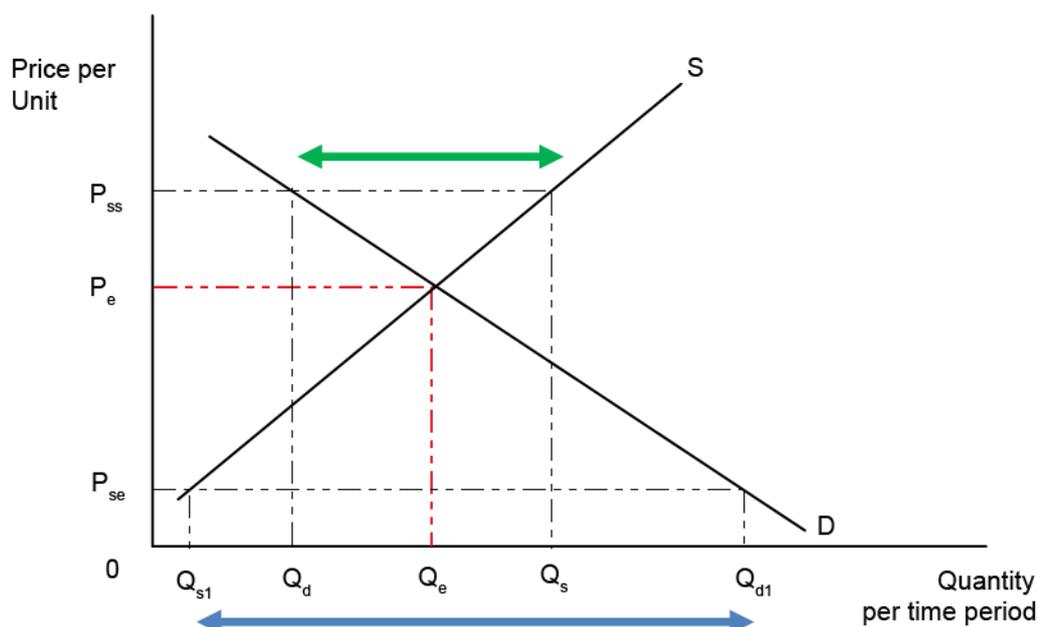
The regulated market price is somewhat different in that it is determined by the government. In this instance, the government will suspend market forces, and set the price according to its judgement. This is often done to promote social equality - low prices on “essential” goods like heating and water.

4.2 Equilibrium diagram

This can be better illustrated through a diagram



Illustration:



It can be seen that P_e and Q_e are the price and quantity, respectively, which will prevail in this market.

4.3 Reaching equilibrium

Prices do not always remain constant. There are often fluctuations in the supply of a good which will impact the market price.

So long as no fundamental change occurs to market conditions, if there is a short term change in supply (e.g. a bad harvest) then the price will eventually revert to the long run equilibrium again. This most commonly occurs through shortages or surpluses in production.



Definition: Shortage

Where quantity demanded exceeds quantity supplied at prevailing market price.



Definition: Surplus

Where quantity supplied exceeds quantity demanded at prevailing market price.

These short run movements that eventually settle on the long run equilibrium price follow a logical flow, as described below for both instances in reference to the diagram above



Example: Shortage



- ❑ In the above diagram demand is initially at Q_{d1} and supply at Q_{s1} .
- ❑ This causes a shortage of $Q_{d1} - Q_{s1}$ at price P_{se} .
- ❑ Consumers will bid up the price of the product in order to secure supplies for themselves.
- ❑ As the price rises above P_{se} the firms will extend supply above Q_{s1} by transferring resources from substitutes in production and towards the more profitable good.
- ❑ At the same time demand will contract below Q_{d1} as consumers switch expenditure away from the good whose price is rising and towards substitutes which represent better value for money.

The price will stop rising once quantity demanded equals quantity supplied at Q_e and the equilibrium price will be established at P_e .

A similar process happens in the case of surpluses.



Example: Surplus



In the diagram above demand is initially at Q_d with supply at Q_s when price is P_{ss} . This causes the surplus $Q_s - Q_d$ at price P_{ss} . Firms will allow their prices to fall to clear backstocks. As the market price falls below P_{ss} consumers will extend their demand above Q_d by switching expenditure from substitutes because it represents better value for money. At the same time firms will contract supply of the less profitable good below Q_s by transferring resources to more profitable substitutes in production. The price will continue to fall until quantity demanded equals quantity supplied at Q_e where the equilibrium market price will be established at P_e .

These movements describe how a market will move from a short run imbalance (i.e. shortage or surplus), and settle on the equilibrium price where supply equals demand.

4.4 Shifts in supply and demand

There are instances though where a change in the condition of supply or demand will lead to a new equilibrium being formed.



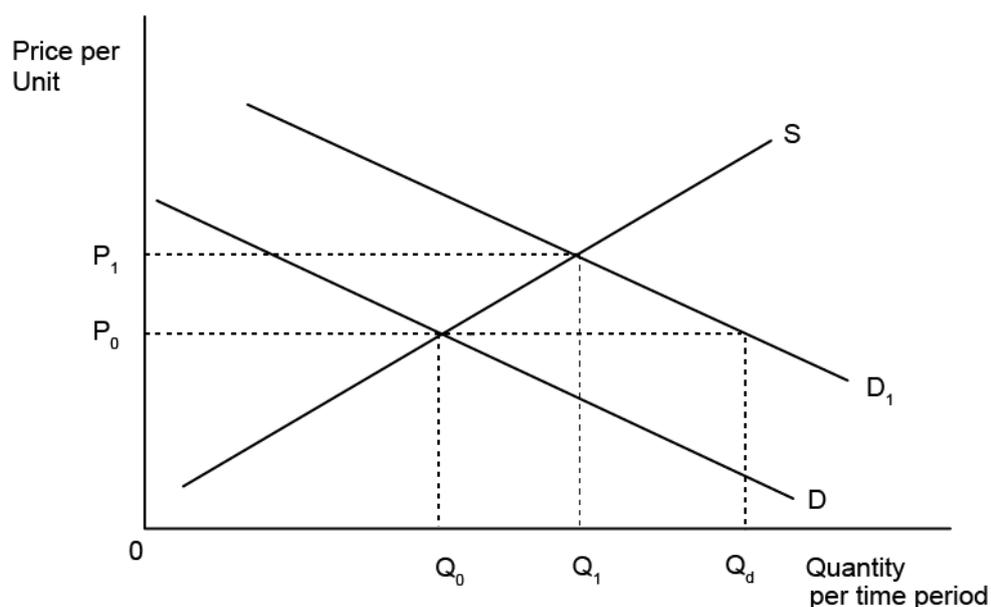
Example: Shift in demand

A shift in demand occurs when more or less of a quantity of good is demanded at each price level.

The diagram shows the effect of a rise in the price of butter on the market for margarine.



Illustration: market for margarine



Here is how the new equilibrium is established:

- ❑ Equilibrium initially at P_0Q_0 .
- ❑ Rise in price of butter causes a contraction in the demand for butter (not shown: this is a model of the margarine market) as consumers switch expenditure towards margarine, a substitute.
- ❑ Rise in demand for margarine, shown by shift from D to D_1 , causes a shortage of $Q_d - Q_0$ at price P_0 .
- ❑ Price rises. Demand contracts and supply extends.
- ❑ New equilibrium at Q_1P_1

A similar story can be explained with a shift in supply.

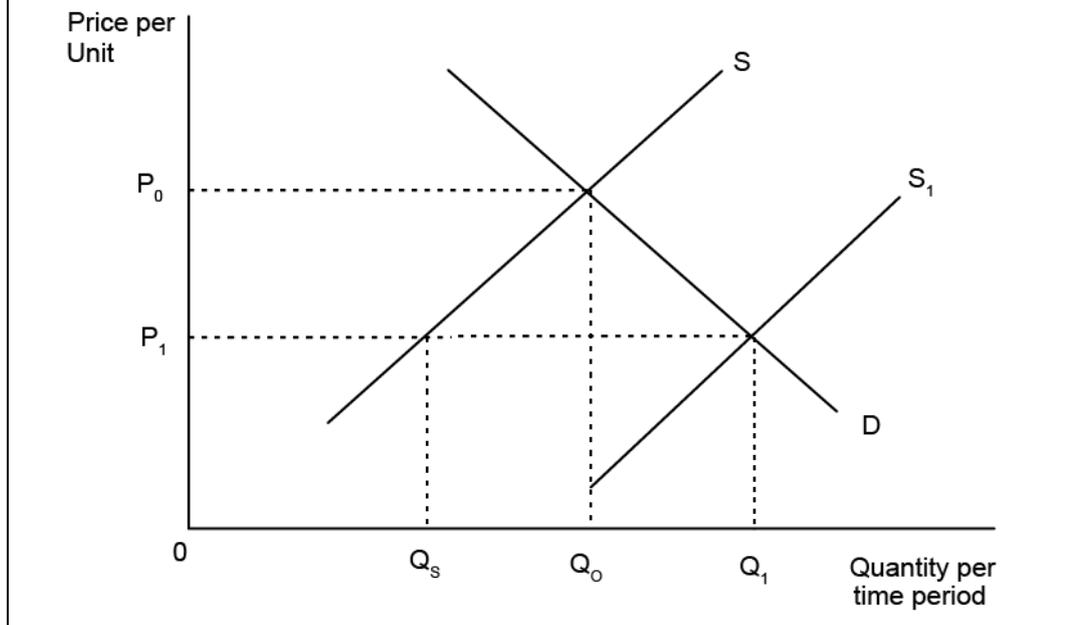


Example: shift in supply

The diagram shows the effect of a rise in the price of leather on the market for beef.



Illustration: market for beef



Here is how the new equilibrium is established:

- Equilibrium initially at P_0Q_0 .
- Rise in price of leather causes an extension in the supply for leather (not shown: this is a model of the beef market) as suppliers increase production in the more profitable product.
- Doing so also increases the supply of beef, as more cows are reared.
- Rise in supply of beef, shown by shift from S to S_1 , causes a surplus of $Q_0 - Q_s$ at price P_0 .
- Price falls. Demand extends and supply contracts.
- New equilibrium at Q_1P_1

4.5 Market for perishable and durable goods

There is an important consideration in the goods that are being analysed; whether they are perishable or durable (i.e. will retain value regardless of which time period they are sold in).

All goods up to this point are considered durable (non-perishable), because if the consumer does not consume in the current period, it is possible to do so in the next: it is possible to postpone demand.

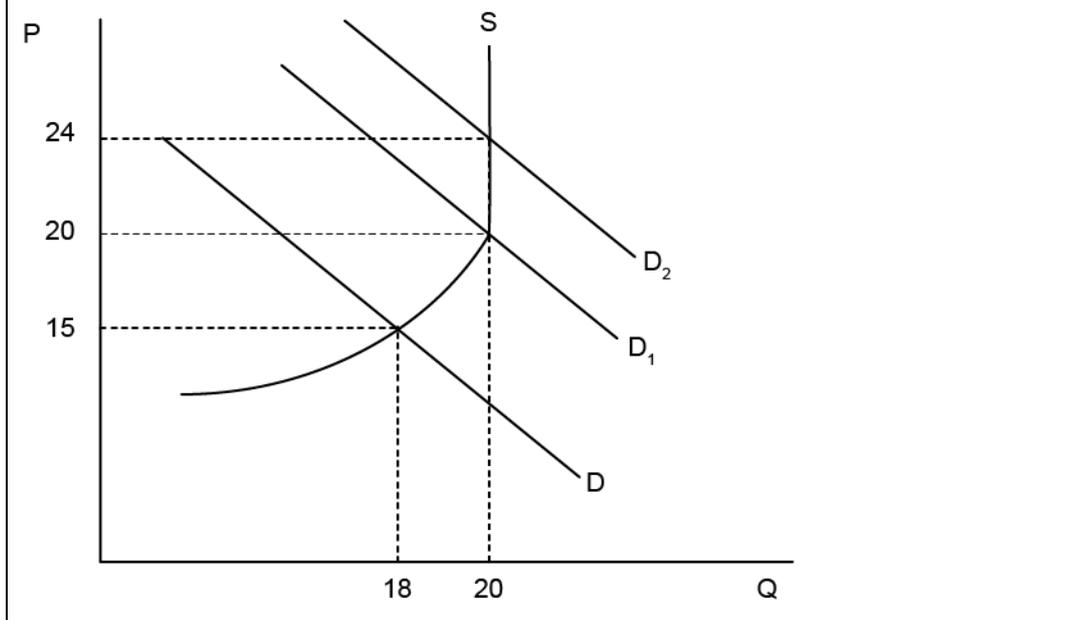
However this is not the case with all the goods:

Perishable goods: Many products, such as foodstuffs, will go rotten if not sold within a certain time frame, and therefore their value will diminish significantly, and hence they are considered perishable. Would you want to buy some eggs that were several months old?

The demand for these goods is considered *relatively inelastic*, because if the consumer does not choose to purchase in the current time period, its value is going to diminish in the next. Eventually the curve will become perfectly inelastic; at this stage the whole price mechanism is dependent on movements in the demand curve.



Illustration: market for perishable goods



The graph depicts the market for a perishable good such as tomatoes.

Initially, supply (S) equals demand (D), the price is 15, and the quantity sold is 18.

The fact that the tomatoes are perishable means that the supply curve becomes inelastic. Even if the producer wanted to supply more to the market, it isn't possible, because the goods aren't of a decent quality.

When D increases to D₁, the price increases to 20, and quantity is at 20 also – the maximum that can be sold.

When D₁ increases to D₂, the supply remains fixed, meaning that the only difference is in the price.

At this stage, *the price mechanism becomes wholly determined by demand.*

Demand and supply: elasticities

Contents

- 1 Introduction
- 2 Elasticity of demand
- 3 Elasticity of supply
- 4 Dynamic supply and demand

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO1 Understand the nature of micro-economics and its basic concepts.

LO2.4.1: *Elasticity of demand and supply:* Describe the concept of elasticity of demand and its practical application

LO2.4.2: *Elasticity of demand and supply:* Explain the determinants of the elasticity of demand

LO2.4.3: *Elasticity of demand and supply:* Demonstrate the measurement of price, income, point, arc and cross elasticity of demand

LO2.4.4: *Elasticity of demand and supply:* Describe the concept of elasticity of supply and explain the percentage and graphical methods of measurement of elasticity of supply

LO2.4.5: *Elasticity of demand and supply:* Describe the determinants of supply elasticity

1 ELASTICITY OF DEMAND

Section overview

- Introduction
- Price elasticity of demand: The basics
- Measurement of price elasticity of demand
- Price elasticity of demand: more detail
- Income elasticity of demand
- Cross price elasticity of demand

1.1 Introduction

We have seen in the previous chapter that as supply of a good increases, the price falls. Therefore in the context of corn farmers, an abundant harvest will lead to a decrease in the price they receive in the market.

It is sometimes the case that if the quantity of corn is great, the price falls so much, that the farmer actually earns less total revenue (i.e. price (P) x quantity (Q)), than had the quantity been less.

Poor harvests can be more beneficial to farmers than good ones!

The reason for this is that there is a *high elasticity of demand* for agricultural goods.

What this chapter will explore will build upon the equilibrium analysis of supply and demand, and investigate how changes in the price of a good can affect the total revenue earned by the firm.

It will answer questions as to “in what situation/ type of firm should be looking to increase their price to increase total revenue, and which should be looking at decreasing the price”?

First, we shall consider the price elasticity of demand.

1.2 Price elasticity of demand: The basics

Measuring the price elasticity of demand is dependent on discovering what decisions a firm will make with regard to their pricing. It is done by measuring how demand changes in relation to a price change.



Definition: Price elasticity of demand

A measure of the extent of changes in the market demand for a good in response to a change in price.

In words, the question we are attempting to answer is shown in the following example:



Example:

The elasticity of demand for wheat would be found by calculating by how much the quantity bought changed as a result of a 1% increase in its price.

Factors determining Price Elasticity of demand

There are several factors which determine the Price elasticity of demand

Nature of the commodity:

The elasticity of demand for necessities of life is generally inelastic because due to increase in price, the demand for necessary commodities does not contract generally proportionately. However, for comforts and luxuries the elasticity of demand is elastic because even a smaller change in price brings bigger changes in quantity demanded. For example demand for wheat, sugar, rice, vegetables etc. is inelastic being necessities and for motor cars, air conditions demand is elastic being comforts and luxuries.

Number of substitutes:

If more substitutes are available for a product it would be more easy for consumers to shift from one product to another and consequently more elastic their demand would be. For example bathing soaps, tooth pastes, edible oils, soft drinks etc. have many substitutes that can be used for one another. On the other hand, electricity is having no close substitute. Therefore, demand for electricity would be inelastic.

Goods having several uses:

Certain goods have different uses e.g. electricity is a necessity for certain uses, while for other uses it is a comfort or luxury. Use of electricity in the industry, for commercial purposes as well households is a necessity and electricity used for decorative lighting is a luxury. Elasticity will be measured depending upon the use. More important the use is more inelastic the demand would be and less important the use is, more elastic the demand would be.

Durable Goods and perishable goods:

Demand elasticity is determined on the basis whether a good is durable or perishable. Generally demand for durable goods can be postponed. For example if there is a very high rise in prices, demand for motor cars, deep freezers, air conditioners can be postponed while perishable goods like fresh milk, vegetables and fruit etc. have inelastic demand as their use cannot be postponed.

Price Level:

Elasticity of demand for those goods which are either high priced or low priced is inelastic. An increase or decrease in price of high priced goods does not have greater impact on rich class. For example a change in price of "Mercedes" motor car will not yield significant effect on high rich class while lower middle class cannot purchase very high priced commodities already. However, if the commodity is low priced then it is already purchased in sufficient quantity so further fall in price does not cause an increase in demand. For example if the price of potatoes is Rs.10 per kg every consumer will be purchasing sufficient quantity. One rupee rise or fall in price would not cause any significant impact on demand.

Income Level:

For rich, elasticity of demand for different commodities is inelastic as an increase in price does not affect their consumption expenditure. For poor, elasticity of demand is elastic because even a smaller change in price brings greater change in demand. For example if price of petrol goes up by Rs. 50 per litre or falls by Rs. 50 per litre it will not cause significant change in the demand for rich class but would cause significant changes in the demand pattern of the less privileged and middle class people.

Consumer's Loyalty:

Some goods and services are addictive in nature for example alcohol, drugs, cigarettes etc. Any rise in price will be unable to stop the use of these goods by addicted consumers. So their demand will be inelastic. Similarly some firms try to make their customers more and more brand loyal by excessive and persuasive advertisement. Their advertisement activities help them to develop habits of their brand. For example Samsung and I. Phone cellular phones and tablets.

Time:

Some goods are demanded in emergency for example lifesaving medicines. Their demand cannot be postponed. Therefore, demand elasticity is inelastic. However, goods like houses, motor cars have elastic demand because consumer can take enough time to adjust their demand.

Proportion of Income spent on the good:

Goods like "match box" are those goods on which consumers spend a very small proportion of income. Therefore, consumers remain indifferent to any change in price. But goods like LED TV, Houses, motor cars etc. are those goods on which a large proportion of consumers' income is spent and therefore, these become elastic towards the price changes.

1.3 Measurements of price elasticity of demand

There are several methods that can be used to measure the price elasticity of demand. Each can be useful in different scenarios, depending on the data that is available.

In general, they are all used to calculate how a change in the price of the good affects the quantity demanded. The symbol η is used to represent elasticity.

Regardless of the method, at the end of the calculation, η will always be a number that needs interpretation.

Interpreting η

Elasticity refers to the sensitivity of demand to price change.

- **Elastic** demand = **sensitive** to price changes
- **Inelastic** demand = **insensitive** to price changes

In order to better analyse the numbers that are generated, we will discuss the various terminology in which elasticity of demand can be categorised.

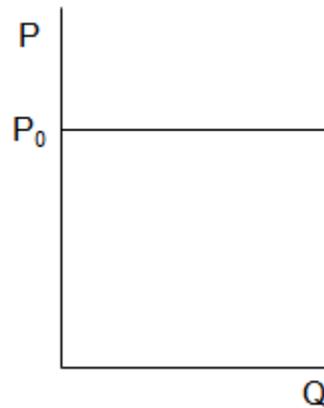
| Category | Characteristics |
|---------------------|---|
| Perfectly elastic | Value of infinity Smallest price rise will extinguish demand |
| Elastic | Value between 1 and infinity Demand responds strongly to price Cut price to raise revenue |
| Unit elasticity | Value of 1 Demand responds in exact proportion to price Price changes do not affect revenue |
| Inelastic | Value between 0 and 1 Demand responds weakly to price Raise price to raise revenue |
| Perfectly inelastic | Value of 0 Demand totally unaffected by price changes |

Perfect elasticity and perfect inelasticity represent two ends of a scale of possible elasticities. They are represented graphically below.



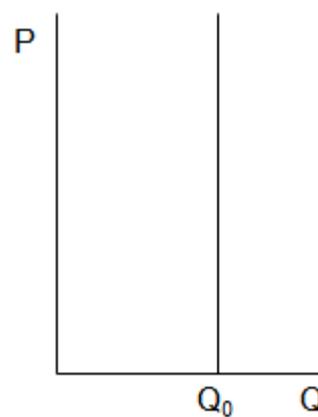
Illustration: Perfectly inelastic and perfectly elastic demands

Perfect elasticity



At prices above P_0 no quantity is demanded but at P_0 demand is infinite

Perfect inelasticity



Zero Response to price change of any level

These are best considered as theoretical limits mathematical limits that would not usually occur in reality.

The graphs indicate that if a demand curve has a low gradient that indicates that demand is elastic.

Similarly, if a demand curve has a steep gradient that indicates that demand is inelastic.

There are number of different methodologies of measuring price elasticity of demand.

Total expenditure method

This way of determining elasticity is to inspect the total expenditure of the consumer, or total revenue to the firm, after a change in price. This method was first proposed by Alfred Marshall. The method simply compares the total revenue (price \times quantity) at one price level to the total revenue at another.

The following are true:

Elastic demand:

- A decrease in price will increase revenue due to the increase in quantity demanded more than offsetting the decrease in price.
- An increase in price will decrease revenue due to the decrease in quantity demanded more than offsetting the increase in price.
- Price and revenue move in opposite directions.

Inelastic demand:

- A decrease in price will decrease revenue as the increase in quantity demanded fails to compensate the fall in price.

- ❑ An increase in price will increase revenue due to the decrease in quantity being more than compensated by the increase in price.
- ❑ Price and revenue move in the same direction.

Unitary demand: Revenue remains unchanged by price change because the change in price is offset by the change in quantity.

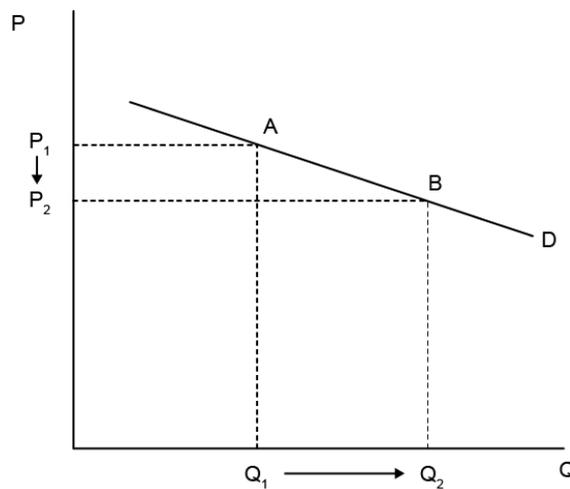
This can be understood better through an example:



Example: Expenditure method

a) Elastic demand

| Price (P) | Quantity (Q) | TR (P*Q) |
|-----------|--------------|------------|
| 8 | 15 | 8*15 = 120 |
| 7 | 25 | 7*25 = 175 |

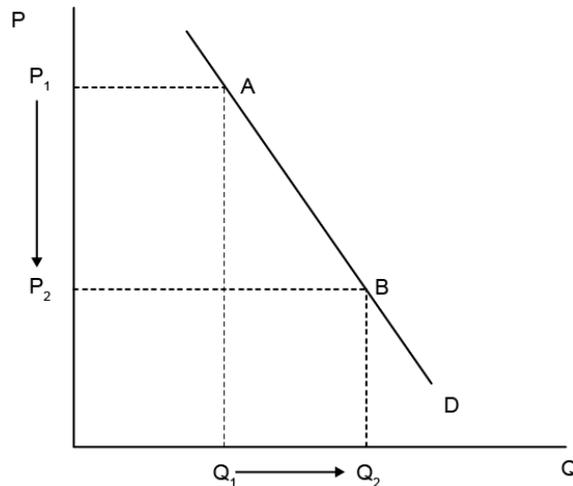


The decline in price is matched with a sharp increase in quantity demanded resulting in the total revenue increasing from 120 to 175.

This highlights how the demand is elastic.

**Example (continued): Expenditure method****b) Inelastic demand**

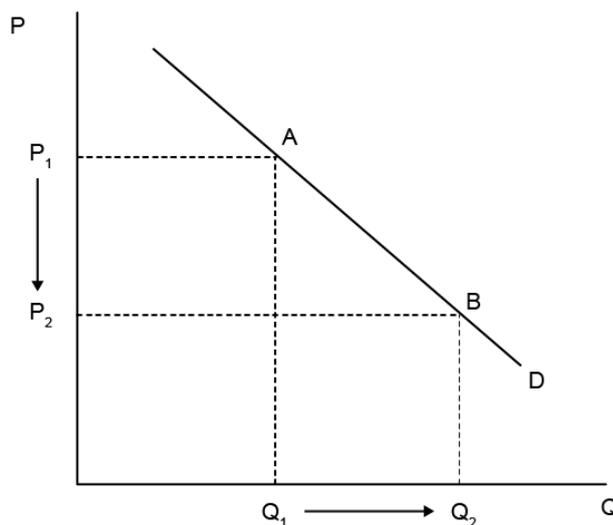
| Price (P) | Quantity (Q) | TR (P*Q) |
|-----------|--------------|--------------------|
| 10 | 8 | $10 \times 8 = 80$ |
| 6 | 11 | $6 \times 11 = 66$ |



The large decline in price is accompanied by only a slight increase in quantity demanded resulting in total revenue decreasing from 80 to 66.

c) Unitary demand

| Price (P) | Quantity (Q) | TR (P*Q) |
|-----------|--------------|--------------------|
| 12 | 4 | $12 \times 4 = 48$ |
| 8 | 6 | $8 \times 6 = 48$ |



The decline in price is accompanied by an increase in quantity demanded such that the total revenue is unchanged.

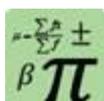
The total expenditure method offers a simple solution to ascertaining whether or not a good has elastic, inelastic or unitary demand. However, it is unable to give

more detail as to whether a certain good is *more* elastic than another, or by how much.

For this, we move onto the other methods.

Percentage method

This builds upon the method above, and looks to exactly prescribe the percentage changes that occur, therefore being able to offer greater comparison between different demand curves.



Formula: Percentage method

$$\eta = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

Where:

$$\text{Percentage change in quantity demanded} = \frac{\text{New demand} - \text{old demand}}{\text{Average demand}}$$

$$\text{Percentage change in price} = \frac{\text{New price} - \text{old price}}{\text{Average price}}$$

The average price and demand are used to ensure the elasticity is the same regardless of whether we go from Point 1 to Point 2, or vice versa.

Note the following

Elastic demand:

- If $\eta > 1$; the percentage rise in quantity demanded is more than the percentage fall in price.
- A decrease in price will increase revenue due to the increase in quantity demanded more than offsetting the decrease in price.
- An increase in price will decrease revenue due to the decrease in quantity demanded more than offsetting the increase in price.
- Price and revenue move in opposite directions.

Inelastic demand:

- Price and revenue move in opposite directions.
- If $\eta < 1$; the percentage rise in quantity demanded is less than the percentage fall in price.
- Revenue will decrease owing to the decline in price not being offset by the relatively small increase in quantity demanded.
- Price and revenue move in the same direction.*

Unitary demand: If $\eta = 1$; the percentage rise in quantity demanded equals the percentage fall in price. Revenue remains unchanged because the decline in the price is offset by the increase in quantity.

This is illustrated using the same data as in the previous example.

Note that the sign is not important in this calculation, only the absolute number (compared to 1).



Example: Percentage method

a) Elastic demand

$$\text{Percentage change in quantity demanded} = \frac{25 - 15}{(25 + 15)/2} = \frac{10}{20} = 0.5 = 50\%$$

$$\text{Percentage change in price} = \frac{7 - 8}{(7 + 8)/2} = \frac{-1}{7.5} = -13.33\%$$

$$\text{Price elasticity } (\eta) = \frac{50\%}{-13.33\%} = -3.75$$

$3.75 > 1$, therefore demand is elastic

b) Inelastic demand

$$\text{Percentage change in quantity demanded} = \frac{11 - 8}{(11 + 8)/2} = \frac{3}{9.5} = 0.316 = 31.6\%$$

$$\text{Percentage change in price} = \frac{6 - 10}{(6 + 10)/2} = \frac{-4}{8} = -0.5 = -50\%$$

$$\text{Price elasticity } (\eta) = \frac{31.6\%}{-50\%} = -0.63$$

$0.63 < 1$, therefore demand is inelastic.

c) Unitary demand

$$\text{Percentage change in quantity demanded} = \frac{6 - 4}{(6 + 4)/2} = \frac{2}{5} = 0.4 = 40\%$$

$$\text{Percentage change in price} = \frac{8 - 12}{(8 + 12)/2} = \frac{-4}{10} = -0.4 = -40\%$$

$$\text{Price elasticity } (\eta) = \frac{40\%}{-40\%} = -1$$

$1 = 1$, therefore demand is unitary.

The percentage method produces the same results as the expenditure method however, but provides a better understanding of to what degree the demand is elastic or inelastic.

Arc elasticity method

The elasticity at two different points on the demand curve is Arc Elasticity of demand, or arc elasticity is the measure of the average responsiveness to price changes exhibited by a demand curve over some finite stretch of the curve".

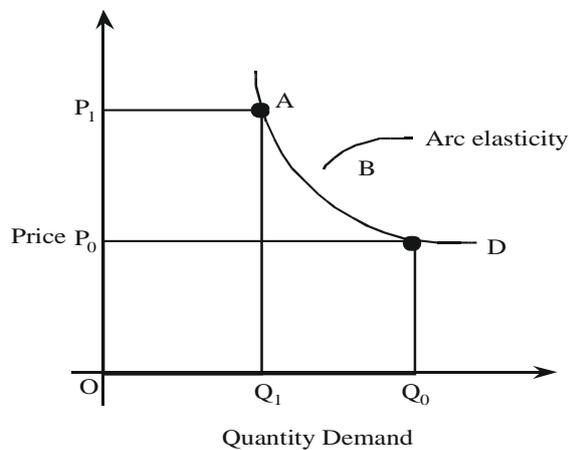
The formula to measure Arc Elasticity of demand is

$$E = \frac{Q_2 - Q_1}{Q_2 + Q_1} \times \frac{P_2 + P_1}{P_2 - P_1}$$

or

$$= \frac{\Delta Q}{\Delta P} \times \frac{P(Average)}{Q(Average)}$$

Where Q1 is the original quantity and Q2 is the new quantity. P1 is the original price and P2 is the new price.



Point elasticity method

The elasticity of demand on a single point on a demand curve is called point elasticity of demand. Point elasticity of demand measure is used for very small changes in price and quality whereas Arc elasticity measure is used for higher changes in demand and price. Point elasticity of demand can be measured in two ways:

Point elasticity of demand = $\frac{\text{Percentage change in demand}}{\text{Percentage change in price}}$

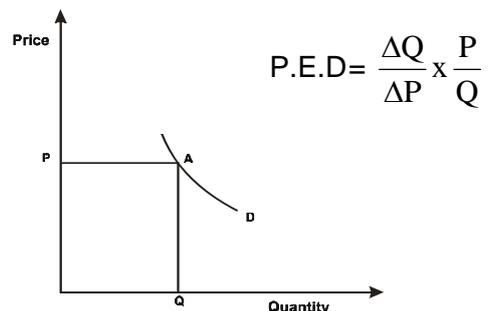
or P.E.D = $\frac{\Delta Q}{\Delta P} \times \frac{P}{Q}$

It is also written as

$$P.E.D = \frac{dQ}{dP} \times \frac{P}{Q}$$

Geometrically, point elasticity of demand with the help of a formula is given below:

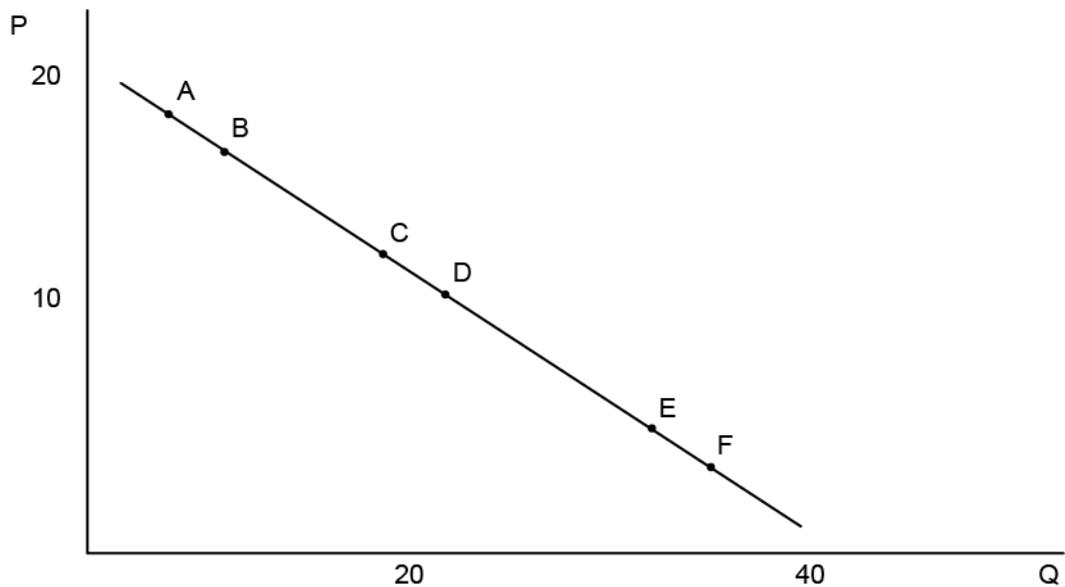
$$E = \frac{\text{Lower Point of the demand curve}}{\text{Upper point of the demand curve}}$$



The use of an example will make this clearer.



Example:



This shows the demand for a good at 3 pairs of points along the curve.

We will be measuring the point elasticity at the three sections on the curve.

The coordinates of the points are as follows:

| Point | Price | Quantity |
|----------|-----------|-----------|
| A | 18 | 4 |
| B | 16 | 8 |
| C | 11 | 18 |
| D | 9 | 22 |
| E | 4 | 32 |
| F | 2 | 36 |

At each stage there is a drop in price of 2, and an increase in quantity of 4. Note that because the average price and the average quantity are being used as denominators, the result is the same whether A – B or B – A is taken.

Price elasticity of demand is calculated below for each point.

**Example:****A – B**

Percentage change in quantity demanded $\frac{8 - 4}{(8 + 4)/2} = \frac{4}{6} = 0.667 = 66.7\%$

Percentage change in price $\frac{16 - 18}{(16 + 18)/2} = \frac{-2}{17} = -11.76\%$

Price elasticity (η) $\frac{66.7\%}{-11.76\%} = -5.67$

B – A (to show the direction is irrelevant)

Percentage change in quantity demanded $\frac{4 - 8}{(4 + 8)/2} = \frac{-4}{6} = -0.667 = -66.7\%$

Percentage change in price $\frac{18 - 16}{(18 + 16)/2} = \frac{2}{17} = 11.76\%$

Price elasticity (η) $\frac{-66.7\%}{11.76\%} = -5.67$

C – D

Percentage change in quantity demanded $\frac{22 - 18}{(22 + 18)/2} = \frac{4}{20} = 0.2 = 20\%$

Percentage change in price $\frac{9 - 11}{(9 + 11)/2} = \frac{-2}{10} = -0.2 = -20\%$

Price elasticity (η) $\frac{20\%}{-20\%} = -1$

E – F

Percentage change in quantity demanded $\frac{36 - 32}{(36 + 32)/2} = \frac{4}{34} = 11.76 = 11.67\%$

Percentage change in price $\frac{2 - 4}{(2 + 4)/2} = \frac{-2}{3} = -0.667 = -66.67\%$

Price elasticity (η) $\frac{11.67\%}{-66.67\%} = -0.18 = -18\%$

The elasticity of demand (E_d) at various points on the curve is as follows:

| Point | Price | Quantity | $ E_d $ |
|-------|-------|----------|---------|
| A | 18 | 4 | 5.67 |
| B | 16 | 8 | 5.67 |
| C | 11 | 18 | 1 |
| D | 9 | 22 | 1 |
| E | 4 | 32 | 0.18 |
| F | 2 | 36 | 0.18 |

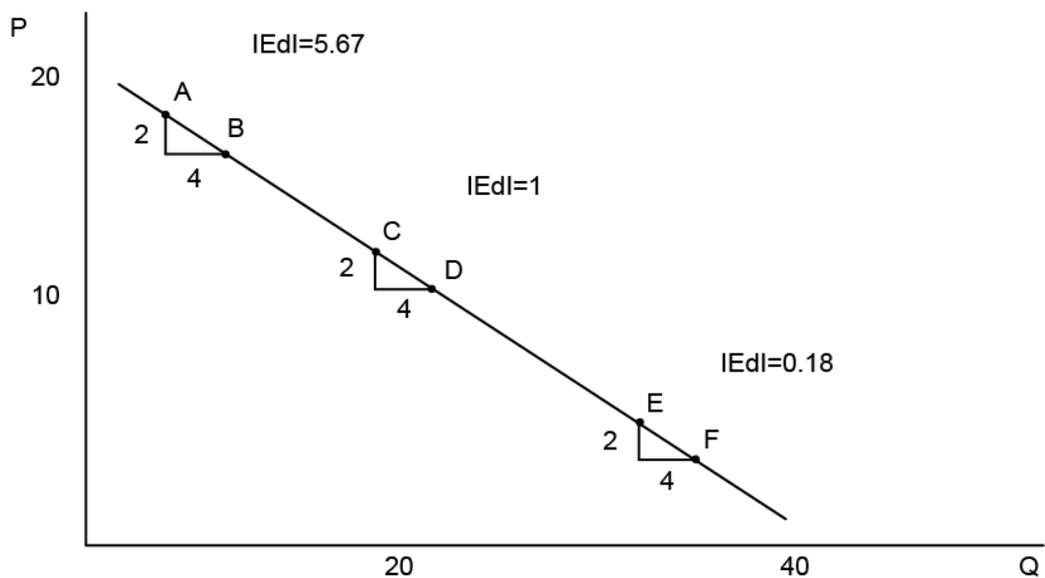
This shows how the elasticity of demand changes at different *points* on the curve.

Further, by taking the midpoint as the reference in each case, the elasticity is the same, regardless of starting point.

Interpreting this



Example:



The demand curve is a straight line. However, we can see that despite a drop in price of 2, and increase in quantity of 4, the elasticity of demand changes at different points on the curve.

The reason for this discrepancy is due to the fact that elasticity of demand is based on *percentage changes* in the price and quantity, rather than simply an absolute change in the numbers.

When there is an increase in quantity, when the output is already low, this amount counts as a much higher increase than if that increase were to come when output was already high.

Therefore the percentage change is always going to be higher when it begins from a low point.

This means that as the quantity increases, the numerator becomes less and less.

Conversely, as we move down a demand curve, price is going to move from being a small percentage, to a large percentage change.

Where the two percentage changes are equal, is the point at which there is unitary elasticity of demand.

To the North-West of the point of unitary elasticity will be elastic, and points to the South-East will be inelastic.

1.4 Price elasticity of demand: more detail

The price elasticity of demand is useful for a number of reasons. An understanding of how a product will behave to changes in price allows for better predictions on how total revenue will be affected when a firm makes a pricing decision.

It also has uses for governments wanting to understand how the market measures that they plan to impose will likely affect consumer behaviour.

There are also a number of **determinants** of the price elasticity of demand.

The following are considerations, and useful indicators, as to how price sensitive a product may be:

- The proportion of income spent on the good
- The availability of substitutes
- The degree of brand or product loyalty for the good
- Whether the good is a necessity or a luxury
- Whether changes in demand are being measured in the long-run or the short-run.

Other elasticities of demand

It is not just a product's sensitivity to its own price which will be of importance when it comes to economic analysis.

The relationship of the quantity of a product demanded to changes in other variables can also offer insight as to its characteristics.

1.5 Income elasticity of demand

The **income elasticity of demand** for a product is also what is used to determine if the good is “normal” or “inferior”.

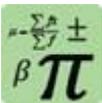


Definition: Income elasticity of demand

A measure of the responsiveness of demand for a good in relation to a change in the level of money income amongst consumers.

A *normal good* will always have a **positive income elasticity of demand**, because as income increases, demand for the product increases also.

An *inferior good* will always have a **negative income elasticity of demand**, because as income increases, demand for the product will decrease, as consumers switch to other alternatives.



Formula: Income elasticity of demand

$$\eta = \frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in level of income}}$$

Where:

$$\text{Percentage change in quantity demanded} = \frac{\text{New demand} - \text{old demand}}{\text{Average demand}}$$

$$\text{Percentage change in level of income} = \frac{\text{New level of income} - \text{old level of income}}{\text{Average level of income}}$$



Example: Income elasticity of demand

A person's income increases from Rs. 10,000 to Rs.15,000.

As a result, their demand for a product goes from 50 units to 40 units.

$$\text{Percentage change in quantity demanded} = \frac{40 - 50}{(40 + 50)/2} = \frac{-10}{45} = 0.222 = -22.2\%$$

$$\text{Percentage change in level of income} = \frac{15 - 10}{(15 + 10)/2} = \frac{5}{12.5} = 0.4 = 40\%$$

$$\text{Income elasticity } (\eta) = \frac{-22.2\%}{40\%} = -5.6$$

Here, we pay particular attention to the sign of the result. Because it is negative, this means that the good is *inferior*.

As income has increased, demand for it has decreased. As we discussed in previous chapters, this can occur for a number of reasons, such as consumers choosing to consume higher quality goods.

Knowledge of income elasticity of demand is important for a business when deciding on its future product range. Firms can use the information to forecast the impact that forecast changes in income will have on the demand for individual products. This in turn aids sales and production planning.

As an economy grows and incomes rise, firms need to be producing goods which have a high income elasticity of demand in order to ensure the business grows and sales increase. This might require the switching of resources from the production of goods which have a low income elasticity of demand to those with a high income elasticity of demand. Alternatively, existing products may be graded to give them a higher income elasticity of demand.

1.6 Cross price elasticity of demand

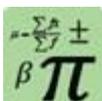
Another measure of elasticity is what the effect is of a price change in another good. This is called *cross price elasticity of demand*.

As with the income elasticity of demand, the sign of the cross price elasticity of demand is important to determine the characteristics of the good. The sign can be used to determine whether the two products being analysed are complements or substitutes.



Definition: Cross price elasticity of demand

A measure of the responsiveness of demand for a good A in relation to a change in price of good B.



Formula: Cross price elasticity of demand

$$\eta = \frac{\text{Percentage change in quantity of Good A demanded}}{\text{Percentage change in quantity of Good B demanded}}$$

Where:

$$\text{Percentage change in quantity of Good A demanded} = \frac{\text{New demand for good A} - \text{old demand for good A}}{\text{Average demand for good A}}$$

$$\text{Percentage change in price of Good B demanded} = \frac{\text{New price for good B} - \text{old price for good B}}{\text{Average price for good B}}$$

We shall briefly cover these types of goods, and undertake a calculation to explain further.

Complement goods



Definition: Complement good

A good where demand for Good A is increased, by a rise in demand for Good B.

These types of goods are often bought together, or have some sort of dependency upon each other. If one sees a change in demand, it is likely that the other will experience this change too.

This could be all manner of goods: golf clubs and golf balls, computers and computer cases. If they were sold separately, the ultimate complementary goods would be left shoes and right shoes.

A complement good has a **negative** cross price elasticity of demand



Example: Cross price elasticity of demand (Complementary goods)

The quantity of cricket balls (Good A) demanded increases from 500 to 600, when the price of cricket bats falls from Rs.100 to Rs.90.

$$\text{Percentage change in quantity of Good A demanded (balls)} = \frac{600 - 500}{(600 + 500)/2} = \frac{100}{550} = 18.1\%$$

$$\text{Percentage change in price of Good B demanded (bats)} = \frac{90 - 100}{(90 + 100)/2} = \frac{-10}{95} = -10.5\%$$

$$\text{Cross price elasticity of demand} = \frac{18.1\%}{-10.5\%} = -1.72\%$$

Not only are they complements (the sign is negative), but the relationship is elastic (1.72% is greater than 1).

This means that quantity of cricket balls demanded is sensitive to the price of cricket bats. The quantity demanded is very dependent on price movements in the other.

Another way of thinking about the negative sign, is to think that because the demand for the two goods is correlated, if the price of Good A increases – this will cause a fall in demand of Good A. If demand for Good A falls, then this will cause a decrease in demand for Good B. Hence the two factors (Good A's price, and Good B's quantity) move in opposite directions.

Substitute goods



Definition: Substitute good

A good where demand for Good A is increased, by a fall in demand for Good B.

These types of goods are often bought instead of each other. If one sees a change in demand, it is likely that the other will experience the opposite change.

This could be all manner of goods: butter and margarine, a Canon camera and a Kodak camera, a mackerel and a cod.

A substitute good has a **positive** cross price elasticity of demand.

If the quantity of milk chocolate (Good A) decreases 5% when the price of dark chocolate (Good B) decreases 8%, the cross price elasticity of demand is simply $5\%/8\% = 0.625$ (62.5%).:

The positive sign means that the products are substitutes, and that the absolute number is less than one means that the relationship is inelastic.



Example: Cross price elasticity of demand (Substitute goods)

Suppose the quantity of milk chocolate (Good A) demanded decreases from 100 to 90, when the price of dark chocolate decreases from Rs.50 to Rs.30.

The calculation would be as follows:

$$\text{Percentage change in quantity of Good A demanded (milk)} \quad \frac{90 - 100}{(90 + 100)/2} = \frac{-10}{95} = -10.5\%$$

$$\text{Percentage change in price of Good B demanded (dark)} \quad \frac{30 - 50}{(30 + 50)/2} = \frac{-20}{40} = -50\%$$

$$\text{Cross price elasticity of demand} \quad \frac{-10.5\%}{-50\%} = 0.21 = 21\%$$

This shows how milk chocolate and dark chocolate are substitutes, and also that they are inelastic in their relationship.

This means that quantity of milk chocolate demanded is not particularly sensitive to the price of another good: dark chocolate. This could be because those who consume dark chocolate are quite loyal to their type, and would not want to switch unless there was a significant price change.

Another way of thinking about the positive sign, is to think that because the demand for the two goods is correlated, if the price of Good A increases – this will cause a fall in demand in Good A. If demand for Good A falls, then this will cause an increase in demand for Good B. Hence the two factors (Good A's price, and Good B's quantity) move in the same direction.

2 ELASTICITY OF SUPPLY

Section overview

- Introduction
- Price elasticity of supply: the basics
- Price elasticity of supply: more details

2.1 Introduction

Now that we have covered the important aspects of the elasticity of demand, we can do the same for the elasticity of supply.

The overriding question to think about throughout this section is: *what is the percentage change in the quantity supplied, in relation to a percentage change in the price.*

What is particularly interesting about the elasticity of supply is that it changes over time. As we shall see, in the momentary, short-run, and long-run, supply tends to get more and more elastic. This is because in the long run, all adjustments are able to take place.

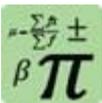
2.2 Price elasticity of supply: the basics

The price elasticity of supply is similar in concept to that of demand, so some of the expressions and equations should begin to seem familiar.



Definition: Price elasticity of supply

A measure of the responsiveness of quantity supplied to a change in the price of the good.



Formula: Price elasticity of supply

$$\eta = \frac{\text{Percentage change in quantity supplied}}{\text{Percentage change in price}}$$

Where:

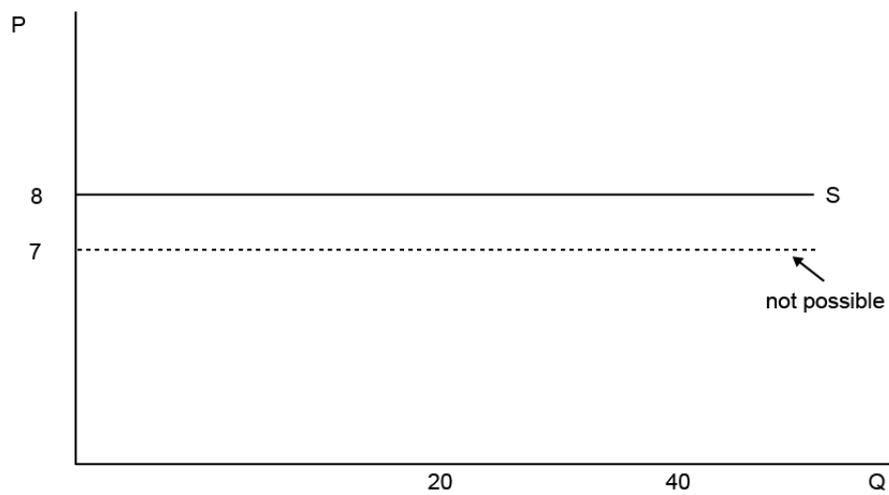
$$\text{Percentage change in quantity supplied} = \frac{\text{New quantity supplied} - \text{old quantity supplied}}{\text{Average quantity supplied}}$$

$$\text{Percentage change in price} = \frac{\text{New price} - \text{old price}}{\text{Average price}}$$



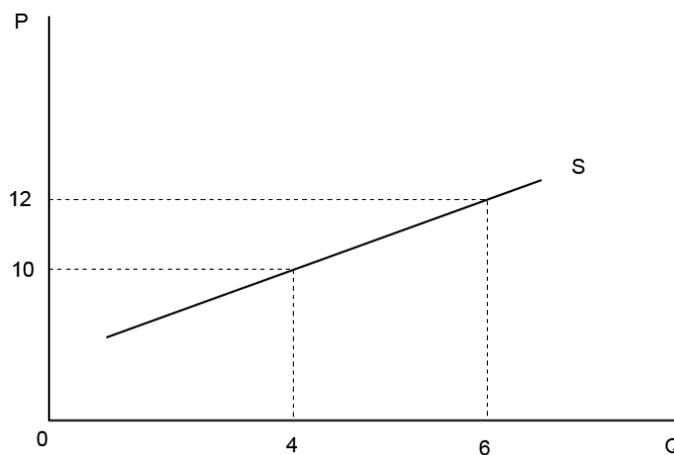
Example: Supply elasticity

a) Perfectly elastic supply



If the price moves below 8, then no firm will supply to the market.

b) Elastic supply



Percentage change in quantity supplied

$$\frac{6 - 4}{(6 + 4)/2} = \frac{2}{5} = 40\%$$

Percentage change in price

$$\frac{12 - 10}{(12 + 10)/2} = \frac{2}{11} = 18.2\%$$

Elasticity of supply

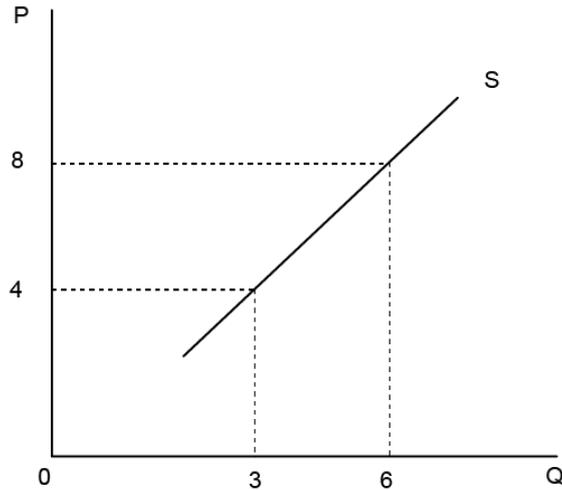
$$\frac{40\%}{18.2\%} = 2.2$$

A small increase in price leads to a proportionally greater increase in quantity supplied.



Example (continued): Supply elasticity

c) Unitary elasticity of supply



Percentage change in quantity supplied

$$\frac{6 - 3}{(6 + 3)/2} = \frac{3}{4.5} = 66.7\%$$

Percentage change in price

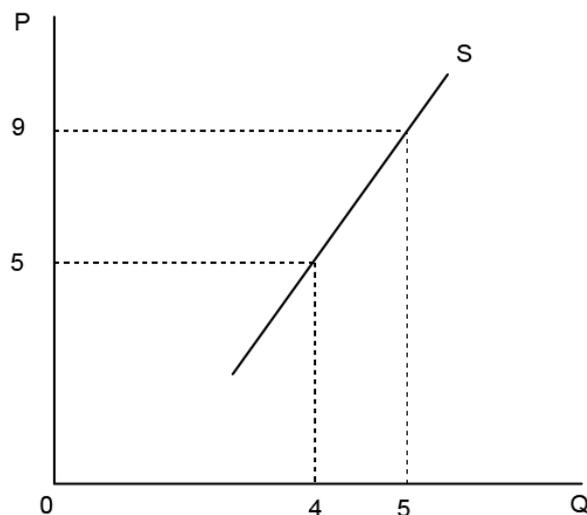
$$\frac{8 - 4}{(8 + 4)/2} = \frac{4}{6} = 66.7\%$$

Elasticity of supply

$$\frac{66.7\%}{66.7\%} = 1$$

An increase in price leads to a proportional increase in quantity supplied

d) Inelastic supply



**Example (continued): Supply elasticity**

Percentage change in quantity supplied

$$\frac{5 - 4}{(5 + 4)/2} = \frac{1}{4.5} = 22.2\%$$

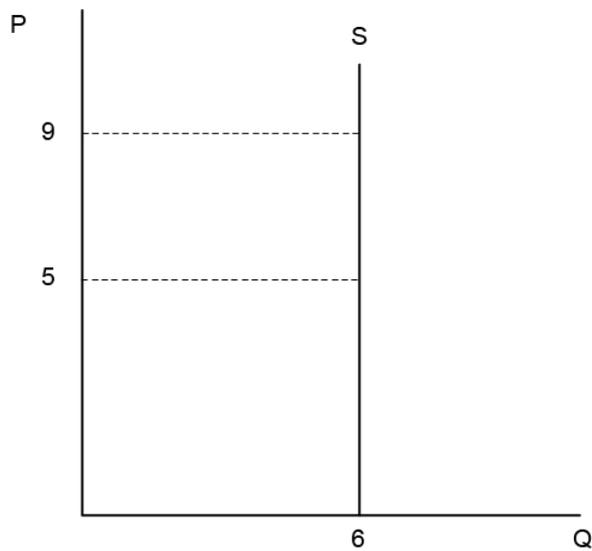
Percentage change in price

$$\frac{9 - 5}{(9 + 5)/2} = \frac{4}{7} = 57.1\%$$

Elasticity of supply

$$\frac{22.2\%}{57.1\%} = 0.39$$

A large increase in price leads to only a small increase in quantity supplied.

e) Perfectly inelastic supply

Supply is fixed at 6 units regardless of whatever price would be offered.

2.3 Price elasticity of supply: more details

Increasing our analysis of the price elasticity of supply, there are a number of **determinants** of the price elasticity of supply. For clarity of understanding, the following points relate to factors that would increase the price elasticity of supply:

- ❑ Greater availability of stocks
 - If back stocks exist then these will be sold if demand increases without the need for price to rise.
 - If demand falls then goods will be withdrawn from sale and stored. This avoids surpluses pushing prices down.
- ❑ Greater ability for firms to switch resources to and from substitutes in production
- ❑ Increased ease of entry and exit to and from the market
- ❑ Shorter length of production process

The length of time since the change in demand conditions changed also has an effect on the elasticity of supply.

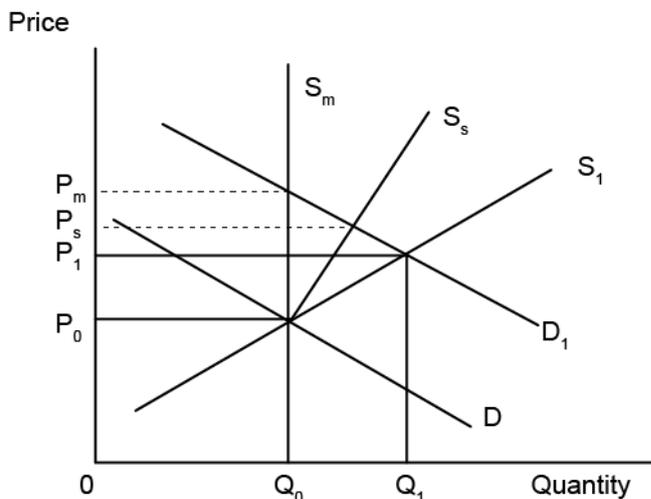
If demand rises, firms will need time to bring forward additional supply. Therefore the analysis of elasticity is commonly divided into three periods:

- ❑ **Momentary (or market) period**
Immediately following the demand change when supply has had no chance to respond. Here, supply is perfectly inelastic.
- ❑ **Short run period**
An intermediate stage when supply has begun to change but has not fully incorporated the demand change. Here, supply is inelastic.
- ❑ **Long run period**
The time period in which supply has fully adjusted to the change in demand. Here, supply is most elastic

Graphically, this can be represented like so:



Illustration:



In the above diagram equilibrium is initially at P_0Q_0 , a position of long-run equilibrium. Demand rises from D to D_1 at price P_0 .

- In the *momentary period* the price rises towards P_m
- In the *short-run period* the increased elasticity of supply adjusts price towards P_s
- In the long run the price adjusts to P_1

This concept can be better explained through an example.



Example: Time and elasticity of supply

A firm produces mobile phones at full capacity.

If there is a sudden rise in demand, then the company will be unable to immediately supply the market more than what it produces – its supply is perfectly inelastic.

After some time, they could order more materials from suppliers, and gradually increase the quantity to the market. This might not be the most efficient means of doing so however, meaning that the additional products that are supplied will be priced higher.

In the long run, the firm can produce more efficiently at the increased output, meaning that the price they can supply to the market is lower, and therefore the curve is flatter.

Interacting with the new demand curve will mean that, as the diagram indicates, as the market moves from momentary, to short, to long run, the equilibrium price decreases.

4 DYNAMIC SUPPLY AND DEMAND

Section overview

- Introduction
- Price stability
- Cobweb theory

4.1 Introduction

So far we have looked mainly at supply and demand in a static form. By this we mean it has been a snapshot of what has occurred in a market at one particular time.

Discussions of how supply becomes more elastic with greater time brought in an element of dynamism. However in this section we will be going into more depth, by looking at two areas in particular: price stability and the cobweb theory.

4.2 Price stability

Certain markets have particularly volatile price changes, whereas in others, the price remains more or less stable. For example, the price of rice does not fluctuate on a daily basis.

This is in stark contrast to prices on the international commodities markets where the prices change constantly.

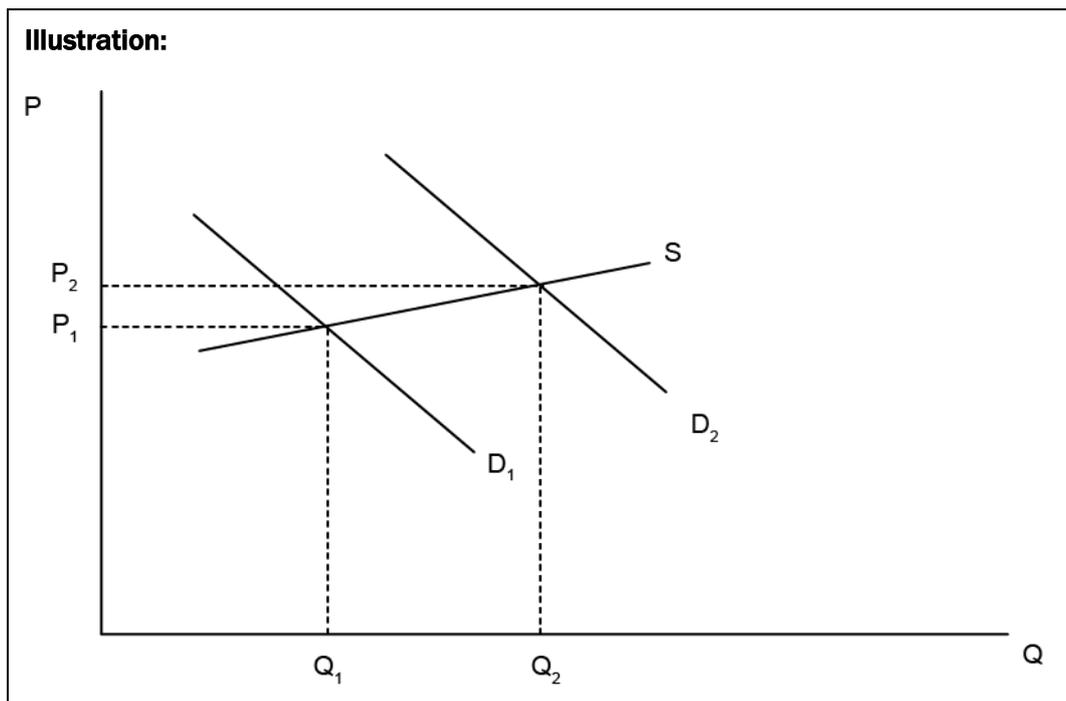
There is difference therefore, and we can now use our knowledge of demand and supply elasticities to offer an explanation.

Milk market

One of the characteristics of the milk market is that it is fiercely competitive in terms of supply. There are lots of firms able to supply to the market, and consequently if the price increases slightly, quantity will increase.

The demand for milk is neither spectacularly elastic nor inelastic.

This can be graphically represented below:



This shows how even if demand were to increase dramatically (for example, a health campaign is begun promoting the benefits of milk in ones diet) then, because of the type of supply, the price of milk would remain relatively stable.

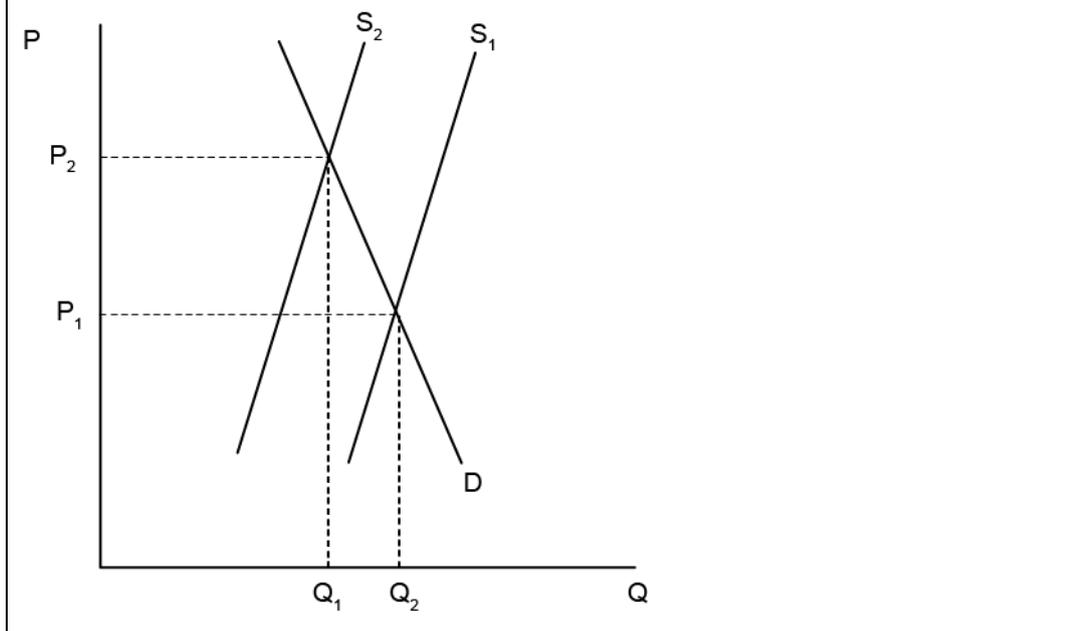
Corn market

The international market for corn fluctuates greatly throughout the year, and also from year to year.

On the supply side, there is uncertainty with regard to whether there will be a good harvest or not. This means that output could be greater, or less than planned.

On the demand side, it can also be faced with inelastic demand because many food processes rely on corn, and cannot substitute other grains for it.

This can also be represented graphically:

**Illustration:**

As we can see, just a small shift backwards in supply and, because of the inelasticity of both curves, the price has increased significantly.

A consequence of this is that if ever there is a slight change in either the supply or demand of corn, the price would fluctuate considerably.

Causes of instability

There are several factors that can contribute towards unstable price movements. These are particularly prevalent in the agriculture sector.

- Weather conditions: can dramatically influence the size of harvest
- Constant, inelastic demand for produce – must be bought whatever the price
- Competition to produce other goods i.e. biofuels for energy

In summation, the more elasticity that exists in both supply and demand, the more price stability we would expect to see in the market.

Government policies to increase price stability in agriculture

A stable price of agricultural commodities is often a political objective for most governments. The price of a good is the main source of income for those individuals and firms that work in the agriculture sector. Therefore, in order to ensure that these people receive a stable, predictable income, the government often acts to stabilise the price.

This is usually done through a buffer stock scheme.

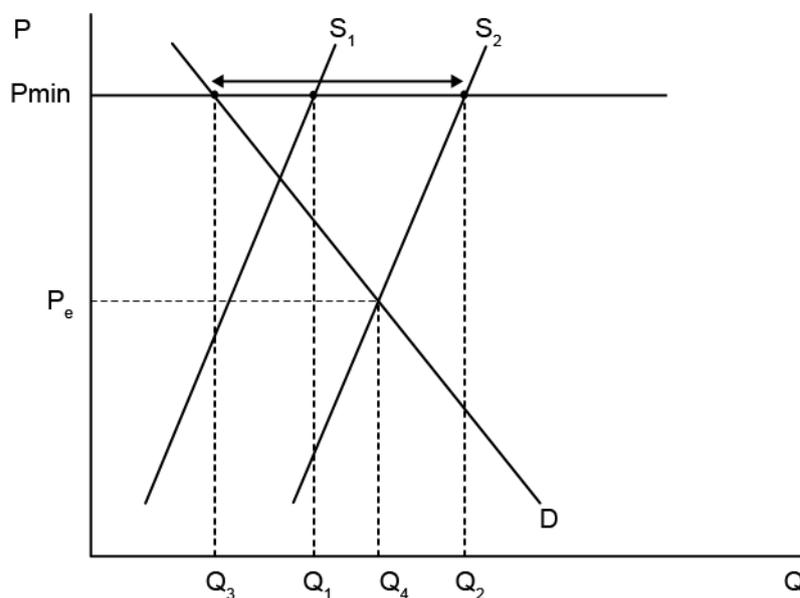
**Definition: Buffer stock scheme**

A measure that uses commodity storage for the purpose of stabilising prices in a market

The government agrees to pay a fixed price, above the market rate, for the commodity. This means that buyers and sellers interact to the market equilibrium, and then the government intervenes to purchase the surplus.



Illustration:



- ❑ In the above diagram supply shifts outwards from S_1 to S_2 meaning (with no intervention) the price will fall to P_e .
- ❑ However, because the government guarantees the price at P_{min} it buys the surplus stock: $Q_2 - Q_3$
- ❑ The fact that farmers receive this price, naturally means that the price is stable, thus achieving the policy goal
- ❑ Should there be a commodity shortage in a future period, these stock levels could be used to release onto the market and reduce the upward pressure on price

Disadvantages of buffer stock scheme

The main disadvantage that comes from this policy is the upfront cost of purchasing excess stock above the market price. This requires capital that, as we have seen through the concept of opportunity cost, could be spent meeting other policy objectives.

It can also encourage over-production of certain commodities, as the pricing signal of the market mechanism is no longer in action.

There are also a lot of administrative, and storage costs associated with the maintaining levels of buffer stocks.

4.3 Cobweb Theory

A second application of the dynamic movements between supply and demand is represented through the cobweb theory.

This theory looks to offer an explanation as to why prices periodically fluctuate, especially in agriculture, and traces the movement through changes in supply and demand.

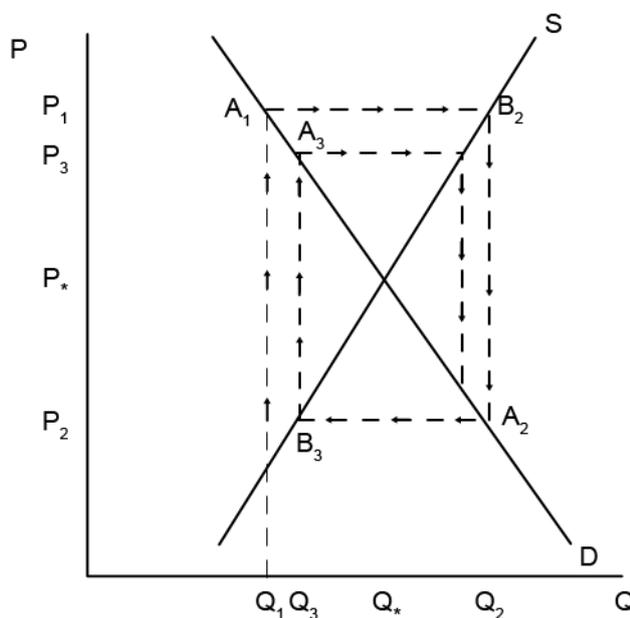
When we say that market equilibrium has been reached (where supply is equal to demand), it doesn't necessarily happen instantaneously. There will be some interactions between supply and demand which eventually settle on the equilibrium price and quantity.

The cobweb theory offers an explanation as to how the market reaches equilibrium, from a point that started off-equilibrium.

Use the illustration below as a guide for the following sequence of events



Illustration:



The key aspect to grasp is that there is a time difference between each market, and also the choice a farmer has of how many cows to supply at the next market based on his knowledge of the price of cows in the current market.

The price received is always found by tracing the quantity (Q) up to the demand curve.

Suppose a farmer is evaluating how many cows to rear to take to market and sell. At the market he is at currently, the quantity is Q^* and the price is P^* .

Before the next market, there is a disease that kills a number of cows. This means that the quantity at the market is just Q_1 (less than Q^*), and consequently the price is P_1 . The new, short term equilibrium is at A_1 .

At this market then, the price received for each cow is higher than the last. How then will the farmers respond? Seeing a higher price for their stock, at the next market, the quantity of cows produced will be what is expected at P_1 , and is therefore Q_2 .

However, because the market price is determined by tracing the quantity up to the demand curve, the price at the market is P_2 .

Seeing that price has now dropped below equilibrium price, the producers will supply less to the next market (Q_3). The fall in supply means that the price becomes P_3 and as such will supply more to the following market.

And so it continues.

Each time P is too high, it follows that Q will be high, causing P to move the other way, causing Q to be low as well. As this oscillation continues, the trail of movement mimics that of a spider cobweb circling in towards the centre.

The important point to note is that with each iteration, the price is getting closer to the equilibrium. In this example, the long term equilibrium will eventually be reached.

In this sense, we can say that the price is dynamically stable.

Importance of elasticities

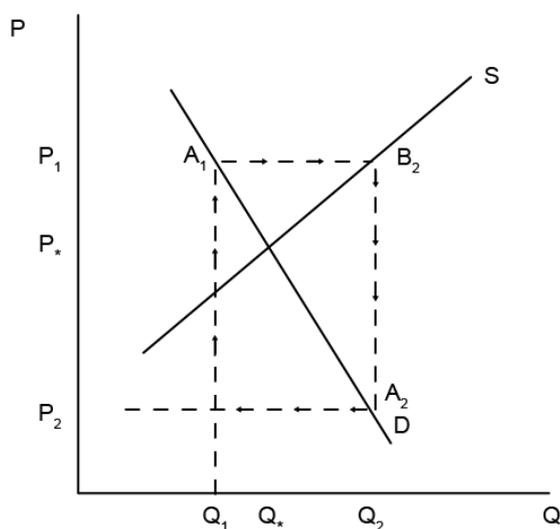
This is not always the case though. In instances where the slope of the supply curve is flatter than that of the demand, then we find that with a few iterations, the short run equilibriums do not tend to the long run.

Going back to our cow scenario, if supply was more elastic, the price changes would cause such a swing in the quantity supplied in the next period that demand will effectively die out.

The illustration below demonstrates this:



Illustration:



Consequently, if the slope of the demand curve is steeper than that of the supply curve, the points are dynamically unstable.

Critique of the cobweb theory

The main assumption in the cobweb theory is that expectations of the price in the next period are made solely on what they were in the last period. It might be natural to suppose that after a few “rounds” of the market the producers would learn that this is not necessarily the best tactic to adopt.

Utility analysis

Contents

- 1 Introduction
- 2 Diminishing Marginal Utility
- 3 Indifference curves
- 4 Extensions of indifference curves

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO1 Understand the nature of micro-economics and its basic concepts.

LO2.5.1: *Utility analysis and indifference curve:* Explain the law of diminishing marginal utility and discuss its assumptions and limitations

LO2.5.2: *Utility analysis and indifference curve:* Explain the law of equi-marginal utility

LO2.5.3: *Utility analysis and indifference curve:* Discuss the meaning and characteristics of indifference curves

LO2.5.4: *Utility analysis and indifference curve:* Explain consumers' equilibrium through indifference curve analysis

1 INTRODUCTION

Section overview

- Definition
- Utility and rationality
- Cardinal measures of utility
- Problems measuring cardinal utility
- Ordinal utility

1.1 Definition

The concept of utility is used throughout microeconomics as a means to measure the satisfaction or happiness one gains from a good or service.



Definition: Utility

A measure of happiness or satisfaction gained from a good or service.

Its roots come from the utilitarian movement of the 18th and 19th centuries whose writers, including Jeremy Bentham and John Stuart Mill advocated that the goal of society was to maximise the total utility for individuals by aiming for “*the greatest happiness for the greatest number*”.

Whilst a worthy objective for a society to aim for, economists have discovered that there are a number of issues that need to be addressed before thorough analysis can be conducted. We cover these now.

1.2 Utility and rationality

An important relationship to establish at this stage is between utility and rationality.

We have touched upon rationality briefly and know that, in short, it is assumed that consumers make the decisions based on a rational preference.

In this context, it is said that rational agents will look to maximise their utility.

This seems a fair assumption to make. When faced with a number of options, you would assume that someone will evaluate which will give them the greatest happiness, and then choose it at the expense of the other, less favourable ones.

1.3 Cardinal measures of utility

A cardinal measure is a way of assigning an option someone has with a level of utility. In this context, the measurement is often called a *util*.



Example:

Aleem could have the following options:

- Eat an apple (8 utils)
- Eat an orange (6 utils)
- Eat a banana (4 utils)
- Eat a peach (2 utils)

And, assuming that he could only choose one piece of fruit, we can see that Aleem would choose to eat an apple. Although he would eat an orange and a banana instead, if given the option

(6 utils + 4 utils > 8 utils)

Benefits of this measurement

The main benefit of this type of measurement is that one can look in detail at a number of options facing someone, and evaluate what decision he is likely to make.

It is possible to say that, as in our example, someone may enjoy eating an orange *x times more than a peach*, which is useful especially when analysing decisions in welfare economics (where the objective is to maximise total utility in society).

1.4 Problems measuring cardinal utility

Whilst theoretically it is very useful to use cardinal measurement, in reality it is difficult to implement.

Unlike a number of the other concrete topics we have covered so far, *utility is an abstract concept*. Finding out how much utility someone would assign to a certain action is extremely difficult, and is the subject of debate amongst economists and philosophers.

This problem of measurement arises, as it is impossible to quantify a unit of utility. It is arbitrary to assign an “amount” of utility to something in a way that makes the value reasonable or comparable.



Example:

It is possible to say: “*the price of this apple is twice as much as that banana*” because the measurement is quantifiably based on price.

However it is not possible to accurately say: “*He enjoys this apple twice as much as that banana*” because it is a qualitative measurement.

This is what is meant by an *abstract concept*.

Therefore in response, a new branch of measuring utility was sprung, which we cover next.

1.5 Ordinal measures of utility

An ordinal measure of utility instead ranks the options available to a consumer, and based upon that order, is able to better determine the person’s utility.



Definition: Cardinal and ordinal

It is useful to understand the difference between the two words; cardinal and ordinal from their mathematical background.

Cardinal: 1, 2, 3

Ordinal: 1st, 2nd, 3rd

In this way, the cardinal measure assigns a value to utility, whereas ordinal ranks the preferences.

With ordinal measures, an individual is observed preferring one choice to another. Based upon a number of choices, they rank them from *most preferred* to *least preferred* and from there, quantifiable measurement is possible.

This therefore measures utility by what people *prefer* to consume, rather than assigning a numerical value.

Based upon our previous example, ordinal analysis simply says:

**Example:**

Aleem could have the following options:

- Prefers eating an apple to an orange
- Prefers eating an orange to a banana
- Prefers eating a banana to a peach

Though at first this might seem like it would be difficult to interpret any real meaning from this, we will explore how it is possible in subsequent sections.

Drawbacks of ordinal measure

Whilst this method benefits from comparing bundles of goods which consumers can prefer over others, it is still not possible to compare utility between individuals.

This is an academically difficult question (some argue impossibility), so for now, it is considered the best practice for measuring utility.

2 DIMINISHING MARGINAL UTILITY

Section overview

- Introduction
- The Law of diminishing marginal utility
- Exceptions to the Law of diminishing marginal utility

2.1 Introduction

Now that we have established different ways that utility can be measured, we turn to what useful analysis can be taken from understanding it.

There are a number of different functions and derivatives of utility that can give insight into how it interacts with other factors. These will be explored further in the following sections.

2.2 The Law of diminishing marginal utility

This is a concept that at first may appear to be counterintuitive but, once understood, allows a rich ability to understand the choices that are made by consumers within a society.

To begin, read through the following example as an introduction to what is meant by diminishing marginal utility.



Example:

Suppose that on a hot day, Karim goes for a walk and sees an ice cream stand. He chooses to consume an ice cream – which he really enjoys - it would give him a lot of utility. Should he have a second ice cream, he would enjoy it still, and his overall utility would still increase, however it would increase by less than when he had the first one. Choosing to have a third ice cream would increase his utility compared to second, but not by as much, and so on...

What this example introduces is the concept of the term *marginal*. In this instance it means “additional” or “extra”.

By consuming more units of the product, the total level of satisfaction is increasing; however the size of the increment is falling each time. Put another way, the growth in incremental satisfaction will slow as more of the good is consumed. This leads to an abbreviated definition:



Definition: Law of diminishing marginal utility

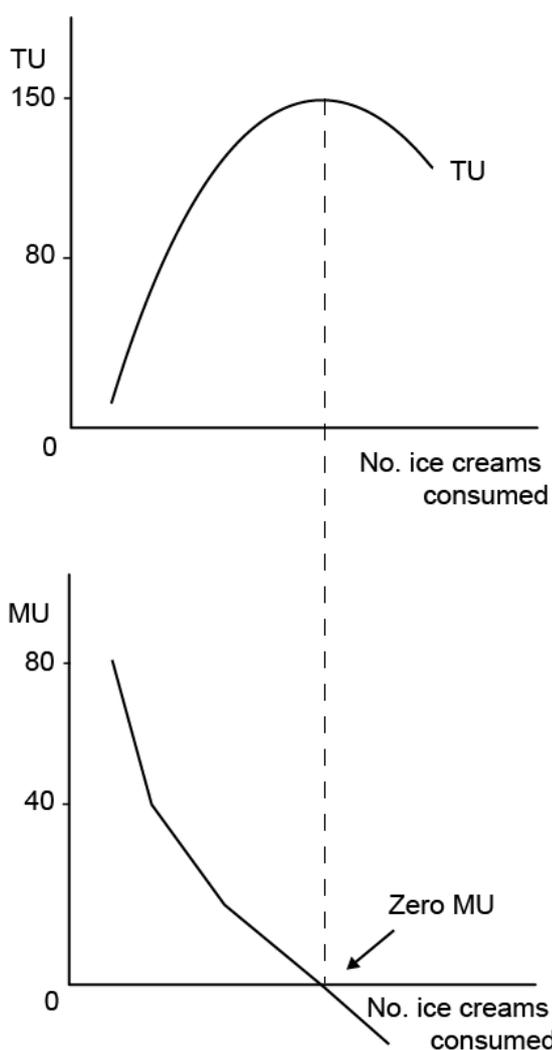
Eminent economist Alfred Marshall defines the Law as follows:

“The additional benefit which a person derives from a given increase of his stock of a commodity diminishes with every increase in stock that he already has”.

The Law can be illustrated graphically through an example to give greater clarification as follows:

**Example:**

| Ice creams | Total utility | Marginal utility (MU) |
|------------|---------------|-----------------------|
| 0 | 0 | - |
| 1 | 80 | 80 |
| 2 | 120 | 40 |
| 3 | 140 | 20 |
| 4 | 150 | 10 |
| 5 | 150 | 0 |
| 6 | 145 | -5 |



From these two graphs, we can understand more about how utility works.

We can see the trait of utility increasing in the first four ice creams (from 80 to 150) at a decreasing rate each time.

The maximum utility Karim gets is 150, which happens when he has his fourth ice cream. After consuming the fifth, his utility remains unchanged.

After consuming the sixth, his total utility actually declines. He gets disutility from the consumption. (Perhaps he feels ill at this point!)

This is represented on the MU graph by the curve entering the negative zone

There is a point to highlight from the table above to avoid confusion.

As you will see, there are numbers assigned to the Total Utility that Karim gets from consuming ice cream. These are for comparative purposes only. This *does not mean that consuming 2 ice creams is 50% better than consuming 1* (120 is 50% more than 80), it is purely as a measure of relativity.

2.3 Exceptions to the Law of diminishing marginal utility

On the whole, this is a strong Law. There are however some exceptions that do not display the characteristics:

- Collectibles
- Hobbies
- Rare items

The reasons for this are that they have greater value when together as a group. If bought individually, they have less worth. They are rarely consumed, per se, and so there is little immediate discomfort in having more.

3 INDIFFERENCE CURVES

Section overview

- Introduction
- Assumptions of indifference curves
- Maintaining utility throughout an indifference curve
- Characteristics of indifference curves
- Slope of indifference curves
- Consumer equilibrium
- Combining budget lines and indifference curves – Law of equi-marginal utility
- Limitations of the law of equi-marginal utility

3.1 Introduction

With the Law of diminishing marginal returns being established, we now turn to present it in a form which brings together the other material that we have done in the opening chapters.

In a few simple steps, we will be able to build up to drawing indifference curves.

The first thing to remember is that it is showing a combination of goods that someone wishes to consume. This means on the x axis will be one good, and the y axis will be another.

3.2 Assumptions of indifference curves

Before continuing, it is appropriate to clarify what the underlying assumptions of indifference curves are:

- Consumer is rational:** Consumers' behaviour is consistent
- Utility is ordinal:** A consumer prefers one basket of goods to another
- Diminishing marginal rate of substitution:** The rate at which an individual must give up "Good A" to obtain an extra unit of "Good B" whilst keeping their overall utility constant, occurs at a diminishing rate
- Consistency of choice:** The choice remains constant over time periods
- Preferences are not self-contradictory:** If a customer prefers A to B, and B to C, then he must therefore prefer A to C
- Goods are substitutable:** Utility can be maintained by exchanging the quantity of goods consumed in any quantity.

3.3 Maintaining utility throughout an indifference curve

An indifference curve shows different combinations of goods that someone may choose to consume.

The key idea with an indifference curve is that by substituting one good for another, one will be able to maintain the same level of utility. This exchange in goods will be different at various levels along the curve due to the law of diminishing marginal rate of substitution, hence leading to its convex shape. This will be explained later.

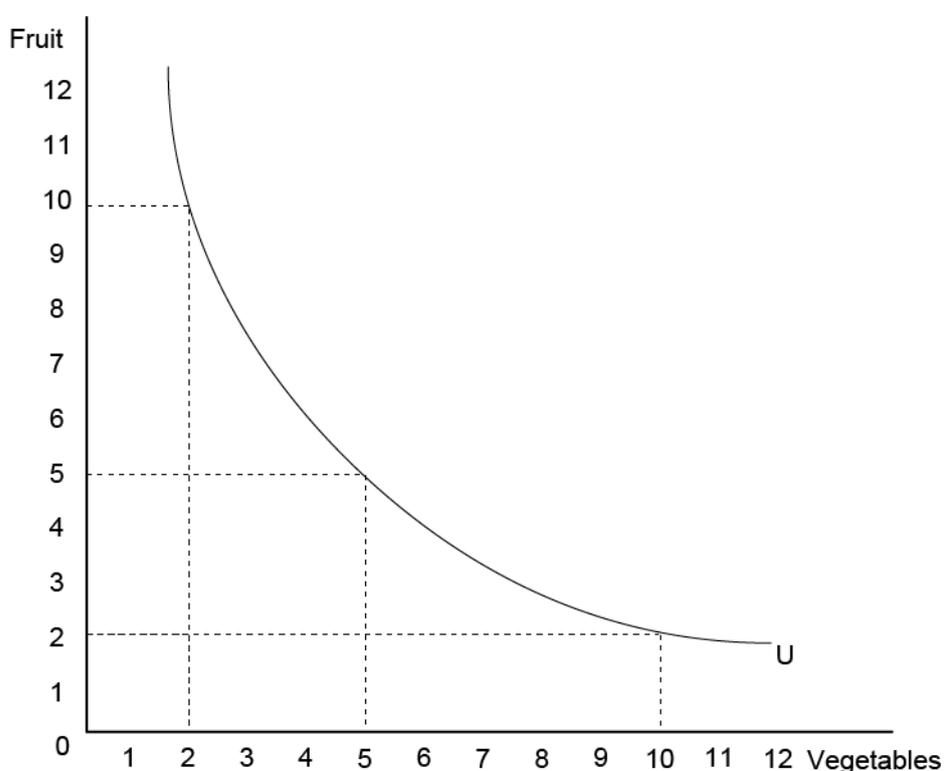
**Example:**

Having 5 fruits and 5 vegetables gives a consumer a utility level U , as he can enjoy both types of food.

Because each point on the line represents the same level of utility, this means that at Point A (2 fruit and 10 vegetables) the consumer will have the same level of satisfaction.

Similarly at Point C (10 fruit and 2 vegetables) the consumer has a utility level of U .

What this means is that at each point along this curve, the consumer is *indifferent* to the combination of goods.

**Illustration:**

Each point shows what combination of goods a consumer requires to have a constant utility. When these points are connected, one has an indifference curve.

From this brief introduction, there are a number of aspects in the analysis of indifference curves that should be considered.

3.4 Characteristics of indifference curves

To get a greater understanding of indifference curves, it will help to define some of the properties that they possess and in doing so, explaining some of the background to their importance.

Negatively sloped

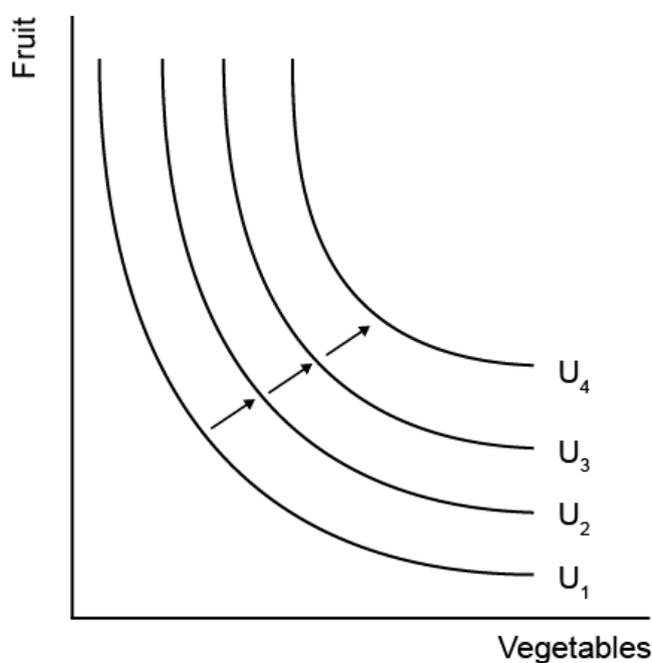
An indifference curve will always slope from left to right. This is because if someone increases their consumption of one good, in order to maintain the same level of satisfaction, he must decrease his consumption of the other.

Higher indifference curve equals higher level of utility

An indifference curve that lies to the right of another represents a higher level of satisfaction than the other. Another way of saying this is that the combination of goods on the curve that is farther out is preferred by a consumer to a combination of goods on a lower indifference curve.



Illustration:



Here, U_4 is preferred to U_3 which is preferred to U_2 which is preferred to U_1 .

Convex to the origin

In this instance, convexity means being bowed to the origin. The shape of the curve has to do with how much of one good does a consumer want to exchange for another in order to maintain the same level of utility.

Suppose a consumer has a high level of Good A, and a low level of Good B. In order to reduce his consumption of Good B, and maintain the same utility, he would need to consume even more units of Good A. This is why indifference curves are straighter at the extremes.

Cannot intersect each other

This can be explained through pure logic based on the assumptions of indifference curves and is aided by an understanding of the transitivity rule.

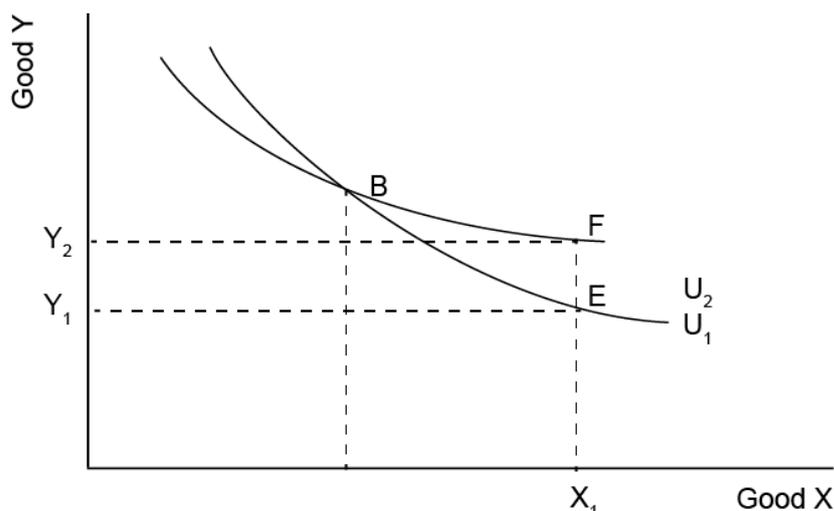


Definition: Transitivity

A rule that implies an agent's decisions are consistent

If a consumer prefers Good A to Good B, and Good B to Good C, then it can be inferred that the consumer also prefers Good A to Good C.

It is important in the context of indifference curves and leads to the following explanation.

**Illustration:**

The curves intersect at Point B.

As they are on the same curve, the consumer must therefore be indifferent also towards Point F as it also yields U_2 .

Point B is also on the same curve as Point E, meaning the consumer will be indifferent between those two also.

However, we can see that Point F is preferable to Point E because the consumer can get $Y_2 - Y_1$ extra of Good Y, whilst in both cases receiving X_1 of Good X.

This therefore means that the curves are illogical.

Curves do not touch horizontal or vertical axis

Indifference curves show the combinations of goods that yield the same utility. It does not show what happens if someone consumes just one of the products, and that would be the case should the curve touch one of the axes.

3.5 Slope of indifference curves

The slope of an indifference curve changes at different points along its length.

To find the exact slope of the curve means finding the Marginal Rate of Substitution at a certain point.

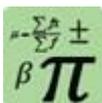


Definition: Marginal Rate of Substitution (MRS)

The rate at which a consumer must give up “Good A” in order to obtain one more unit of “Good B” and maintain the same level of utility

The MRS shows that at a certain point, what someone would be willing to trade in order to have the same utility.

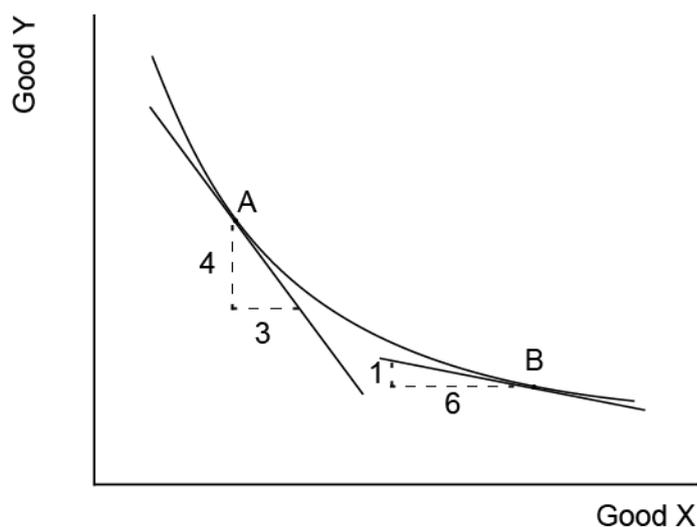
This is done by finding the line tangent to a point on the curve, and calculating the change in Y, divided by the change in X.

**Formula: Marginal rate of substitution**

$$\frac{\Delta y}{\Delta x}$$

where Δ means "change in"

This is shown at two different points on the diagram below.

**Illustration:**

At Point A, to maintain the same level of utility, one reduces consumption of Good Y by 4, and increases consumption of Good X by 3.

At Point B, to maintain the same level of utility, one reduces consumption of Good Y by 1, and increases consumption of Good X by 6.

Doing the calculations, this means the MRS has changed from:

$$-\frac{4}{3} \text{ (-.. 33)} \quad \text{t} \quad -\frac{1}{6} \text{ (-.. 667)}$$

At Point A, the consumer would be willing to give up 4 units of Good Y (hence why it has a minus sign), in order to gain 3 units of Good X.

At Point B, the same consumer would only be willing to give up one item of Good Y (because he has so few) and would need 6 units of Good X in return to keep the same utility.

The steeper the curve, the more of Good Y you are willing to give up for an increment of Good X. This means that the *Marginal Rate of Substitution is higher in this case.*

3.6 Consumer equilibrium



Definition: Consumer equilibrium

The amount of goods and services which is possible for the consumer to buy, given their income and the prices in the market.

The consumer is in equilibrium at a point where the price line is tangent to the highest attainable indifference curve from below.

The combination choice that a consumer makes in his decision is not solely down to the marginal utilities of the products. There has to be some constraint on what he chooses – and this comes in the form of income.

In our example, the choice of either having Fruits or Vegetables is assuming that a consumer can have whatever he pleases. If he has 5 fruits and 5 vegetables, then he could increase his utility by having 7 fruits and 5 vegetables, say.

The further out a utility curve is, the greater the utility of the consumer.

Depending on the level of income, the consumer is constrained to a combination of goods that he can purchase.

Derivation of the budget line

Each consumer will have an income, and with that income he is able to purchase a combination of two goods.

Their total income can be split between these two in many different ways. The calculation for this expenditure is as follows:

$$\text{Expenditure} = (P_a * Q_a) + (P_b * Q_b)$$

Because the expenditure part of the equation is fixed by the income, the price and quantity of Goods A and B must equal this amount.



Example:

The price of Apples is Rs.2 and the price of carrots is Rs.1.50.

Omar has a budget of Rs.30.

If he chooses to buy 8 carrots, how many apples can he buy?

$$30 = 2A + (11.00)$$

$$30 - (11.00) = 2A$$

$$A = \frac{30 - (11.00)}{2} = 9$$

Omar is able to buy 9 apples.

The different combinations of goods can be shown in the form of a *budget line*.

The budget line shows the combinations of both goods that the consumers can afford with their income. To work out where to draw the budget line, it is necessary to divide the total income by the price of each good. This shows the maximum quantity a consumer could buy if he were to devote all of his income to just one good.

The straight line between these two points represents the budget line.

- All points along it show combinations of goods that are affordable
- Any point to the right of the budget line is unaffordable
- Any point to the left of the budget line is affordable, but inefficient.

Slope of the budget line

The slope is representative of the relative price between the two goods. In order to draw a line, first find the extreme points that touch the axes.

It is calculated in the following manner:

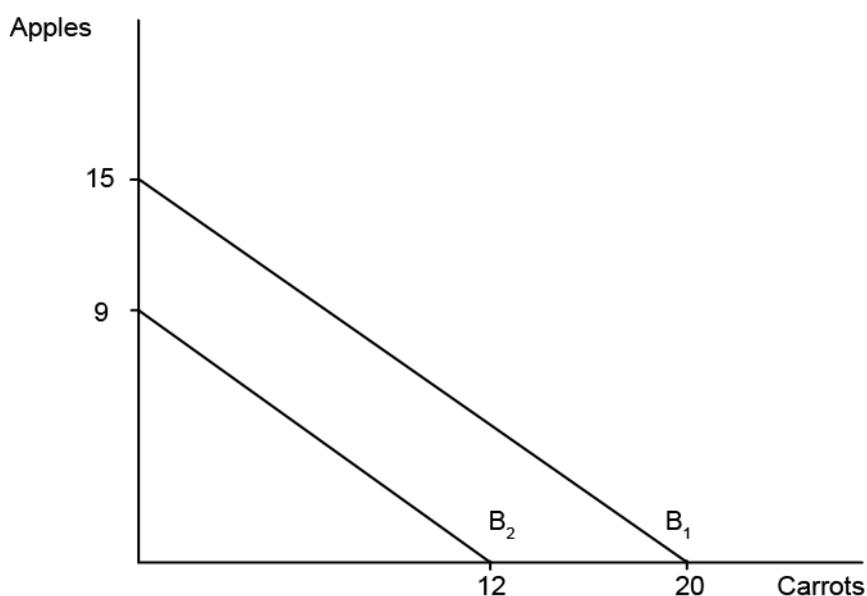


Example:

The price of Apples is Rs.2 and the price of carrots is Rs.1.50.

At first, Omar has a budget of Rs.30 meaning that his budget line is B₁.

He then loses some money meaning that his budget now becomes Rs.18, meaning the new budget line is B₂



When finding the points at which it crosses on the X and Y axis, the following calculations are performed:

$$\frac{30}{2} = 15 \text{ (apples)}, \frac{30}{1.50} = 20 \text{ (carrots)}$$

When Omar's budget falls, the following calculations are:

$$\frac{18}{2} = 9 \text{ (apples)}, \frac{18}{1.50} = 12 \text{ (carrots)}$$

In this instance, the slope of the budget line has remained the same – it has simply shifted.

Throughout, it is the same as the relative prices, in this case: $\frac{2}{1.50} = 1.33$. In words, *the opportunity cost of one carrot is 1.33 apples.*

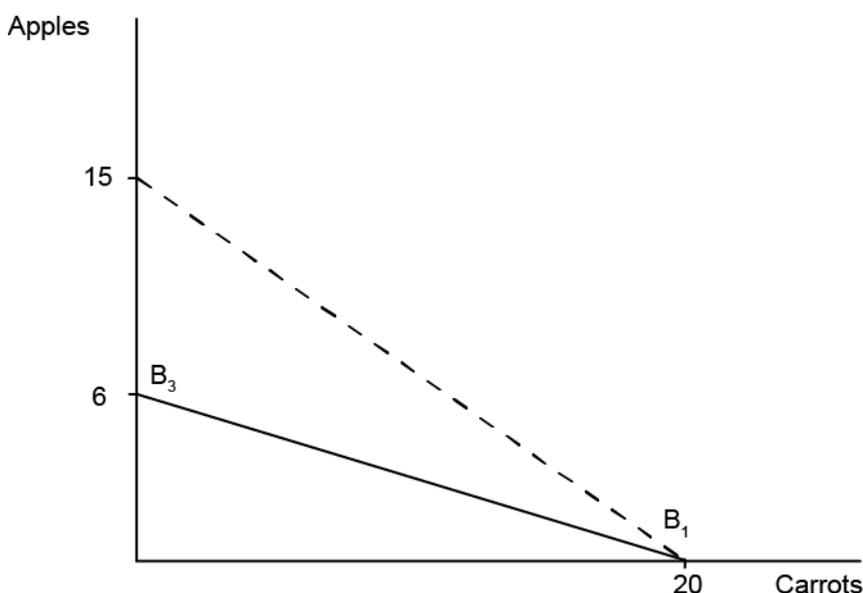
Change in price

However, if there is a change in price of one of the products, then this affects the slope of the line.

**Example:**

Let's assume Omar has his income of Rs.30 again.

The price of Apples goes from Rs.2 to Rs.5, whereas the price of carrots remains at Rs.1.50.



Now when finding the points at which it crosses on the X and Y axis, the following calculations are performed:

$$\frac{30}{5} = 6 \text{ (apples)}, \frac{30}{1.50} = 20 \text{ (carrots)}$$

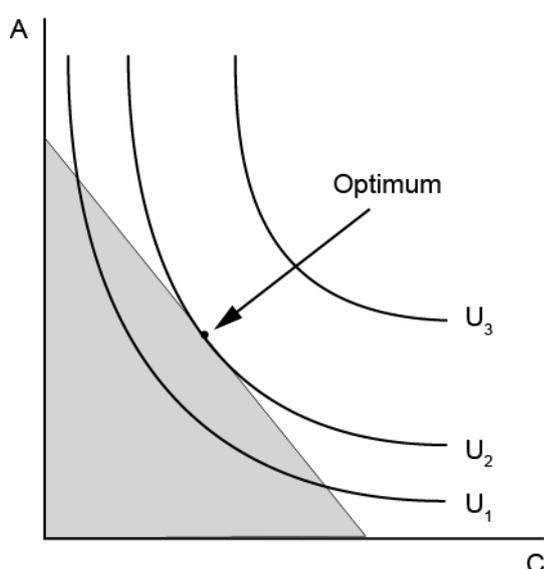
This is represented by B3 on the graph

3.7 Combining budget lines and indifference curves – Law of equi-marginal utility

Now that we have seen how both budget lines and indifference curves can be drawn, they can now be considered on the same indifference map.

The objective of the consumer is to maximise his utility, and therefore be on the highest indifference curve possible to him.

The budget line constrains the maximum utility available to the consumer. Any point to the right of a budget line is unattainable. This means that the maximum utility available to the consumer is a point on an indifference curve that is tangential to the budget line. This point is called the optimum.

**Illustration:**

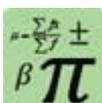
The shaded area is affordable, given the current budget.

U_1 is attainable, but inefficient

U_3 is unattainable

The optimum on U_2 is the most efficient point. At no other point could the consumer have a higher utility given the constraints of the budget line.

The most efficient (optimal) point can be more formally identified using the following formula:

**Formula: Optimum**

$$MSS_{xy} = \frac{MU_x}{MU_y} = \frac{P_x}{P_y}$$

Where:

MRS_{xy} = marginal rate of substitution between good X and good Y

MU_x = marginal utility of Good X

MU_y = marginal utility of Good Y

P_x = price of Good X

P_y = price of Good Y

This relationship is the point of tangency of the budget line to the indifference curve in the above diagram.

The formula has a simple interpretation. At the optimum, the marginal utility per rupee spent on Good X equals the marginal utility per rupee spent on Good Y. If this were not the case the consumer could increase his utility by spending say Rs. 10 less on the good with the lower marginal utility and using the Rs. 10 to buy the good with the higher marginal utility. However, this is not possible as this point is the optimum.

This is known as the law of equi-marginal utility or the law of substitution.

This can be explained further through an example:

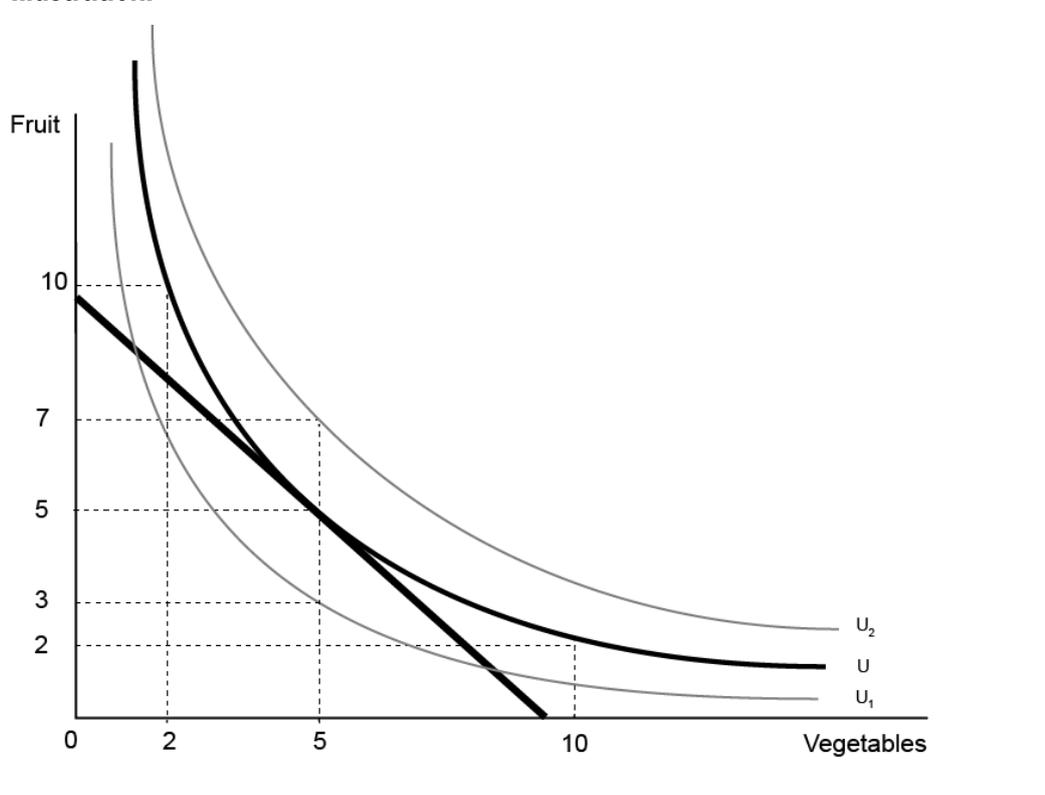


Example: Indifference map of Fruit and Vegetables

At the optimal point, it is impossible for the consumer to increase his utility, without violating the current budget line.



Illustration:



On indifference curve of U_1 , the combination of 3 Fruits and 5 Vegetables is *not optimal* because a higher state of utility is possible at 5 Fruits and 5 Vegetables.

The consumer would have a higher utility at 7 Fruits and 5 Vegetables on indifference curve U_2 however that is not possible as it is to the right of the budget line. Similarly, the consumer would have higher utility at 10 Fruits and 2 Vegetables or 2 Fruits and 10 Vegetables but again both of these are not possible as they are to the right of the budget line.

The optimum (the optimal point) occurs where the indifference curve and the budget line are tangent. This is at the consumer equilibrium.

Importance of the law of equi-marginal utility

The law shed insight into several areas including the following.

- ❑ **Consumption:** The law indicates how a consumer is able to make the best choice of his wants to gain maximum total satisfaction. It suggests how consumers achieve the optimum allocation of their income and expenditure. In other words, it determines the relative demand for different goods.
- ❑ **Production:** The law indicates how a producer can allocate his resource to achieve the optimum allocation of resources. This is where the last unit of investment expenditure brings equal productivity to all the factors of production employed.

Assumptions underlying the law of equi-marginal utility

The law of equi-marginal utility rests on the following assumptions:

- The consumer behaves rationally and seeks to maximize his total satisfaction.
- Utility is measurable in cardinal terms.
- The consumer has a given scale of preference for the goods in consideration.
- The consumer has perfect knowledge of utility derived from goods.
- Wants and goods are substitutable.
- Prices of goods are unchanged.
- Consumer income is fixed.
- The marginal utility of money is constant.

3.8 Limitations of the law of equi-marginal utility

Consumer expenditure may not conform to the law due to the following limitations:

Consumers do not make conscious calculations

The operation of the law involves calculations and comparison of the expected satisfaction from an amount of money spent on alternative goods and services.

It is unlikely that consumers do this. Most consumer expenditure is based on habit rather than conscious calculation and comparison of utility per unit of currency.

However, it could be argued that the law explains the actions of rational consumers on a sub-conscious level.

Consumer ignorance

Consumers may be unaware of other available alternatives. In this case no substitution could take place and the law would not operate.

Custom and fashion

Some purchases are made based on custom or fashion rather than on the basis of a rational appraisal of utility. This would distort the operation of the law.

Indivisibility of goods

The operation of the law assumes that goods and services are divisible so that the optimum point might be reached. However, this is not the case in practice.

This prevents the marginal utilities from becoming equalised.

Underlying assumptions

The operation of the law rests on a series of assumptions which might not hold in practice.

4 EXTENSIONS OF INDIFFERENCE CURVES

Section overview

- Introduction
- Using the budget line
- Substitution effect
- Income effect
- Price effect
- Price change with an inferior good

4.1 Introduction

From all of the information that we have now gathered, it is possible for us to use the indifference curves to undertake more analysis on different types of products. The fact that the budget line pivots with a price change is useful for working out what the income and substitution effects are on a product.

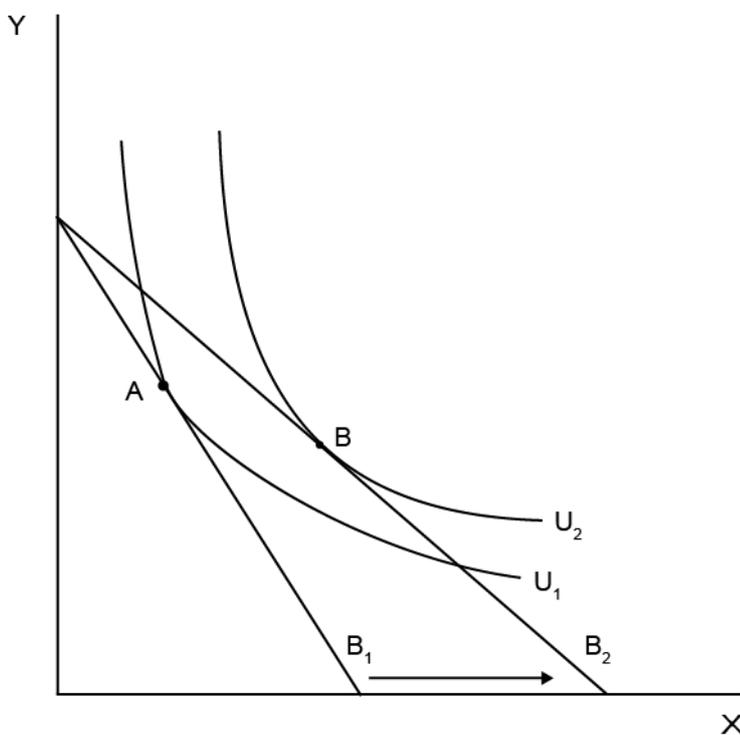
4.2 Using the budget line

We have seen how a change in the price of a good causes the budget line to pivot.

It will be useful to analyse a scenario of a price change, and how that affects the equilibrium position on an indifference curve.



Illustration:



This shows that when the price of Good X decreases, the equilibrium changes from A to B, and in doing so, taking the consumer to a higher indifference curve

What has caused this change?

Recalling from an earlier chapter, when the price of one good changes, this affects the quantity bought of the other – the *cross price elasticity of demand*.

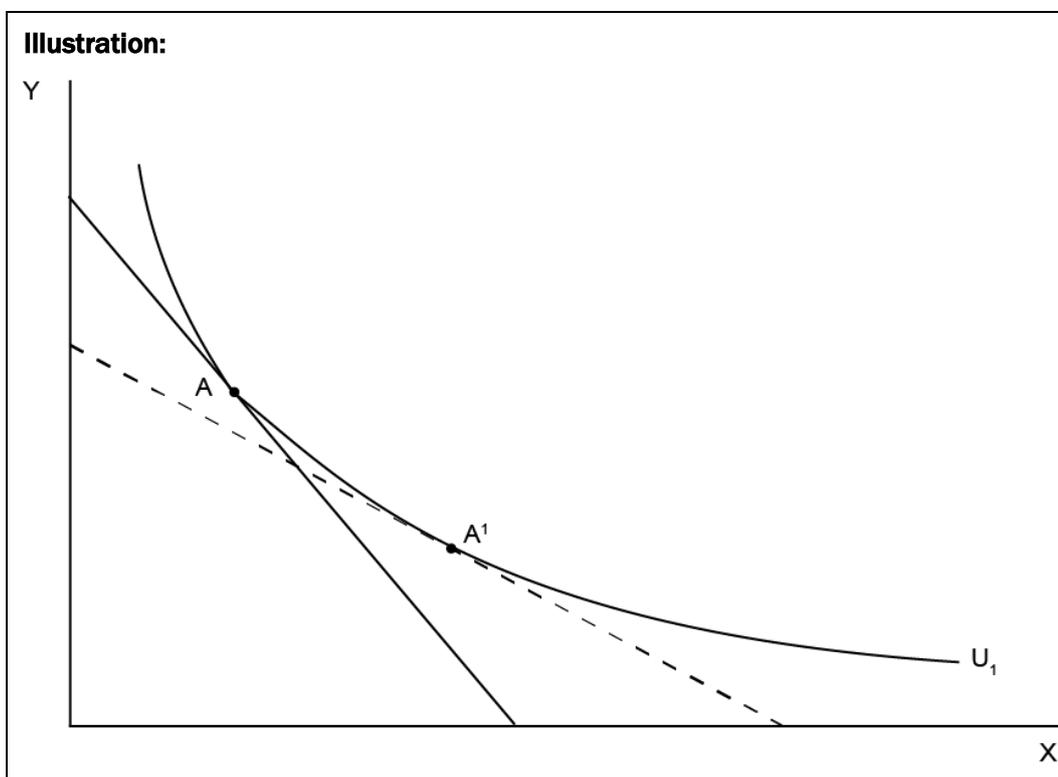
There has been a *substitution effect*, and an *income effect* involved in this change.

4.3 Substitution effect

So to start, we shall analyse the substitution effect.

The price of Good X falls, meaning that the consumer wishes to buy more of it.

However, there is also the income effect, which can also affect the quantity demanded. Therefore we use indifference curve analysis to isolate the movement.



The dotted budget line is tangential to the new budget line, and therefore represents the same real income.

In looking at the substitution effect, we are seeing what the consumer would have demanded, were the relative prices the same.

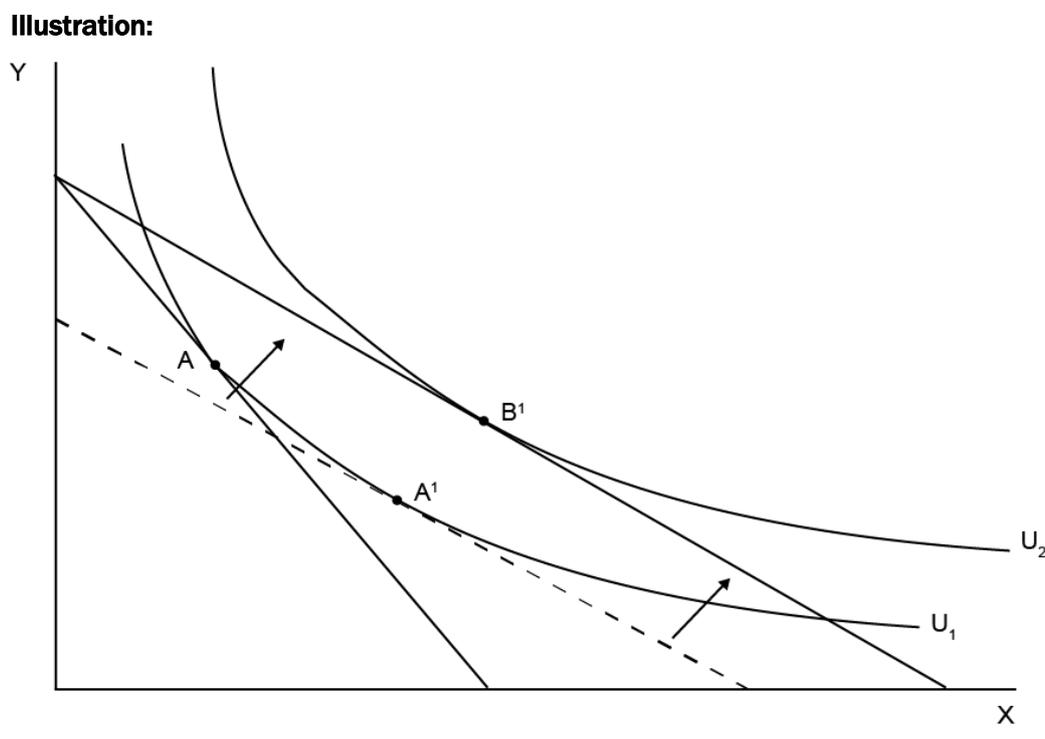
To do this we keep the consumer utility constant at U_1 , and find the point where the dotted budget line is tangential. This is then a new bundle of goods which occurs at A' .

Point A' is the bundle of goods that would have been bought if the relative prices were post-price change, but if the consumer didn't experience the increase in income that came with it.

4.4 Income effect

The next step then, is to see the income effect.

As we know from earlier study, a rise in income causes a *parallel shift* in the budget line. To isolate it, we take the bundle of goods (A') that would have been bought were the relative prices the same, and push out the budget line to the new utility curve, U_2 .



This shows that, from point A' , what would happen to consumption of both goods with the increase in income.

In this case, the additional income meant the consumer would choose bundle B , which is an increase in consumption of Good X and Good Y .

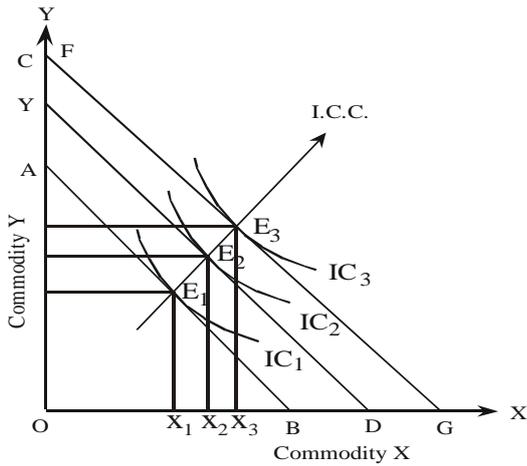
The concept is explained in detail with the help of the following cases:

- (i) Income effect for normal goods.
- (ii) Income effect when good 'Y' is inferior.
- (iii) Income effect when good 'X' is inferior.

The above situations are explained with the help of diagrams as under:

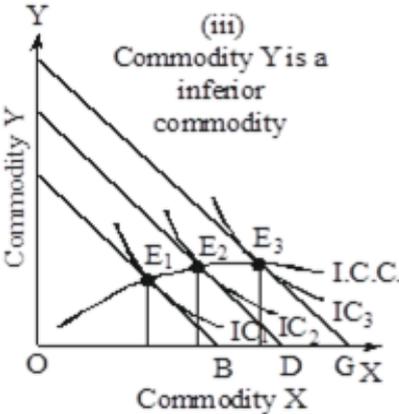
Income effect for normal goods:

Normal goods are those goods whose demand rises with an increase in income and falls to a decrease in income. Therefore, to an increase or decrease in income, the Income Consumption Curve (IC) becomes 45° . Because increase or decrease in income affects both the goods generally in similar way.



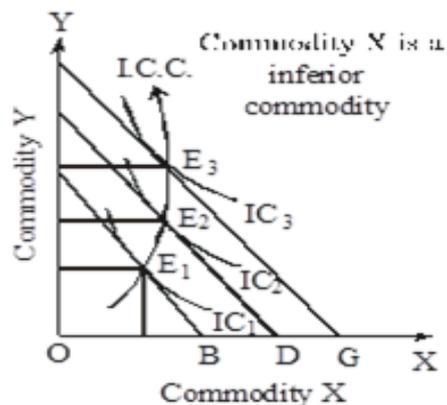
Income effect when good 'Y' is inferior

Income inferior goods are those goods whose demand falls to an increase in income. If income of the consumers increases and the increase in demand is less in proportion that is greater proportion of income is spent on goods 'X' a small proportion of income would be spent on inferior good 'Y'. The income consumption curve bends towards 'x' axis as in figure below.



Income effect when good 'X' is inferior

In case good 'X' is inferior to an increase in income, lesser proportion of income is spent on good 'X' while larger proportion of in income is spent on good 'Y' so the income consumption curve bends towards 'Y' axis as shown in the figure.



4.5 Price effect

Price effect shows change in the consumer's equilibrium when price of one good changes while the price of another good and consumer income remains constant.

It is the aggregate of the

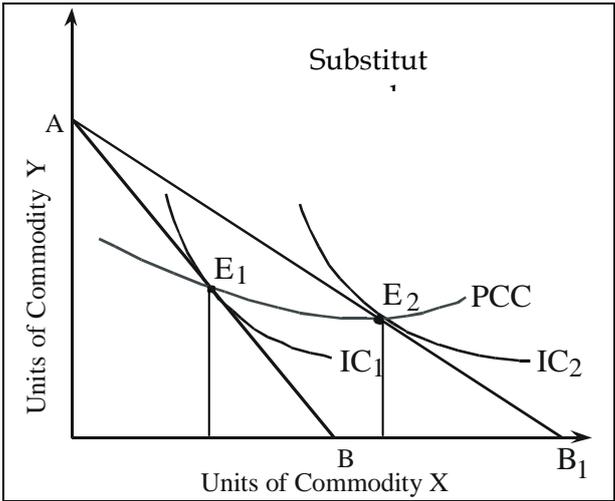
- substitution effect and;
- income effect

Price effect is further explained with the help of the following cases.

- (i) Price effect for substitute goods
- (ii) Price effect for independent goods.
- (iii) Price effect for complementary goods.

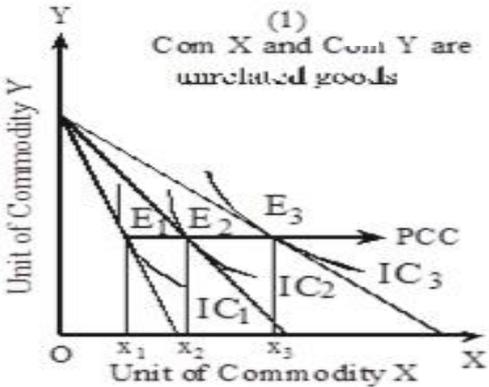
Price Effect for substitute goods

Substitute goods are those goods which are used as alternates. For example different brands / variety of bath soaps, toothpastes, mutton, beef, chicken, vegetables, pulses etc. Due to any fall in price of Good 'X' the demand for the goods will not only increase but also the demand for good 'Y' will fall. Good 'X' would appear to be more cheaper for consumers, so they decrease expenditure on good 'Y' and purchase more of goods 'X' and the price consumption curves slides towards 'x' axis which shows that larger quantity of 'X' and smaller quantity of good 'Y' is demanded as shown in figure below.



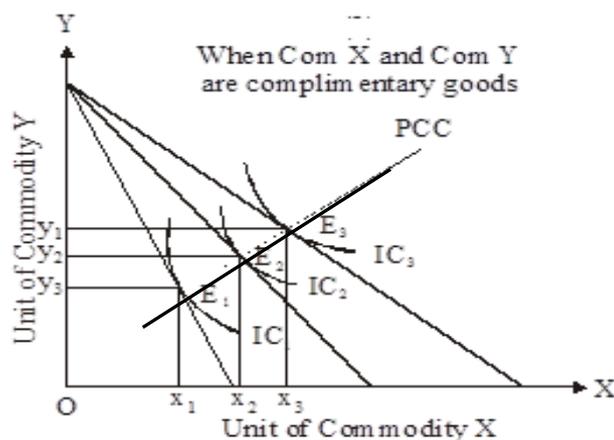
Price effect for independent goods

In case both goods 'X' and 'Y' are independent, any fall in price of 'X' will affect total demand of 'X' only and not going to have any impact on good 'Y'. Therefore the price consumption curve becomes parallel to 'X' axis as figure shown in figure below.

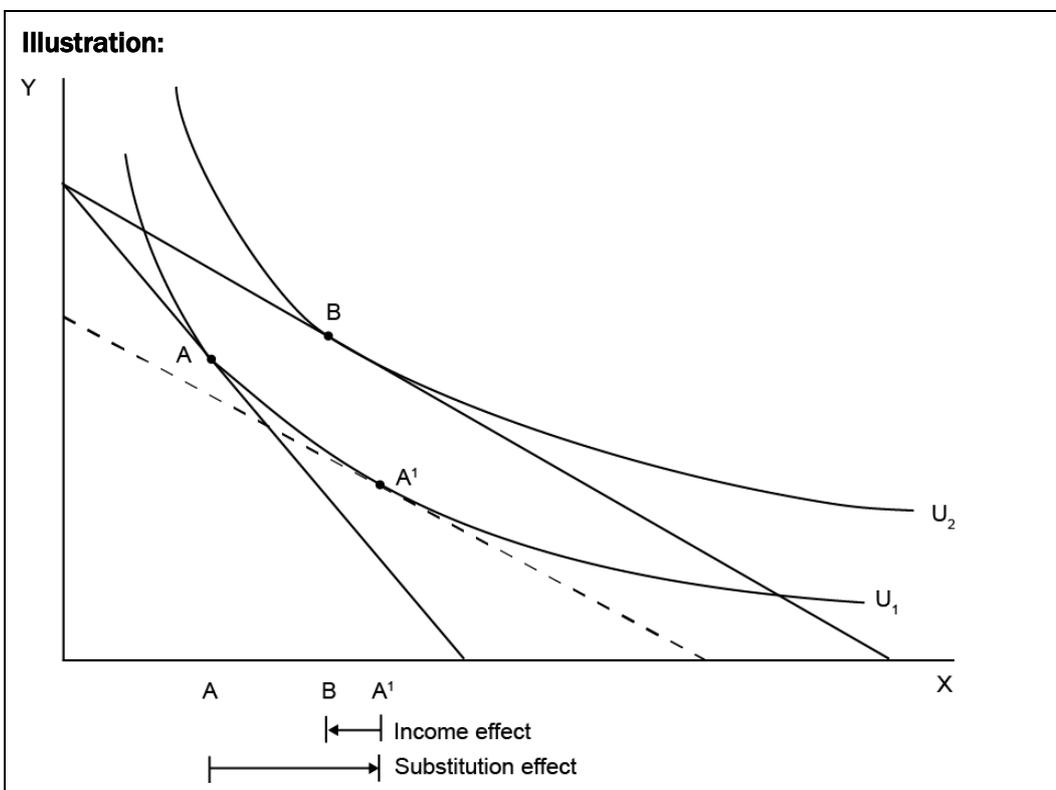


Price effect for complementary goods

Complementary good are those goods which are used in combination. For example motor car and petrol, cricket bat and cricket ball etc. Change in price of goods 'X' not only change the demand of good 'X' but also the demand for good 'Y' changes. Therefore to fall in price of good 'X' the price consumption curve becomes 45° as shown in figure below.



4.6 Price change with an inferior good: Further explanation



Here we see the same price movement as before: a fall in the price of Good X.

Keeping utility constant, were we dealing with the new relative prices, then A' of Good X would be consumed.

The income effect is then brought into place, effectively moving from A' to B. This causes the quantity of B consumed to decrease.

Here the substitution and income effects are working in opposite directions; however the substitution effect dominates the income effect.

We see that the price of Good X falling still leads to an increase in the quantity consumed nevertheless.

In the bizarre instance where income effect dominates the substitution effect, an increase in price will lead to an overall increase in quantity demanded. *This is a Giffen good.*

Costs, revenues and firms

Contents

- 1 Short run costs
- 2 Long run costs
- 3 Revenue
- 4 Firms under different competition

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO1 Understand the nature of micro-economics and its basic concepts.

- LO2.6.1: *Cost and revenue curves:* Discuss short run curves of total cost, total fixed cost, total variable cost, average cost and marginal cost
- LO2.6.2: *Cost and revenue curves:* Derive a long run average cost curve from a short run average cost curve
- LO2.6.3: *Cost and revenue curves:* Derive a long run marginal cost curve
- LO2.6.4: *Cost and revenue curves:* Discuss revenue curves under perfect and imperfect competition
- LO2.6.5: *Cost and revenue curves:* Discuss the concept of economies and diseconomies of scale
- LO2.7.1: *Equilibrium of firm in the short and long term under perfect competition, monopoly, oligopoly and monopolistic conditions:* State the features of perfect and imperfect competition
- LO2.7.2: *Equilibrium of firm in the short and long term under perfect competition, monopoly, oligopoly and monopolistic conditions:* Discuss the short and long run equilibrium of firms under perfect and imperfect competition
- LO2.8.1: *Laws of increasing and diminishing returns:* Explain the law of increasing returns and its application and assumptions
- LO2.8.2: *Laws of increasing and diminishing returns:* Explain the law of diminishing returns and its application and assumptions.

1 SHORT RUN COSTS

Section overview

- Introduction
- Short, long, and very long run
- Types of cost
- Marginal cost
- Relationship between the cost curves
- Laws of costs (or Laws of returns)
- Laws of returns: explanation
- Law of variable proportions
- Increasing and diminishing returns: evaluation

1.1 Introduction

Firms produce goods and services. This production is the supply that allows consumer needs to be met. During the process of production, the business incurs costs. This chapter explains cost behaviour. That is to say how costs are affected by timescale and volume of output.

An accountant views profit as the difference between selling price and costs. An economist would view normal profit (the acceptable return on capital invested) as one of the costs of the business, being the return to enterprise. However, this chapter deals mainly with the explicit costs faced by a firm. Profit earned is not such an explicit cost but it is a return to the providers of capital.

1.2 Short, long, and very long run

Economic analysis examines cost behaviour over different timescales. Three timescales are defined.

Short run



Definition: Short run

That period of time during which at least one factor of production must remain fixed.

As previously explained there are four factors of production for economic goods being land, labour, capital and enterprise. Assuming enterprise is always present during the production process, this then leaves land, labour and capital to vary based upon the time period.

In production, it is almost always *capital* that stays fixed (the factory, machinery etc), as other factors can respond much more flexibly (labour, resources etc.)



Example:

Firm A produces wooden tables in a factory.

Firm A wishes to increase production.

In the short run, the capital (machinery used to cut the wood, say) will stay fixed.

In order to increase production, Firm A needs more materials (wood to make the tables) and more labour (to assemble the wood).

In the short run the increase in cost will be additional cost of the labour and the resources

Long run



Definition: long run

That period of time in which it is possible to vary output by varying all factors of production within the given state of technology.

In the long run, it is assumed that all the factors of production can vary. This means that a new, more efficient factory could be built that would reduce the overall cost of production.



Example:

Firm A continues to increase its production.

Firm A moves to a new factory. This factory has more machinery meaning the time taken to cut the pieces that go into the tables is heavily reduced.

Firm A is also able to vary the amount of labour and resources in the production process to optimise output, and produce at a lower price than before.

In the long run, the cost of production can be reduced, when compared with the short run because all of the factors of production could be optimised.

Very long run



Definition: Very long run

That period during which factors outside the firms' control can vary.

In the very long run all factors of production are variable (as in the long run) but other factors are also variable. For example, exogenous factors such as government rule, social customs and technological advances are also variable. These are beyond the control of a firm, and mean the cost of production can vary further.



Example:

In the very long run, Firm A can fully optimise its four factors of production, however it is also affected by exogenous factors.

The factory may be subject to a new tax (or subsidy) on using wooden products, which would affect production costs.

1.3 Types of cost

From understanding the characteristics of different time periods, we shall next explore the different types of cost involved for a company, which were briefly touched upon in the previous section.

As we saw, in the short run, at least one factor of production must remain fixed. This means that there are some costs known as fixed costs, which *remain constant regardless of the level of input*.

Fixed cost

Existing only in the short run, these costs are unaffected by how much is produced. If there was no production whatsoever, these costs would still be incurred.

**Definition: Fixed cost**

Costs that do not vary with the level of output. (They do not change if output changes).

Returning to Firm A and its production of wooden chairs, we can explore the concept further.

**Example:**

The fixed costs associated with Firm A are those that would still have to be paid, even if there was no output.

Examples of these are: rental cost of the building, rates/land taxes paid to local authorities, costs of full-time contracted staff, and cost of business insurance.

Average fixed cost**Definition: Average fixed cost**

$$\frac{\text{Total fixed costs}}{\text{Output}}$$

The fixed costs of a business are known as the overheads. A useful indicator for businesses to look at is the average fixed cost. If a firm can increase its scale of operations, the fixed costs are spread over more units thus reducing the average fixed cost.

**Example:**

Firm A has the following costs with its business:

| Types of cost | Amount (Rs.) | Output of 100 units | Output of 500 units | Output of 1,000 units |
|-------------------------------|--------------------------|---------------------|---------------------|-----------------------|
| Fixed costs | | | | |
| - Building rent | 100,000 | | | |
| - Business insurance | 20,000 | | | |
| | 120,000 | | | |
| Average fixed cost: | | | | |
| | Rs.120,000 ÷ 100 units | Rs. 1,200 | | |
| | Rs.120,000 ÷ 500 units | | Rs.240 | |
| | Rs.120,000 ÷ 1,000 units | | | Rs. 120 |
| Variable costs (/unit) | | | | |
| - Manual labour | 1,000 | | | |
| - Wood | 500 | | | |
| - Screws | 200 | | | |
| | 1,700 | 1,700 | 1,700 | 1,700 |
| Average Total Cost | | 2,900 | 1,940 | 1,820 |

As the quantity of output increases, the average fixed cost decreases. This will always be the case, as the fixed cost is being spread over more and more units.

Variable cost



Definition: Variable cost
 Costs that vary as the level of output varies.

This means that the costs to the firm will increase with every extra unit of output. As stated earlier, in the long run, all factors of production are variable, so this is an important concept.



Example:
 The variable costs associated with Firm A are shown in the previous example. With each additional unit of output being produced, there is a clear cost associated with it.
 The additional cost of each additional table is Rs. 1,700.

Average variable cost



Definition: Average variable cost

$$\frac{\text{Total Variable Cost}}{\text{Quantity of Output}}$$

The information provided for Firm A shows a variable cost per unit that does not change with the level of output. Every extra unit of output had a variable cost of Rs.1,700.

This is not always the case. Usually, variable costs are more or less constant up to a certain level of output after which they increase.



Example:
 Suppose Firm A employs 4 people to assemble tables and that these assemble 10 tables each per day. A 5th and 6th employee (on the same wages as the others) might each also assemble 10 tables each. This would mean that the labour cost per table would be unchanged.
 However, the 7th employee (on the same wages as the others) might result in a reduction in the average number of tables per employee thus increasing the labour cost per table.
 This is because space might be limited and employees might have to wait for sufficient space to finish a job or that employees now have to queue to receive wood from the stores whereas before there was no waiting time previously.

This effect is known as the law of diminishing returns (or the property of diminishing marginal product).

**Example:**

Firm B has the following cost structure:

| Types of cost | Amount (Rs.) |
|---|--------------|
| Fixed costs | |
| - Building rent | 50,000 |
| - Business insurance | 10,000 |
| Variable costs (per unit for units 0-10) | |
| - Labour | 800 |
| - Materials | 400 |
| - Energy costs | 1,200 |
| Variable costs (per unit for units 11-500) | |
| - Labour | 900 |
| - Materials | 400 |
| - Energy costs | 800 |
| Variable costs (per unit for units 501-1000) | |
| - Labour | 1,500 |
| - Materials | 400 |
| - Energy costs | 700 |

Disregarding the fixed costs, if we look solely at the variable costs, then these will change at different levels of output. Remember, that because the costs are given on a “per unit” basis already, it is not necessary to divide by output again.

| Output | Average variable cost |
|--------|---|
| 5 | (Rs.800 + Rs.400 + Rs.1,200) = Rs.2,400 |
| 250 | (Rs.900 + Rs.400 + Rs.800) = Rs.2,100 |
| 750 | (Rs.1,500 + Rs.400 + Rs.700) = Rs.2,600 |

This shows us a number of interesting points. For Firm B, at different levels of output, its variable costs will change. We can see that the average cost of:

- energy (power to run machines etc) decreases as output increases
- labour increases as output rises, this is because more skilled labour (i.e. managers) is required at higher levels of output, hence increasing the average cost.

Total cost

Bringing the two costs (fixed and variable) together, we have a figure for the total cost to the firm.

**Definition: Total cost**

All of the expense to produce each level of output

Total cost = Fixed cost + Variable cost

This will vary from firm to firm, as each will have different fixed costs, and variable costs.



Example:

For Firm B, we can calculate the total cost of production at a certain point, say 200 units.

If we recall:

| Types of cost | Amount (Rs.) |
|---|--------------|
| Fixed costs | |
| - Building rent | 50,000 |
| - Business insurance | 10,000 |
| Variable costs (per unit for units 11-500) | |
| - Labour | 900 |
| - Materials | 400 |
| - Energy costs | 800 |

Therefore at 200 units, the calculation will be:

$$\begin{aligned}
 & (Rs. 00,000,000,000,000) + [**** (00000000000)] \\
 & ((Rs. 00,000 + Rs. 220,000) \\
 & \text{,,,,,,} \quad \text{,, } 0
 \end{aligned}$$

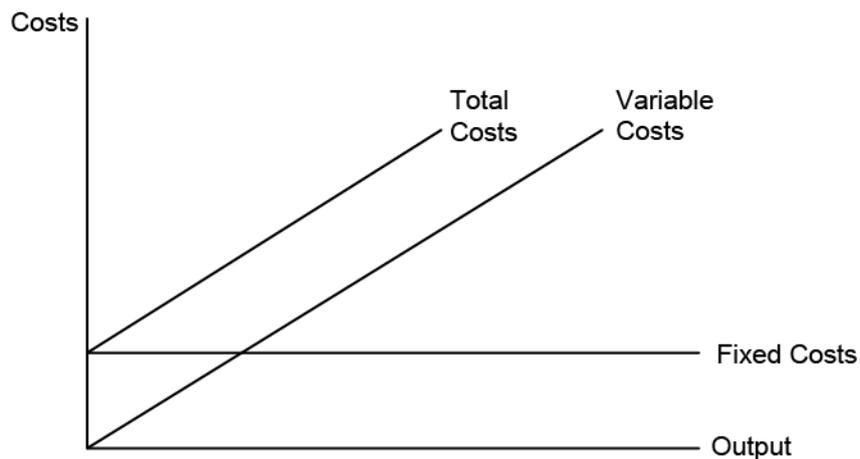
At 600 units, the calculation will be:

$$\begin{aligned}
 & (Rs. 00,000,000,000,000) + [**** (++++++00000)] \\
 & (Rs. 00,000 + Rs. , 66,, 000) \\
 & \text{,,,,} \quad \text{,, } , 000
 \end{aligned}$$

The concept of total cost can be represented in a graphical form as well:



Illustration:



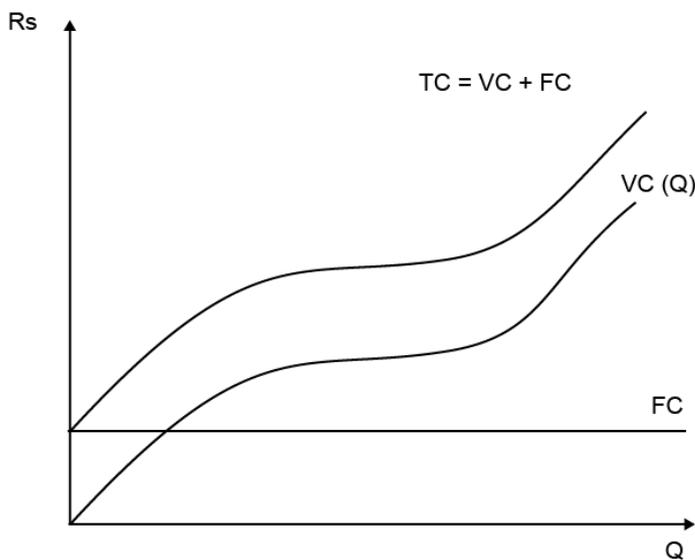
This shows the cost structure for Firm A, whereby the variable costs remain the same for each incremental increase in output.

The assumption of constant proportion is not present in most firms, however this is the simplest form of displaying the relationship between the three costs.

The illustration below shows the cost curves for a firm where the average variable cost changes at different levels of output.



Illustration:



Here, the variable costs of a firm like Firm B increase at a declining rate, flatten out, and then increase further afterwards.

This idea of changing rates at different points along a curve is explored in greater detail in the section of “Production and Profit”.

Average total cost

A simple continuation of finding the total cost is to find the average total cost, which is used to indicate what costs have gone into making a unit at each level of output.



Definition: Average total cost (or average cost)

All of the expense to produce each level of output, divided by the total number of units

$$\text{Average total cost} = \frac{\text{Total cost}}{\text{Unit of output}}$$

It can also be calculated as: Average Fixed Cost + Average Variable Cost

The short-run average cost curve is U shaped:

The average cost is made up of an average fixed cost per unit plus an average variable cost per unit.

Average fixed cost will fall as the level of output rises. Spreading fixed costs over a larger amount of output is a major reason why (short-run) average costs per unit fall as output increases.

The standard assumption about the variable costs is that up to a certain level of output, the variable cost per unit is more or less constant but will rise when output increases beyond a normal capacity level. This reaches a point where the downward pressure due to the fall in average fixed cost is outweighed by the upward pressure of increase in average variable cost (due to law of diminishing returns) thus giving the curve a U shape.

1.4 Marginal cost

Then finally we have the marginal cost. Though this may seem similar to variable costs, the marginal cost will change at various levels of production. Also as we will see later, it is very important to the decisions that a firm will make.



Definition: Marginal cost

The addition to total costs resulting from increasing output by one Unit. i.e. the variable costs of the last Unit produced

This is better explained through an example



Example: Calculating marginal cost

| Output | Total cost | Marginal cost (in bold) |
|--------|------------|----------------------------|
| 0 | Rs.500 | Rs.500 |
| | | Rs.300 |
| 1 | Rs.800 | Rs.800 |
| | | Rs.250 |
| 2 | Rs.1,050 | Rs.1,050 |
| | | Rs.200 |
| 3 | Rs.1,250 | Rs.1,250 |
| | | Rs.300 |
| 4 | Rs.1,550 | Rs.1,550 |
| | | Rs.500 |
| 5 | Rs.2,050 | Rs.2,050 |

Once the total costs have been established, it is relatively simple to then calculate the marginal cost between each output level.

We can see here that the marginal cost doesn't stay constant throughout.

Marginal cost (MC) curve

This means that the marginal cost curve for a typical firm is U-shaped. Though different in each case, the reason for this general shape is to do with diminishing and increasing returns.

At the low levels of output, there are still efficiencies that can be made (increasing returns) meaning the cost of producing an extra unit will be less than before, because equipment etc is not being fully utilised.

After a certain point though, this will begin to change, and the cost of producing an extra unit will begin to rise with each incremental increase, as equipment etc reaches capacity, and inefficiencies start to occur.

1.5 Relationship between the cost curves

Now that we have an understanding of the main costs to a firm, we can look at how these curves interact with each other.

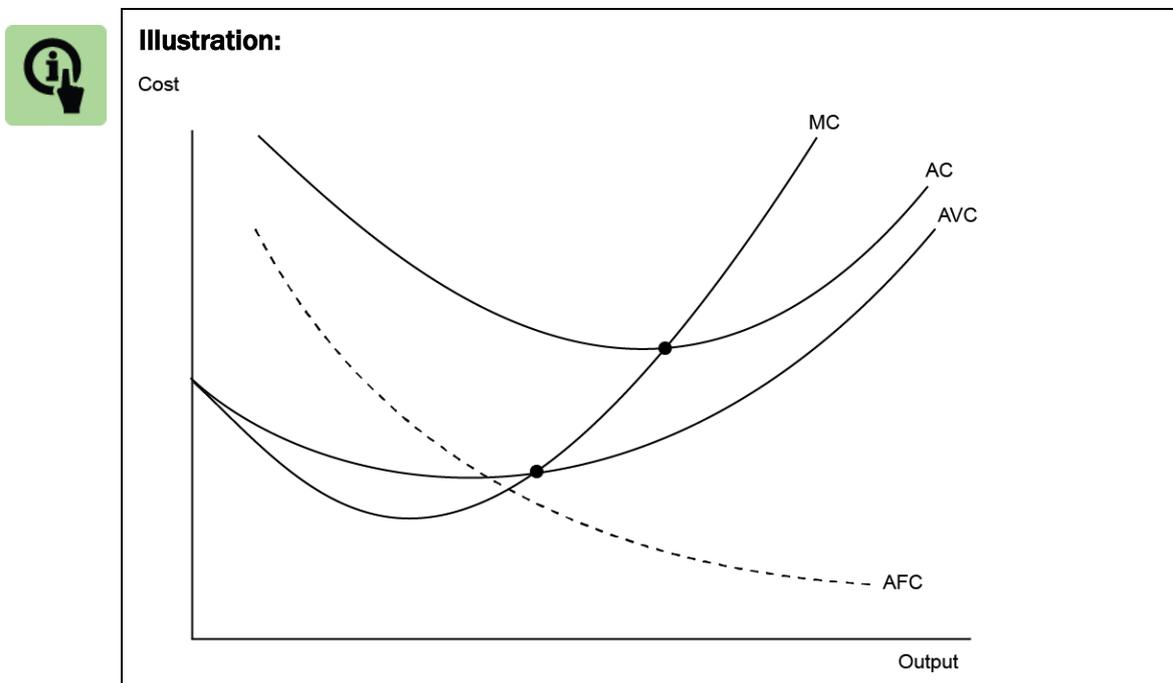
The **marginal cost** is key to understanding how much a firm will want to produce, and therefore supply to the market. By isolating the cost to produce an additional unit of a good, they can accurately assess the cost of increasing output.

The **average variable cost** curve also begins by decreasing, finds a minimum spot, and then increases afterwards.

The **average fixed cost** curve is always downward sloping, because the fixed costs remain constant, and are then spread out more thinly with each additional unit of output.

The **average total cost** curve is the sum of the AVC and AFC curves, so it too is U-shaped.

This can be shown on a cost curve graph below:



There are a number of important points to note from this graph.

- ❑ The inclusion of fixed costs raises the AVC to the AC
- ❑ The MC, AVC, and AC all start by declining, before reaching a minimum point, and then increasing again
- ❑ The AC and AVC are pierced at their minimum points by MC curve

This last point deserves greater discussion.

Any average cost curve will continue to decrease if the MC is less than the AC. If the previous incremental cost was less than the average, then this will naturally bring the average down.

Once the MC becomes bigger than the AC, each additional unit will add cost which is greater than the average, thereby increasing the average.

This principle is the same with the AVC curve also, which is why the marginal cost curve crosses it at its minimum point.

1.6 Laws of costs (or Laws of returns)

There are three laws of costs that we will examine here:

- Law of decreasing cost (Law of increasing returns)
- Law of constant cost (Law of constant returns)
- Law of increasing cost (Law of decreasing returns as previously as law of diminishing returns)

When costs are decreasing, this is due to the returns on the factors of production exerting increasing returns. For this reason, the two are effectively the same.

These three laws apply at different levels of output for a firm.



Example:

| Output | Fixed cost | Variable cost | Total cost | Average cost | Marginal cost | Phase |
|--------|------------|---------------|------------|--------------|---------------|-------|
| 1 | 100 | 55 | 155 | 155 | 55 | D |
| 2 | 100 | 95 | 195 | 98 | 40 | D |
| 3 | 100 | 130 | 230 | 77 | 35 | C |
| 4 | 100 | 165 | 265 | 66 | 35 | C |
| 5 | 100 | 210 | 310 | 62 | 45 | I |
| 6 | 100 | 272 | 372 | 62 | 62 | I |
| 7 | 100 | 352 | 452 | 65 | 80 | I |
| 8 | 100 | 450 | 550 | 69 | 98 | I |
| 9 | 100 | 570 | 670 | 74 | 120 | I |
| 10 | 100 | 720 | 820 | 82 | 150 | I |

Where:

D = Decreasing

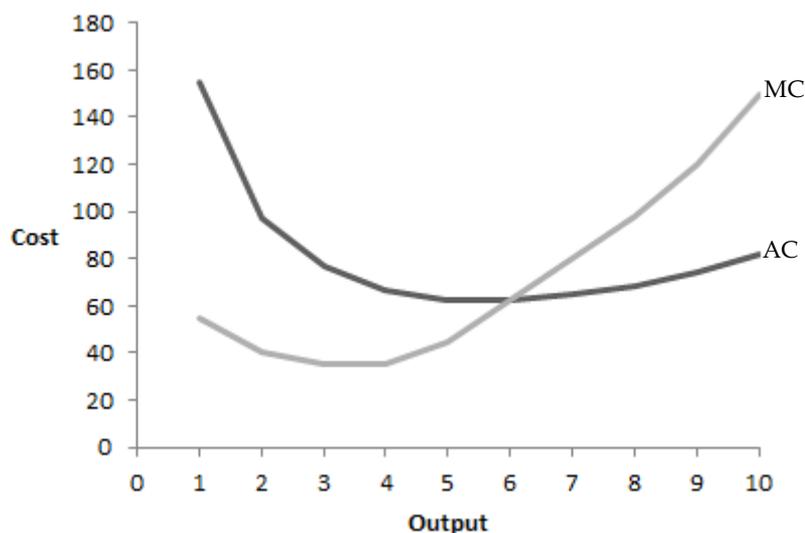
C = Constant

I = Increasing

As output increases, the MC decreases until the third unit. It then remains constant until the fourth unit after which it increases.

This can be explained in terms of marginal productivity. The marginal productivity improves until the third unit. This represents the maximum productivity available and is the point where the most return on the factors of production is earned. Marginal productivity remains constant until the fourth unit after which it deteriorates.

This is represented in a graph below:

**Illustration:**

Average cost continues to fall until $MC = AC$ at which point AC is at a minimum. (Up to this point, the MC of each new unit is less than the AC of units to date. The new unit will thus reduce the average).

1.7 Laws of returns: explanation

After finding the derivation of a marginal cost curve, we look in more detail at the flipside; productivity.

The idea of marginal returns is fundamental to the understanding how costs are formed.

The logic behind this is best explained through an example:

**Example:**

A firm producing widgets (term for a generic good) has two factors of production: the factory, and labour. The capacity of the factory is fixed, and the marginal cost of labour is the same (i.e. each new worker will cost the same).

There are two stages to how marginal cost is affected.

1. Increasing returns (MC goes down)

As output begins to increase, the large manufacturing processes/equipment still not fully utilised means that TC only increases slightly. The additional labour can be productive as they can always use the equipment to its full potential, for example. As such the MC is relatively low.

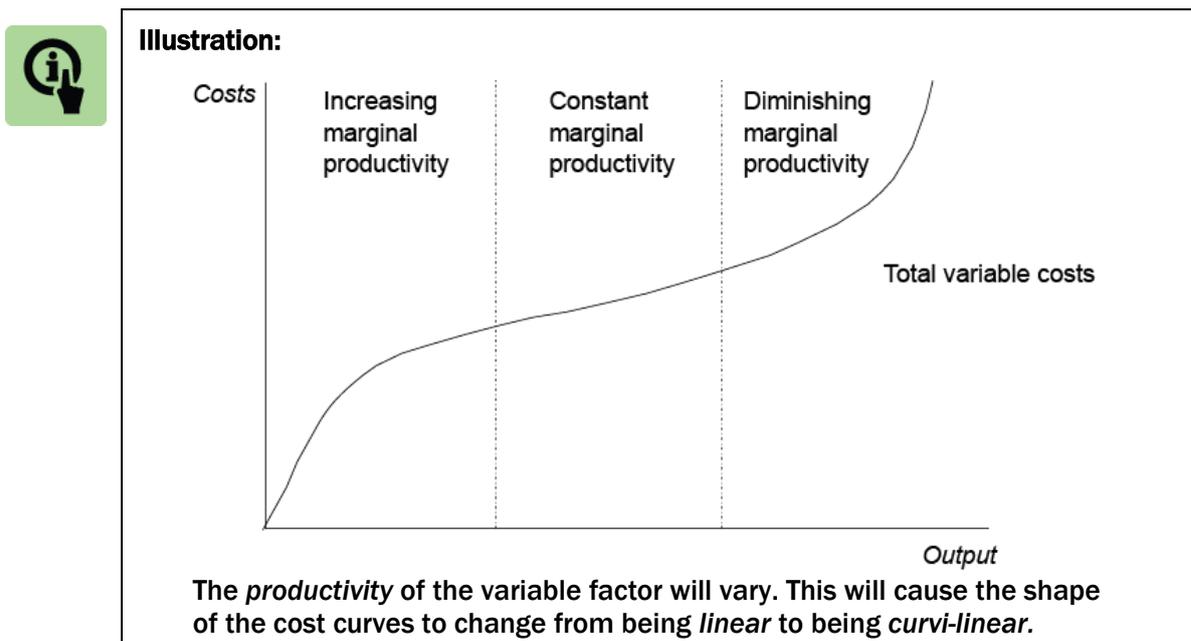
2. Constant returns (MC goes sideward)

At this point, labour is producing its optimal output per unit. The marginal cost is therefore at its lowest.

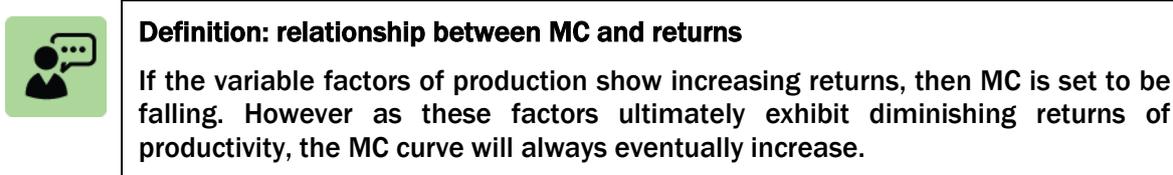
3. Diminishing returns (MC goes up)

The more labour that is employed, the less marginal output it is able to produce. This could be a result of too many people to efficiently operate/ rotate use of machinery. The cost increases more and more to generate an extra unit of output, because of labour exhibiting diminishing returns in the short run.

In general, the productivity of factors of production can be represented as below:



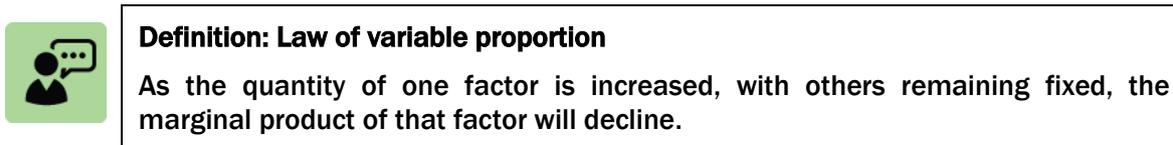
This leaves us with need to formally define the relationship between productivity laws of returns and marginal cost:



1.8 Law of variable proportion

The Law of variable proportion goes on to synthesise a lot of the points and concepts that have been made above.

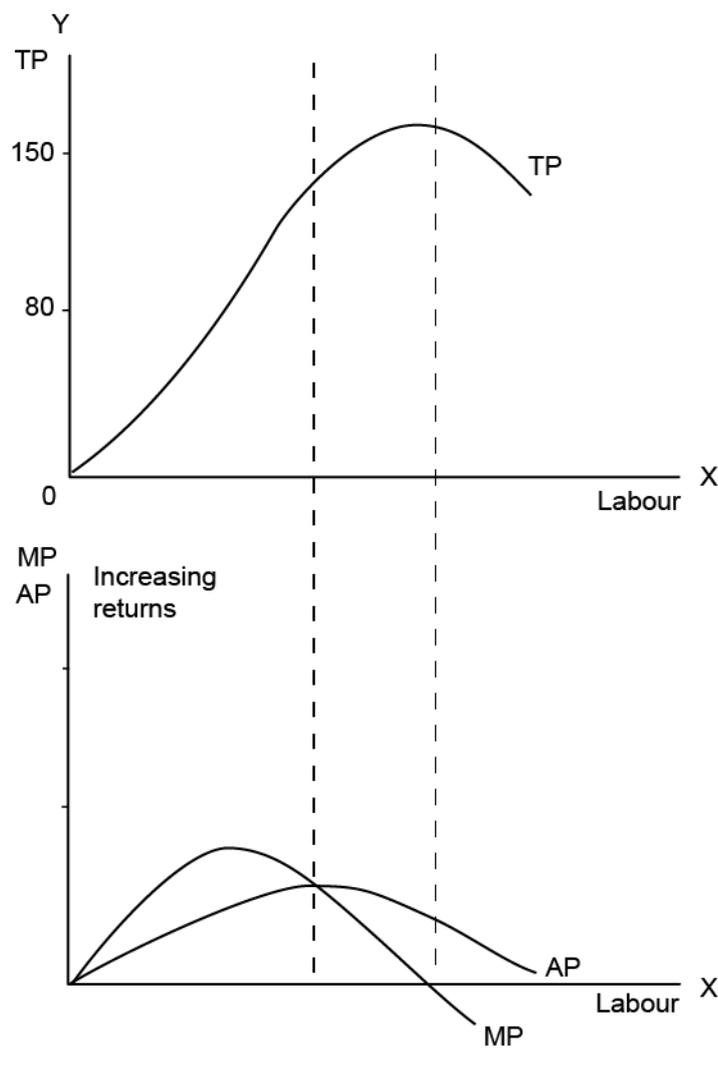
It states:



However, this is dependent on three assumptions:

- Constant state of technology:** if technology improved, then the marginal product could increase also.
- Fixed amount of other factors:** they must stay constant to be able to test it.
- Possibility to combine factors:** the factors must be able to combine to make a product.

In doing so, the productivity of the factor inputs will follow the pattern below:

**Illustration:**

Going through these phases shows how productivity changes with the isolated increase of a factor. This then leads to returns displaying the features that we discussed.

1.9 Increasing and diminishing returns: evaluation

There are a number of points to be considered with regard to the analysis we have done so far on productivity returns. It is important to bear in mind the underlying assumptions that have been made:

Assumptions

Time is so short that fixed factors cannot change.

Labour is the only variable factor, increased output may decrease material costs.

There is no change to the technique of production.

2 LONG RUN COSTS

Section overview

- Introduction
- Diagram
- Economies and diseconomies of scale
- Deriving a long run average cost curve
- Deriving a long run marginal cost curve

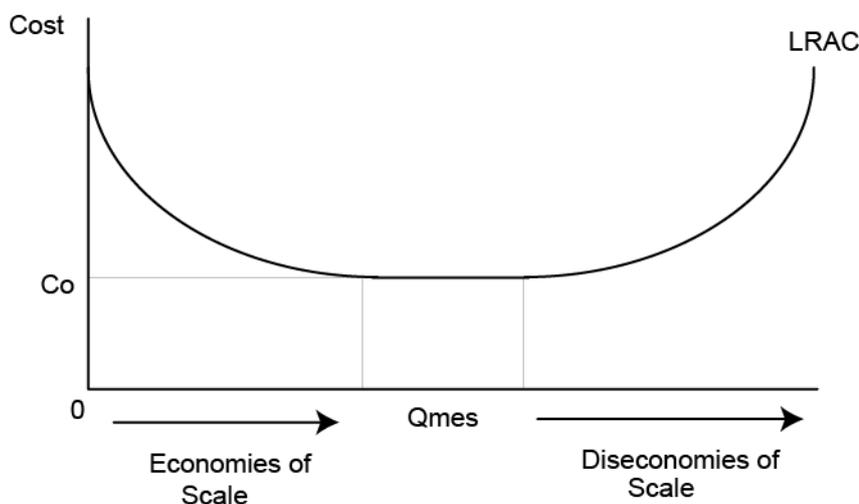
2.1 Introduction

So far we have looked only at the short run, where all but one of the factors of production has been fixed. As you recall, in the long run, all of these factors are variable, and so the average cost of production could fall beyond what it is in the short run.

In our example, if the widget factory is close to capacity, the firm could consider buying a new plant, which could decrease the overall average cost. However this would only be so once a sufficient output was reached to cover the initial cost of buying the new plant which lends itself to this analysis.

First, let us clarify the shape, and some features, of the average cost curve

2.2 Diagram



As the output of the firm increases the unit cost decline up until output level Q_{mes} .

Q_{me} is the firm's minimum efficient scale of output and is where unit costs are minimised because economies of scale are maximised.

After a point further growth may cause unit costs to rise due to the inefficiencies generated by diseconomies of scale.

2.3 Economies and diseconomies of scale

There are a number of factors which affect the unit cost of a product depending on the output.

Cost reducing benefits to large scale production are known as *economies of scale*.



Definition: Economies of scale

Factors which lead to the overall decrease in unit cost, as output increases.

These are usually costs which have similar characteristics to fixed costs, and can be spread out amongst ever greater units, hence reducing the average cost

Examples of these are:

Technical: generate better efficiency through larger quantities of output.

Managerial: able to employ specialist managers to increase efficiencies.

Trading: able to buy and sell in bulk at more optimal prices.

Financial: able to demand better interest rates with more assets as collateral.

External: firms clustering together – development of specialised labour force etc.

The converse of these are diseconomies of scale: cost increasing disadvantages of large scale production.



Definition: Diseconomies of scale

Factors which lead to the overall increase in unit cost, as output increases.

These are often a result of managers/ staff losing control/ motivation as production gets greater. There can also be strains on local infrastructure which come with scale.

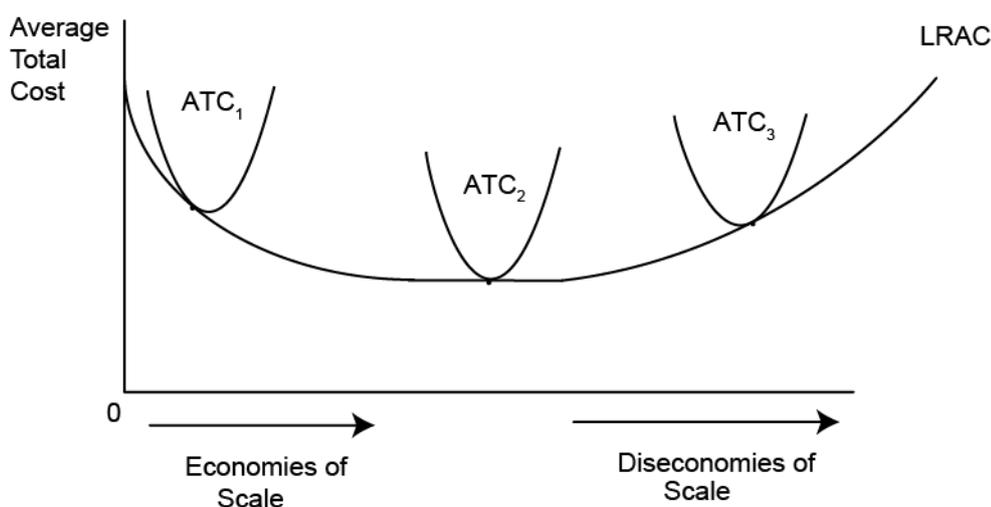
2.4 Deriving a long run average cost curve

From what we know of these curves in the short run, it is possible to make up a long run curve. As mentioned above, this sort of analysis is useful for a firm deciding whether to build a new factory.

They would look at forecasts of what the average costs would be at various levels of future output, and from there, find the output size that leaves them with the optimal average cost.

Many decisions are fixed in the short run but variable in the long run. This leads to the long run cost curve being a different shape to the short run cost curves.

The following figure shows the long run cost curve of a firm. As the firm moves along the cost curve it is adjusting the size of its factory to the quantity of production. The diagram also shows the short run cost curves for a small medium and large factory. (Of course these are not the only three factories that could be built. The firm could choose any intermediate size and in each case that would result in a different ATC curve).

**Illustration:**

ATC_1 = Average total costs in short run of a small factory.

ATC_2 = Average total costs in short run of a medium factory.

ATC_3 = Average total costs in short run of a large factory.

The long run cost curve is much flatter than the short run cost curve. All short run cost curves lie above or on the long run curve. This reflects the extra flexibility available in the long run.

In the short run the firm faces whatever short run curve results from its past choice as to the size of the factory but in the long run the firm can choose its short run cost curve.

Suppose the firm had a small factory. It would experience average total costs represented by ATC_1 above. Assume that the firm was manufacturing at a cost represented by the lowest point on ATC_1 . If it wanted to increase production in the short run it could only do so by taking action that would increase average total costs (i.e. a point represented further up ATC_1).

Alternatively the firm could invest in a medium size factory. This would allow the firm to benefit from economies of scale. The new short run curve would be ATC_2 .

Because the LRAC is a curve where all inputs are flexible, and the SRAC is a curve where only one input is flexible, it is impossible for the SRAC to undercut the LRAC. At points where they meet, this is when resources are deployed in the same way, and so the costs are equal.

This leads to the following relationship:

**Definition: Envelope relationship**

At a planned output level, short run average total cost equals long run average total cost, but at all other levels of output, short run average total cost is higher than long run average total cost.

Consequently, when deriving the LRAC, we take the lowest, or near-lowest costs for the SRACs when the plants are different sizes, and find the best fit around them so that no SRAC points are below the LRAC.

2.5 Deriving a long run marginal cost curve

There is also a distinction to be made with regard to the short run marginal cost (SRMC) and the long run marginal cost (LRMC).

Due to all factors being variable, we find that the LRMC is flatter than the SRMC. In words, this translates to it costing the firm less to increase a unit of output when all factors of production are flexible, than when some of them are fixed.

As with the derivation of the LRAC, the LRMC and SRMC also exhibit an envelope relationship.

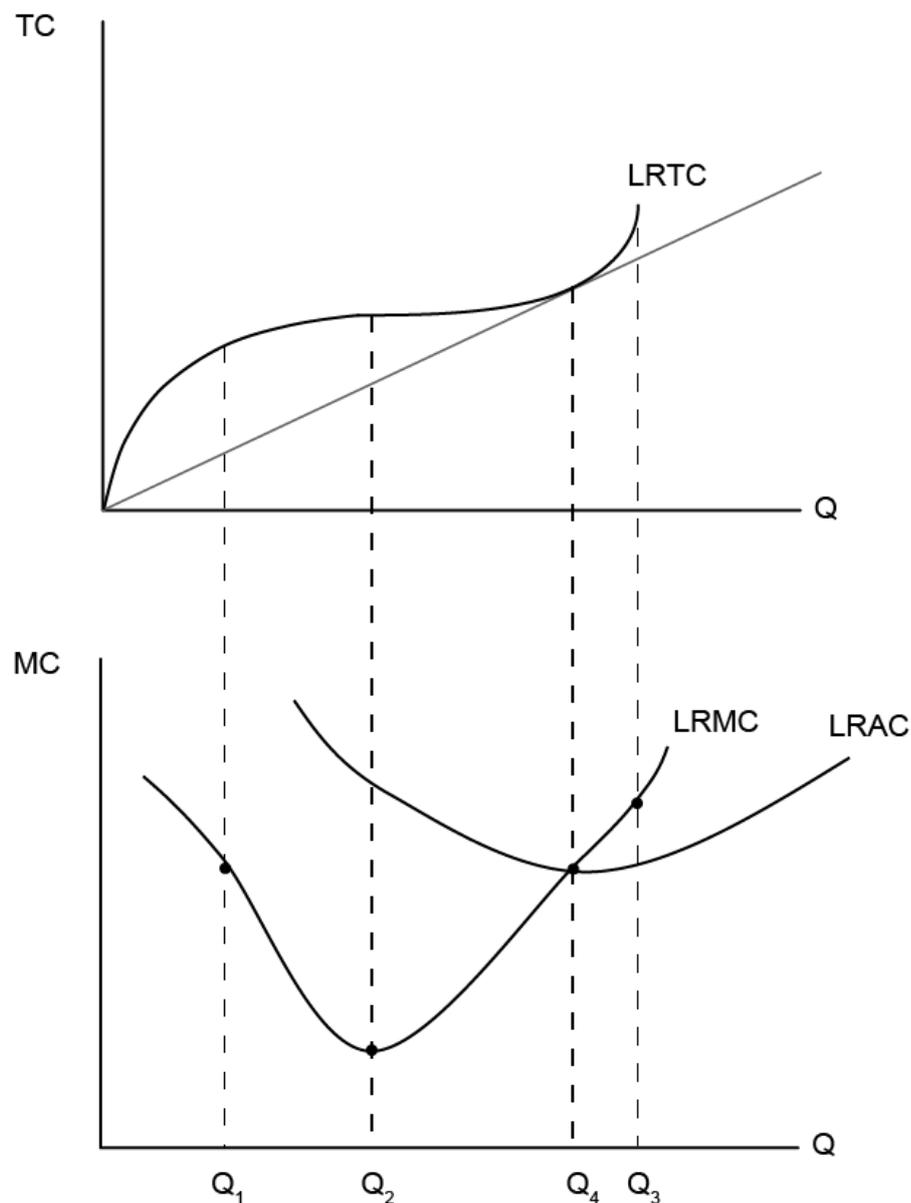
To derive an LRMC, we will begin by drawing a Long Run Total Cost (LRTC) curve.

The slope of the LRTC is the LRMC.

A steep slope indicates a high MC, and a flat slope indicates a low MC.



Illustration:



Drawing the graphs in this way allows us to see at which points the LRMC will be at its lowest, and when the costs are increasing and decreasing.

We can see that the minimum point of the LRMC is when the LRMC is flat – where there is no change in the addition of cost from an extra unit of output.

The lowest point of the LRAC occurs when the flattest tangent from the origin meets the LRMC. On the diagram, this occurs at Q_4 .

The LRMC will cut the LRAC from below at the minimum level of the LRAC. After this point, there are diseconomies of scale and the cost of producing an extra unit becomes even greater.

As was mentioned in an earlier section, the relationship between marginal cost and average cost remains the same, in that the MC curve will cut the average cost curve at its minimum point. See 1.5 to recap.

3 REVENUE

Section overview

- Introduction
- Under perfect competition
- Under imperfect competition

3.1 Introduction

Up to this stage it has been only the cost side of firm behaviour that we have considered in depth. However, an analysis of how revenue, the money firms receive from selling their products, is equally necessary to understand the behaviour of firms.

To begin, we first consider the total revenue (TR) that a firm can earn from selling its products:



Definition: Total revenue

$$TR = P \times Q$$

This is not an unfamiliar concept, as we touched upon this before. From knowing that this is the total revenue, we can delve deeper into other types of revenue.

Average revenue

Average revenue (AR) can simply be thought of as how much money a firm earns for its goods on a per unit basis.



Definition: Average revenue

$$AR = \frac{TR}{Q}$$

Substituting the TR equation into the AR equation, we can see that AR is equal to Market price. This means that whatever the prevailing market price is, is what the average revenue per unit will be.

In other words, the *AR curve is equivalent to the demand curve* for that good.

Marginal revenue

As with other 'micro' concepts we have seen, marginal revenue is the incremental earnings from an additional unit sold.



Definition: Marginal revenue

$$MR = \frac{\Delta TR}{\Delta Q}$$

Marginal revenue is useful for the firm because they can evaluate what additional income they will receive from selling an extra unit of the good.

3.2 Under perfect competition

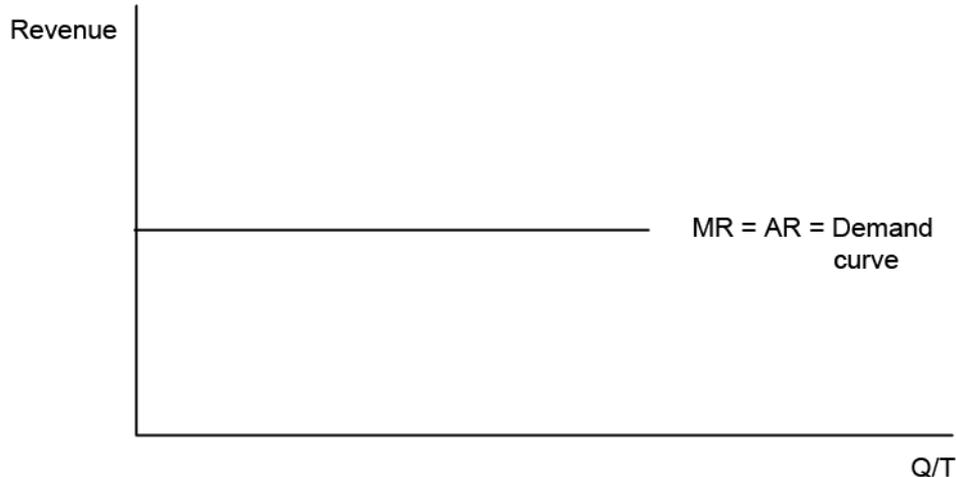
One of the distinct features of perfect competition is that the demand curve is completely horizontal. This is because the price remains the same regardless of output – it is not a downward sloping demand curve like we have seen earlier.

From a firm's perspective, because price remains constant, this means that average revenue remains constant also.

As each additional unit of output is generating the same revenue (i.e. the constant price) this is one instance where **marginal revenue is equal to average revenue**.



Illustration:



3.3 Under imperfect competition

In all other instances (i.e. imperfect competition), the demand curve faced by firms is downward sloping.

This is to do with the Law of Demand that we learnt about earlier, whereby as the price of a good decreases, the quantity demanded increases.

For this reason, the demand curve, and therefore AR curve, is downward sloping and to the right.

We shall now look at the graphical representation of AR and MR on a graph as follows.

The marginal revenue is always less than the price due to the arithmetic of averages and marginals.

To better understand the reasons behind the slopes of marginal revenue, and average revenue, we shall look now at an example.

**Example:**

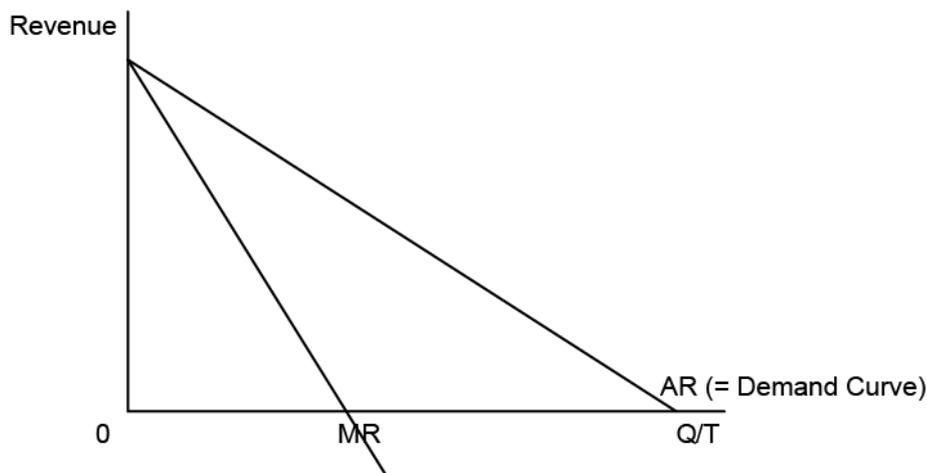
A firm is faced with the following schedule for the quantities they sell, and the revenue that they will receive:

| Quantity | AR (P) | TR | MR |
|----------|--------|-----|-----|
| 1 | Rs.100 | 100 | 100 |
| 2 | Rs.90 | 180 | 80 |
| 3 | Rs.80 | 240 | 60 |
| 4 | Rs.70 | 280 | 40 |
| 5 | Rs.60 | 300 | 20 |
| 6 | Rs.50 | 300 | 0 |
| 7 | Rs.40 | 280 | -20 |

We see here that marginal revenue falls quicker than average revenue.

At the point where the quantity sold goes from 6 units to 7 units, the marginal revenue that the firm could earn actually decreases – they would earn more from selling 5 or 6 units at a higher price than they would be selling 7 units at Rs.40.

This can be represented on the graph below. The MR curve crosses the x-axis at 6 units.

**Illustration:**

4 FIRMS UNDER DIFFERENT COMPETITION

Section overview

- Introduction
- Perfect competition
- Imperfect competition
- Extreme case: monopoly
- Less extreme case: monopolistic competition

4.1 Introduction

Firms' behaviour depends on the market structure that they operate within.

Here, we shall discuss the two extremes: perfect and monopolistic (imperfect) competition.

Whilst there are differences in the final outcome for the consumer between the two scenarios, there are some characteristics that remain the same.

The most salient being that: every profit maximising firm will produce at the point where ***the marginal revenue is equal to the marginal cost***, provided that marginal cost cuts marginal revenue from below.

This is also the condition which is loss minimising for the firm.

4.2 Perfect competition

The firm operating in conditions of perfect competition will face a number of features particular to its market.

Features

Large numbers of buyers and sellers: No single buyer or seller is able to influence the market price for the product – this is only possible through high volume which dilutes any power any single party may have.

Homogenous product: An identical product means no individual producer can charge more for a good that could be considered superior.

Free entry and exit: Firms can leave and enter as determined by fluctuations in profit.

Perfect knowledge of prices: Buyers and sellers are fully aware of prices in the market.

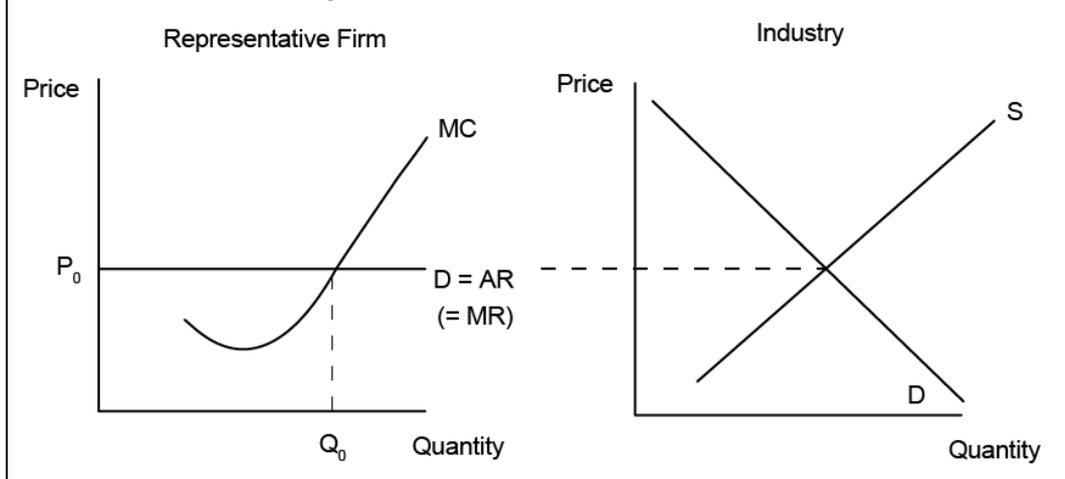
Transport costs are negligible: This doesn't matter in the market of the economic agents.

Perfect factor mobility: Factors of production are perfectly mobile, allowing free long term adjustments to be made by the firm.

Firms are price takers: Firms accept the market price that is given, and have no influence on changing it.



Illustration: Perfect competition

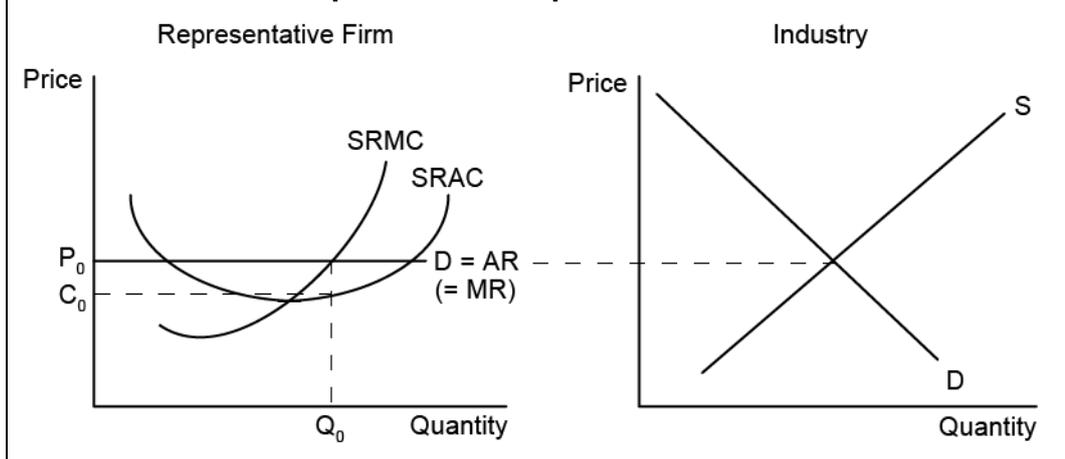


Because the perfectly competitive firm is too small to influence the market price its MR is the market price. Therefore it will maximise profits where its MC equals the market price. i.e. P_0Q_0 . In fact, supply curve of the firm is the marginal cost curve.

Short Run Equilibrium with Supernormal Profits



Illustration: Short Run Equilibrium with Supernormal Profits



Points to note

The firm is producing where $AR > AC$.

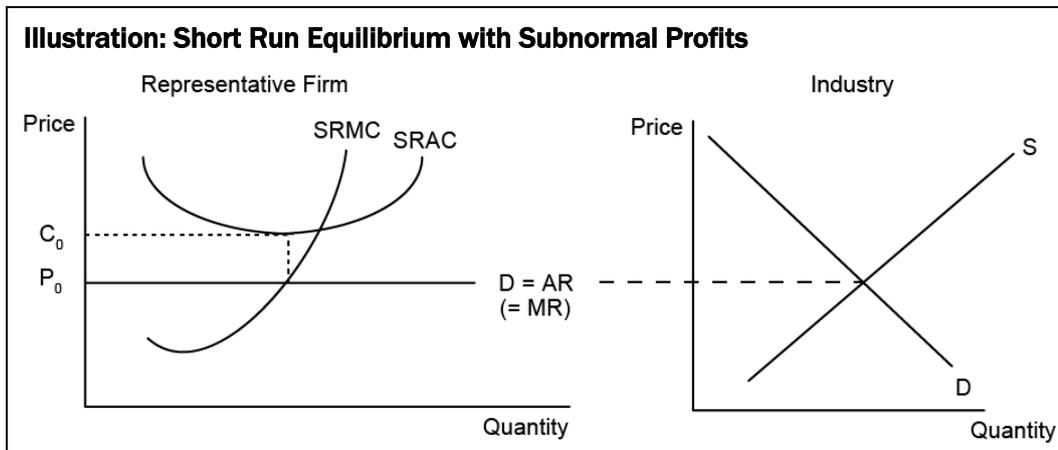
This means that the revenue derived from supplying the market exceeds the opportunity cost of the factors used. Consequently the firm is making a Supernormal Profit.

The firm is producing to the right of (i.e. above) the quantity corresponding to its lowest AC.

Recalling that high productivity leads to low unit costs we can see that this firm is enduring rising unit costs in order to supply the present quantity. This means it is

Short Run Equilibrium with Subnormal Profits

Similarly when the price drops below the bottom of the average cost curve, the following occurs:



The firm is producing where $AR < AC$.

This means that the revenue derived from supplying the market is less than the opportunity cost of the factors used. Consequently the firm is making a subnormal profit.

The firm will be producing to the left of (i.e. below) the quantity corresponding to its lowest AC (which is unsustainable).

As all firms will be faced with this situation, some will have to exit.

The converse of what is explained below then happens

In the short run, it is possible for the firm to survive if $P < AC$. A firm will exit the market if its average revenue/ price is below the average variable cost. The reason for this is to do with the shutdown condition.



Definition: Shutdown condition

The market price that forces a firm to exit the market. This occurs when $P < AVC$.

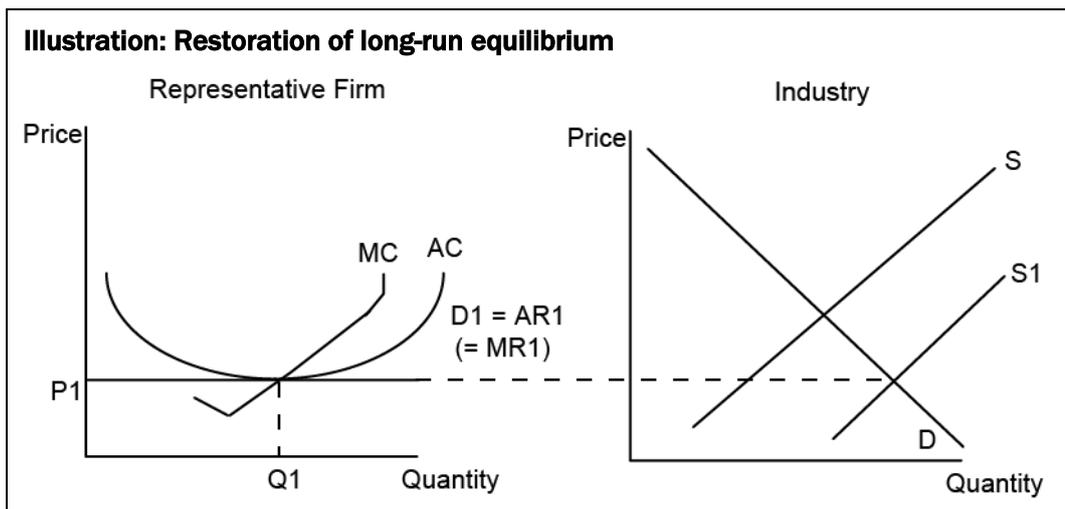
The reason for this is the distinction between Total Cost and Variable Cost, and also sunk costs.

In the short run the firm will continue to produce as long as total revenue covers total variable costs or put another way, so long as Price per unit is greater than or equal to Average Variable Cost ($AR = AVC$).

The reason for this is because a firm must pay its fixed costs even if there is no output. Assuming that these fixed costs (if the firm shuts down) then the loss per unit would be higher if the firm were to shut down, so long as they were still able to cover the variable costs.

It is therefore feasible for a firm to not shut down (in the short run) if $P < AC$.

Restoration of long-run equilibrium



In the long-run the supernormal profits will be eroded by the following process:

- Higher price will attract more firms into the market
- The increased supply will lower the price
- With demand staying constant, this will cause the price to drop again, to P_1
- This is level at the bottom of the AC curve.

Points to note

- Firm makes only normal profits in the long-run due to absence of barriers to entry
- Price is at its lowest feasible long-term level where it just compensates the firm for the opportunity cost of the resources used.

The firm produces efficiently where its AC is at the minimum.

4.3 Imperfect competition

From seeing perfect competition, we now turn to the more common *imperfect competition*.

This arises when only a few firms are able to supply a certain good at the given market price. This becomes problematic mainly from a public policy perspective. If a few firms hold a lot of power in a marketplace, then they are more likely to increase the price for their own profit, at the expense of consumer welfare.

As such, governments have been known to intervene if this market power becomes abused.

Sources of imperfection

To analyse imperfect competition, we need to know some of the sources of this imperfection.

Many are caused by barriers to entry being formed when only a small number of firms actually supply to the market. If there are significant economies of scale, then only those who are in the position to supply can have costs low enough to warrant entry into the market. If a small firm tried to enter, they would not be able to compete.

Other barriers can come from regulation. If, for example, a firm registers a patent meaning that it is the only firm allowed to sell a certain type of product, then they have a market advantage that others cannot. This means, say, that they could supply to the market at a cheaper price than other firms, again acting as a barrier.

4.4 Monopoly

The extreme case of imperfect competition happening is in a *monopoly*.



Definition: Monopoly

A market structure where there is just one firm supplying to the whole market.

There is absence of competition - whatever price/ output choice they make as an individual firm is what it is for the whole market.

Features of a monopoly

There are a number of features particular to a monopoly which deserve mention:

- Sole supplier of good or commodity
- Profit maximising firm
- Price maker
- Earn super normal profit
- Very high barriers to entry

Examples of a monopoly

Not many examples exist of true monopolies, as they are difficult to be established in a true free market economy. That said, some governments issue firms the right to run a monopoly, such as the following:

- U.S. Steel
- Deutsche Telekom
- National Football League

Long run equilibrium of a monopolist

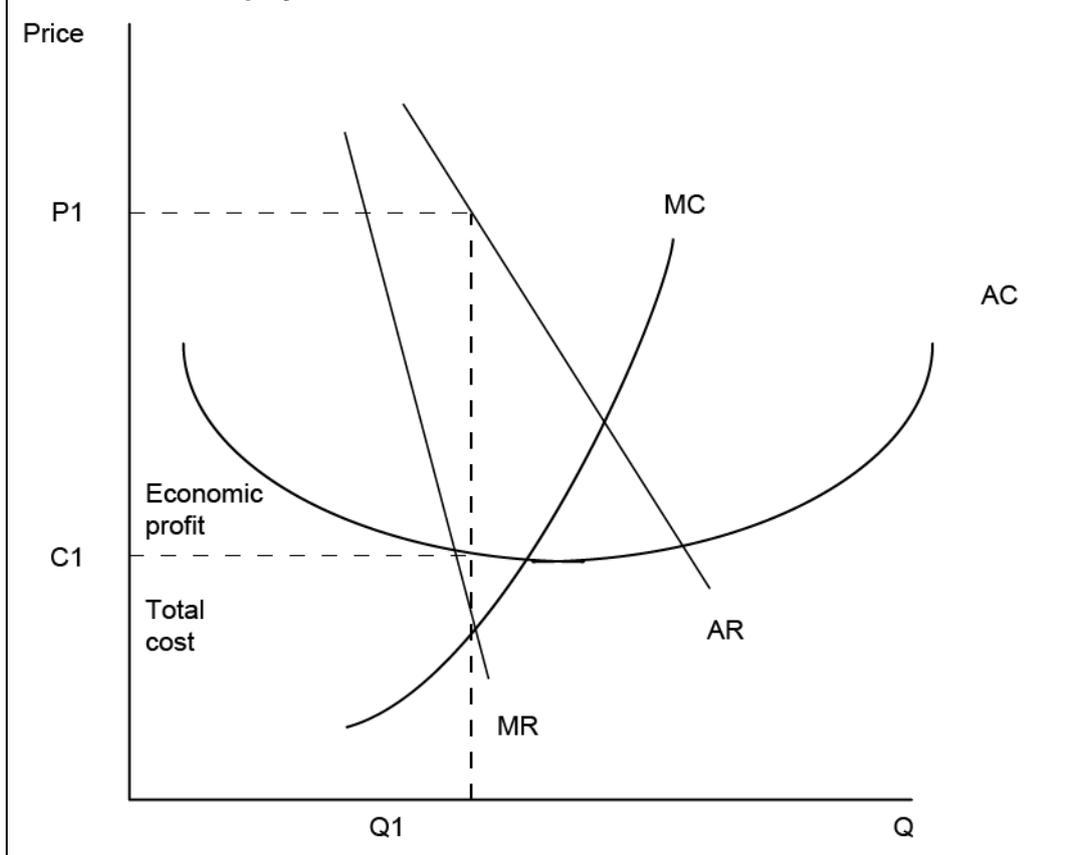
Unlike for perfect competition there is no difference between the long-run and short-run equilibrium of the monopolist. The firm faces a downward sloping demand curve because the average revenue decreases as output increases.

The monopolist cannot simultaneously set price and quantity

- If it cuts quantity prices will rise.
- If it raises quantity prices will fall.



Illustration: Monopoly



Points to notice

The firm may make supernormal profits by charging a price above AC. This has the effect of exploiting the consumer. Total supernormal profits are $Q_1(P_1 - C_1)$.

The firm doesn't produce efficiently at low AC. This is inefficient to survive.

The firm can continue making supernormal profits in the long-run due to the existence of barriers to entry.

The monopolist can deter entry from competitors

With the monopolist holding significant market power, it is possible for them to act in a way that prevents other firms from entering the market.

In principle, if they are able to maintain barriers to entry high; other firms will not be able to enter, and they can retain their excess profit.

These come in three categories:

Structural

Due to differences in production costs

- Economies of scale
- Vertical integration
- Control of resources
- Expertise/ reputation of incumbent

Strategic

Choices by the monopolist to make entry harder

- Raising prices (by increasing the price for a low quantity that small firms can't afford, thus driving them from the market, and then increasing the price again once they leave)
- Marketing/ product differentiation

Legal

Barriers enforced by law

- Patents
- Copyright
- Licences

Advantages of a monopoly

Despite being labelled as imperfect, there are nonetheless a number of advantages that can be had from a market or industry being run by a monopoly.

- Benefit from economies of scale:** By producing a large quantity of output at a low average cost, a firm can then operate internationally at a much more competitive rate.
- Dominant domestically allows for international competitiveness:** By running a monopoly with the ability to produce at scale, a firm can then operate internationally at a much more competitive rate.
- Supernormal profits:** can be used to fund technological improvement, such as investment in R&D
- Able to take a long term approach:** This allows for investment in long term projects, rather than short termism

Disadvantages of a monopoly

Despite the above positives, there are also a number of disadvantages that come with the monopoly market structure.

- Output is restricted in the market
- Price is higher than in a competitive market
- Less choice for consumers
- Less consumer sovereignty

This can be measured in different types of inefficiency: technical inefficiency, productive inefficiency and X-inefficiency



Definition: Technical inefficiency

When a firm is not producing the maximum output from the minimum quantity of inputs.

An example of technical inefficiency would be a firm hiring too many employees to produce a required level of output, or using outdated capital.

Within the scope of technical inefficiency, there are two other types we shall consider.

**Definition: Productive inefficiency**

Where the production of a good is not achieved at the lowest resource cost possible.

This occurs in a monopoly because they produce at an output which is not at the lowest point on the Average Cost curve. This means that the cost is above what the minimum could be.

**Definition: X-inefficiency**

The difference between the efficient behaviour of firms, and the observed behaviour of firms. It occurs owing to a lack of competitive pressure.

A monopoly incurs x-inefficiency when, because there is not competition from other firms, the monopolist does not seek the most technically efficient practices in its business. This could be under-utilisation of capital, or over-hiring of employees.

Price discrimination

One of the characteristics of a monopolist is the ability to engage in price discrimination.

**Definition: Price discrimination**

The action of selling the same product to different groups of buyers at different prices in order to maximise profits.

The heterogeneity in price is independent of the cost of production; it is purely on the basis of maximising profit. True price discrimination only occurs when the good being sold is identical. For example, a First Class seat on a plane will have higher associated costs than an Economy seat, and so charging a higher price doesn't usually maximise profits.

Conditions required for price discrimination

In order to work, there are three conditions that must be met:

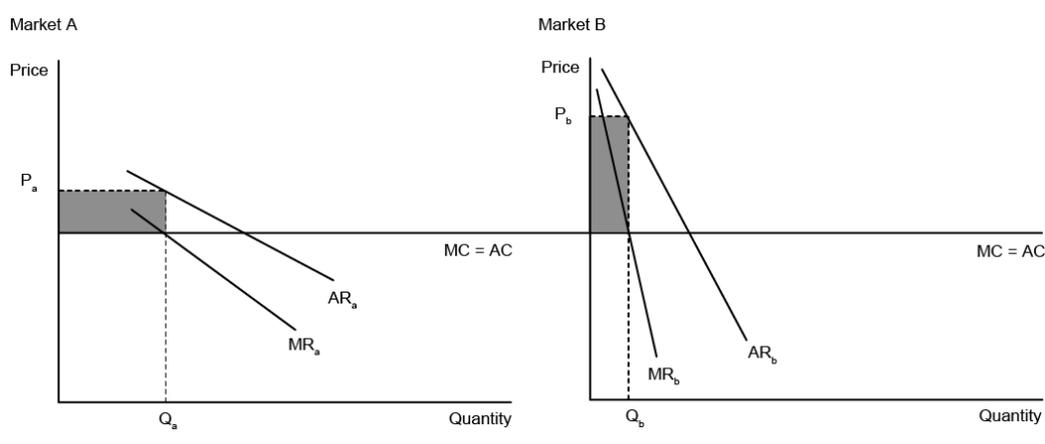
Monopoly power: Firm must have the ability to set prices.

Elasticity of demand: Each group of buyers must have a different elasticity of demand in order to extract consumer surplus.

Separation of market: Firm must be able to split up the groups of buyers, and prevent goods from being resold between them.

Price discrimination: diagram

Based on the above conditions, the concept of price discrimination can be illustrated like so:

**Illustration:**

What is important to note here is that the demand is more elastic in Market A, and therefore the monopolist charges a lower price in order to maximise profit. In Market B, the demand is more inelastic, meaning it charges a higher price.

Without price discrimination, the monopolist would charge just one price to both Market A and Market B, in which case the total level of profit would be lower.

4.5 Oligopoly

**Definition: Oligopoly**

An industry dominated by a few large suppliers.

Often an oligopoly is defined as an industry with 2 or more but not more than 20 suppliers. However, an oligopoly would also exist if there were a large number of small suppliers in a market dominated by several large suppliers. For example, the UK regulatory definition of an oligopoly is a five firm concentration ratio of more than 50% (this means they have more than 50% of the market share).

An industry in which there are only two dominant firms is called a duopoly.

Examples of oligopolies include:

- ❑ The accountancy industry (which is dominated by the "big 4" firms of PWC, Deloitte, KPMG and Ernst and Young);
- ❑ Commercial aircraft industry which is dominated by Boeing and Airbus.

Oligopolies might be collusive (i.e. member firms work together in making pricing and output decisions) or non-collusive. Each of these is discussed later.

Features of oligopoly

Few Seller's Markets:

It is a market model in which the number of entities producing / trading homogenous or differentiated product are few, that is, few large firms with a high Concentration Ratio.

Interdependence of firms:

It is the unique feature of oligopolistic market that the policies of every producer directly affect others, because the products are good substitutes. They have high cross elasticities of demand, therefore, pricing and output decisions of one firm are highly important for others. A firm is not certain how its rivals will respond to an action initiated by it. Consequently there is interdependence in decision making.

Maximum Advertisement:

Because of interdependence and being good substitutes, oligopolistic firm spends much in advertisement. It is generally said that "Advertising can become a life and death matter for them". For example if all oligopolists continue to spend lots of money on advertising their products and one seller does not match up with them, he will find his customers gradually shifting to his rival products.

Inside Competition - Outside agreement:

True competition consists of a life of constant struggle i.e. rival against rival, a phenomenon which one can only find in oligopoly market model leading to another feature of the oligopolistic market; the presence of competition. This competition is not a shape of perfect competition where there is no battle because there is never anyone strong enough to disturb the peace. Thus in Oligopoly, although there is a joint stance of firms on many issues like pricing etc. but in-fact they are always competing of other issues like market size etc.

Lack of Uniformity in Size of the Firms:

Another feature of oligopoly market is the lack of uniformity in size of firms. Some firms may be very large (dominant) and other firms may be of small size. Uniformity in size of entities is rare in oligopoly.

Demand Curve under oligopoly market:

Since under oligopoly the exact behaviour pattern of a producer cannot be ascertained with certainty, the demand curve cannot be drawn accurately and with definiteness.

No Unique Pattern of Pricing Behaviour:

Because of interdependence and rivalry, all players enter into a formal agreement with regard to price and output changes. It leads to a monopoly under oligopoly. For example, organization of petroleum exporting countries (OPEC) regularly determines the price of oil and its output in the world oil market.

Barriers to Entry (Entry is difficult but not impossible):

Since there may be a monopoly under oligopoly, the existing firms create artificial barriers to new entry. For example economies of scale are important entry barriers in a number of oligopolistic industries such as the aircraft, rubber and cement industries. In these industries, each of the existing say three or four firms might have sufficient sales to achieve economies of scale. But new firms entering this market would have such a small operating level / market share in the beginning that it would be difficult for them to survive and absorb huge operational losses. Entry barriers may also be because of Government Restrictions, Licences, and Patents etc.

Mergers:

Some oligopolies have emerged mainly through the growth of the dominant firms in a given industry. More recently many of the players in the airlines, banking and entertainment industry have merged. The merging or combining, of two or more competing firms may substantially increase their market share, and this in turn may allow one of them, say the new firms to achieve greater economies of scale through merging with the larger firm. These merged firms would then have more control on supply and thus the price of their product(s).

Homogenous or differentiated goods:

An oligopoly may be homogenous oligopoly or differentiated oligopoly depending upon whether the firms in the oligopoly produce standardized or differentiated products. Many industrial products (steel, zinc, copper, lead, cement etc.) are virtually standardized products that are produced in homogeneous oligopolies. While many household appliances (refrigerators, washing machines, air conditioners, etc.) and many sporting goods (tennis rackets, golf clubs, etc.) are differentiated oligopolies engaging in considerable non-price competition supported by heavy advertisement.

Lack of Market information:

Consumers in oligopolistic markets lack detailed market information and are susceptible to the market strategies of the suppliers.

Collusive oligopolies

Firms may attempt to collude (agree on an approach) in oligopolistic markets. If they were to do this they could act as a monopoly, setting the price so as to make higher profits over the long term. Oligopolists acting in this way are known as a cartel.

Collusive oligopolies are rare in practice.

- Cartel members might be tempted to break the agreement in the pursuit of increasing their share of the industry profit.
- Price fixing in a cartel arrangement is often illegal.

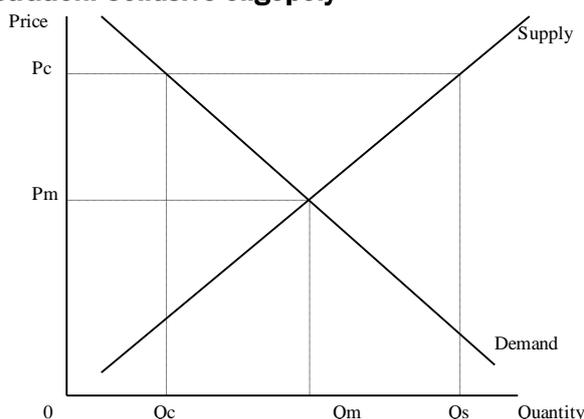
Strength of Collusion oligopolies

Collusion is possible if following conditions apply.

- Only very few firms are operating which are all well known to each other.
- They are open with each other regarding costs and production methods.
- Production techniques and costs of all the firms are similar.
- They produce similar products.
- There is a dominant firm.
- There are significant barriers on entry of new firms.
- The market is stable (that is no price war and price rivalry).
- Non - intervention by the Government to hinder Collusions.



Illustration: Collusive oligopoly



In the above diagram the free market price would be P_m and the quantity supplied would be Q_m .

However, the cartel decides on a price of P_c (which may be established by restricting supply to Q_c by use of a quota on its members).

This creates the problem of potential oversupply because at price P_c a member of the cartel might be tempted to maximise its own profits by producing at output Q_s . This would undermine the cartel agreement and probably lead the other members to increase production also.

Success and Failure of Price Cartel

Price cartels are established when the cartel firms have the ability to control nearly total supply in the market. However, the main drawback or weakness of price cartels is that each firm wishes secretly to sell more output than the allotted share which results in breaking the price cartel agreement. The failure or success of cartels depends on the following:

Control on supply: Whether price cartel is consisting of most or all of the selling firms of the product? If price cartel is controlling the supply, price cartels are successful otherwise price cartel will break.

Close substitutes: Price cartel is successful if close substitutes are not available in the market because at higher price agreed on by the oligopoly firms if close substitutes are available buyers will shift demand to close substitutes, therefore, price cartels will not exist.

The ease with which supply can be controlled: If the supply in the market is easily controlled by the oligopoly firms, price cartel is successful. However, if supply (in case of agricultural crops) is dependent on climatic conditions and weather conditions, or discovery of new natural resources price cartel may not be successful as in case of favourable climatic conditions there may be a better and bumper harvest of agricultural products.

Price elasticity of demand: Success of price cartels is dependent on price elasticity of demand. If price elasticity of demand is elastic i.e. at higher price, buyers contract demand more proportionately, price cartels will be unsuccessful. But if the price elasticity of demand is in-elastic, price cartels are successful because higher price agreed-on may be established.

Agreement on individual share: If all the firms in cartel agree on their allotted quota of supply, price cartels are successful. However, if firms secretly increase production and sale of the product, price cartels will collapse because at increased supply, charging a higher agreed-on price would not be possible.

Non-collusive oligopolies – kinked demand curve

One of the main features of oligopoly is that the oligopoly firm's price and output policies are dependent on price and output policies of other oligopoly firms. Although price cartels are formed but existence of these cartels and collusions in the long run are converted into price war among the oligopoly firms as there is inside competition among the oligopoly firms and all the firms try to sell their share. If any of the firms starts losing its share in the total market it tries to sell its produce secretly at low price.

In short a firm cannot pursue independent strategies. Theory of oligopoly suggests that, once a price has been determined, it will not change except to react to competitors' movements.



Example:

The demand curve for price increase is relatively elastic

If an airline raises the price of its tickets from Lahore to Sydney, rivals will not follow suit and the airline will lose revenue. Rivals have no need to follow suit because it is to their competitive advantage to keep the original price.

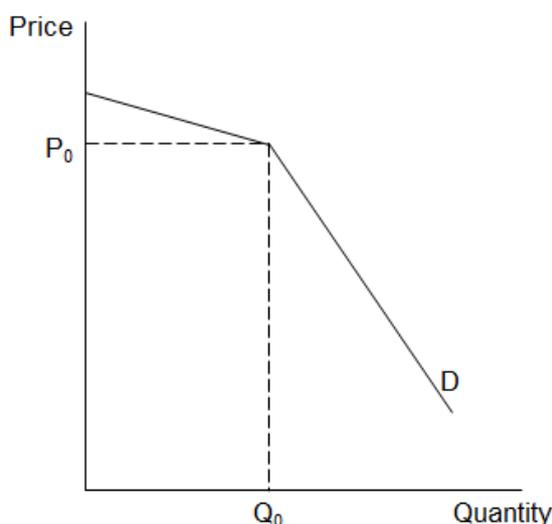
The demand curve for the price decrease is relatively elastic

If an airline drops the price of its tickets from Lahore to Sydney, rivals will respond by lowering their prices otherwise they would lose market share.

This means that members of a non-collusive oligopoly face a kinked demand curve as the reaction of competitors to a price change depends on whether price is increased or decreased.



Illustration: Kinked demand curve



At the starting position the firm supplies Q_0 at a price of P_0 .

Price increase

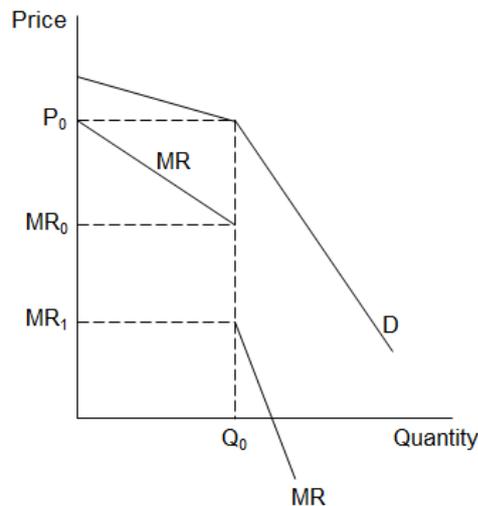
If the oligopolist raises price above P_0 the rivals will maintain their price in order to make the firm lose customers.

Demand will move along the more elastic portion of the demand curve to the left of Q_0

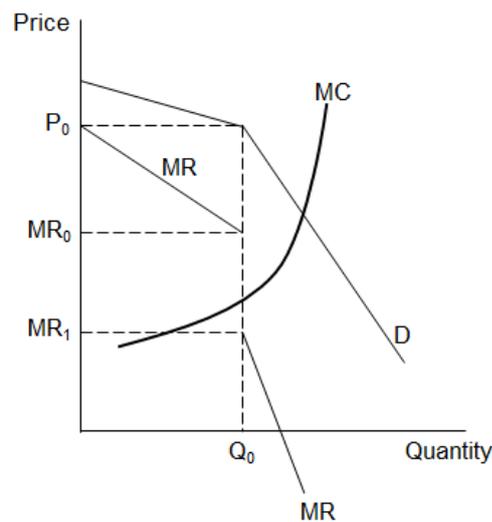
Price decrease

If the oligopolist cuts price below P_0 then rivals will cut price too and hence there will be little or no increase in demand.

The firm will be forced on to the less elastic portion of its demand curve to the right of Q_0 .


Illustration: Kinked demand curve showing marginal revenue curves


The kink in the demand curve leads a discontinuity in the marginal revenue curve.


Illustration: Kinked demand curve showing marginal revenue and marginal cost curves


Providing the marginal cost of the firm remains in the region between MR_0 and MR_1 the firm will not benefit from changing its price.

Assumptions of kinked demand curve:

- There is an established or prevailing market price for the product of the oligopolistic industry.
- Each firm in the industry is aware of the actions of its rivals.
- Any attempt by one seller to increase sales by reducing price of his product will trigger other firms will also follow his move and thereby starting Price War.
- If one seller raises price of his product other firms may not follow his price rise policy.

Advantages of oligopoly

- Members of an oligopoly might be able to set prices (though this might be illegal).
- Oligopolists are able to make large profits as there are few players in the market.
- Barriers to entry allow an oligopolist to maintain profits in the long term.
- Customers are easily able to make price comparisons among the few players existing in the market and this may lead to competitive pricing.
- Stable prices in the market make planning easier for both the supplier and the customer.

Disadvantages of Oligopoly

- Price setting in an oligopoly might prove disadvantageous to customers.
- Innovation of small players in the industry is stifled.
- An oligopolist is able to make good profits on an ongoing basis so there may be no incentive for product improvement.
- Oligopolistic industries can suffer from price wars.

4.6 Monopolistic competition

On the other end of the imperfect competition spectrum is *monopolistic competition*.

Whilst sounding similar to the previous case, the two are in fact quite different.



Definition: Monopolistic competition

A market structure where many sellers produce similar, but not identical, goods. Each producer can set price and quantity without affecting the marketplace as a whole.

Features of monopolistic competition

Monopolistic competition is similar to perfect competition in some ways (number of buyers and sellers etc); however there are also a number of features that differ.

A comprehensive list of features is as follows:

- Many producers and many consumers
- Knowledge is widespread, but not perfect
- Non-homogenous products
- Producers have some control over price ("price makers")
- Barriers to entry and exit do exist, but are low
- Brand loyalty exists, making demand less sensitive to price
- Firms also engage in some form of marketing
- Ability to make some supernormal profit

Examples of monopolistic competition

This is a common market structure in many industries. It is often characterised by many small business owners who all differentiate in some way. These include:

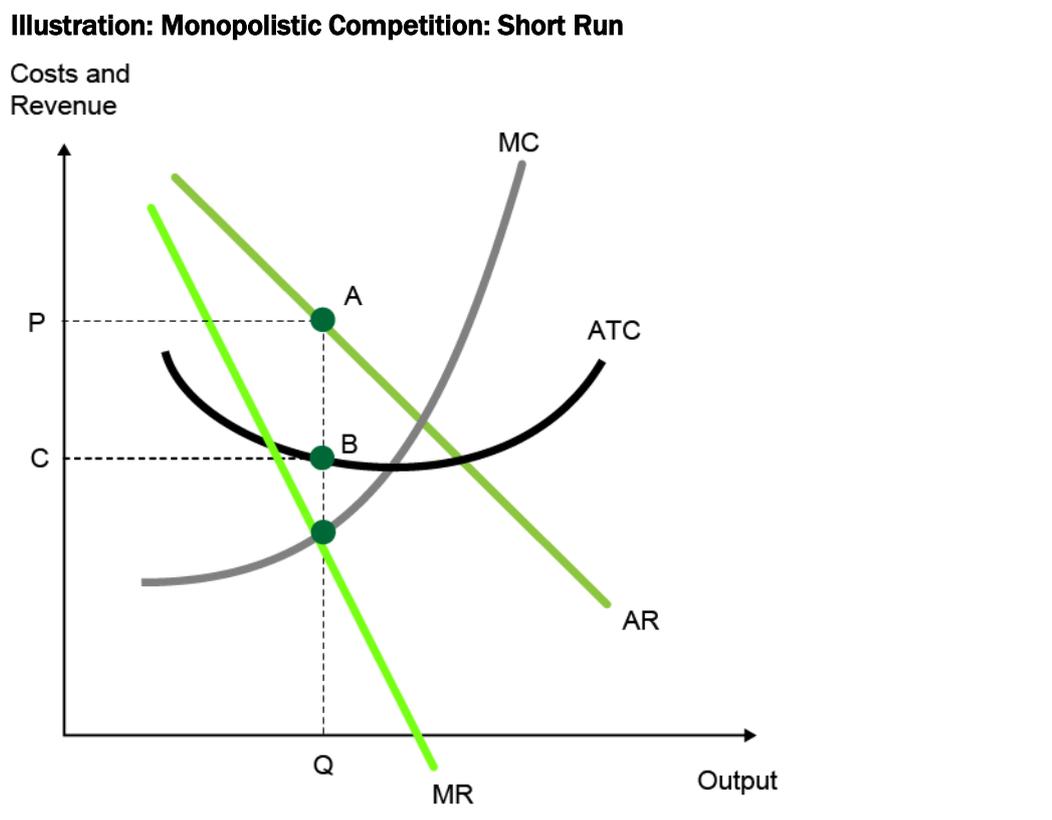
- Hairdressers
- Soap powder
- Restaurants
- Hotels

Consequently, it is a business form that has had much study. The theory was developed by Joan Robinson (UK) and Edward Chamberlain (USA) in the 1930s.

Graphical representation of monopolistic competition

To see more of the implications of monopolistic competition, we shall next analyse the following graph depicting the industry in the short run.

Monopolistic Competition: Short Run



We begin by assuming that there is a firm in the market that has a dominant position, perhaps through some innovation of the entrepreneur.

As usual the profit maximising output occurs when marginal revenue equals marginal cost: $MR = MC$. Therefore the monopolist produces a level of output at Q.

In this instance we see that the firm earns supernormal profit represented by the area, PABC.

An examination of the above diagram can provide insight into the impact that changes in market conditions would have on a firm of this type.

□ Increase in firm's costs:

- Both the ATC and MC curves would rise.
- The point of intersection with the MR curve (i.e. where profit is maximised) would be further back on the MR curve meaning that profit is maximised at a higher price and lower output.
- The rise in the ATC curve reduces the area of the rectangle PABC meaning that profit would be reduced.

□ Increase in consumer income:

- Both the MR and AR curves would move to the right.
- The point of intersection with the MC curve (i.e. where profit is maximised) would be higher up the MC curve meaning that profit is maximised at a higher price and higher output.
- The movement of the AR curve increases the area of the rectangle PABC meaning that profit would be increased.

Monopolistic Competition: Long Run

With near perfect information in the market, other entrepreneurs and firms are aware that this supernormal profit is being earned.

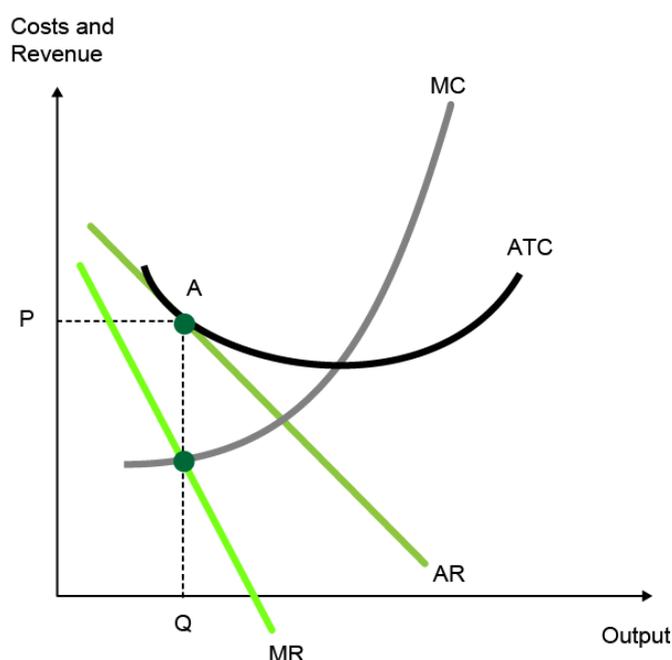
Attracted to the potential of also earning profit, other firms look to enter the market. Owing to the low barriers to entry, they are able to compete with the incumbent.

As more and more firms enter, the average revenue that the firm earns is shifted to the left. The demand they face has been shifted back due to other substitute goods.

Consequently, the amount of profit that firms can earn is reduced.



Illustration: Monopolistic Competition: Long Run



As the graph shows, the AR curve shifts back to a point whereby no supernormal profit can be earned by any of the firms.

Should supernormal profit be earned, then this would soon attract new entrants, who would shift the individual curves back to a point where profit is once again normal.

Firms will enter until the marginal profit that can be earned is zero.

Monopolistic Competition: Subnormal profit

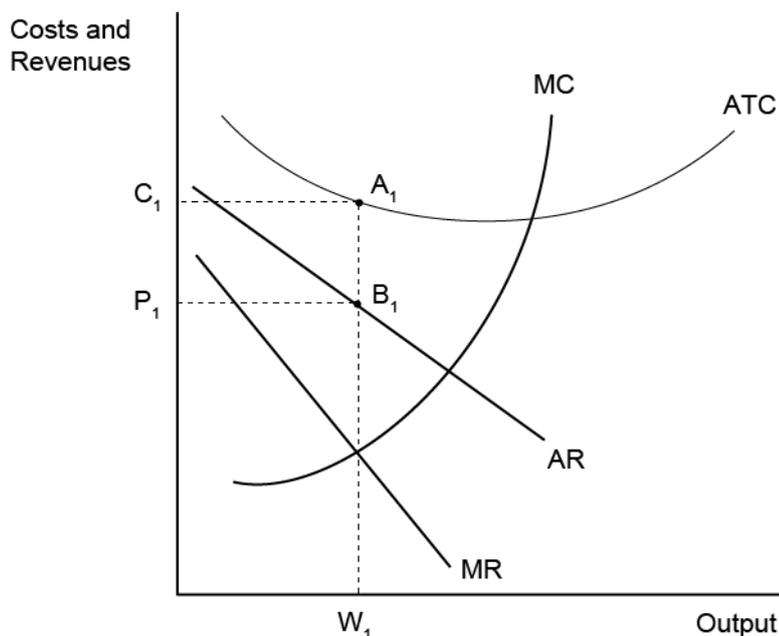
In some instances subnormal profit exists in a monopolistic competition market. As the diagram below shows, at a level of output, Q_1 , the cost of production for the firm is at C_1 , and the price in the market is P_1 .

This means that the firm would be running at subnormal profit (a loss).

The converse of order of events occurs to when the market had supernormal profits: firms begin exiting the market until the average revenue that the remaining firms can receive is equitable with the average cost curve.



Illustration: Monopolistic Competition: Subnormal profit



Here the amount of loss that the firm encounters is represented by the rectangle $P_1B_1A_1C_1$.

Advantages of monopolistic competition

This style of market has a number of advantages for the economy:

- No significant barriers to entry:** means that the market is relatively contestable.
- Differentiation increases consumer choice:** this will increase the potential utility to be had by consumers.
- More efficient than monopoly:** there are arguably less inefficiencies than with a monopoly.

Disadvantages of monopolistic competition

On the other side of this though, issues do exist for monopolistically competitive markets:

- ❑ **Differentiation can be unnecessary:** if it is just wasteful. Resources spent on competitive advertising against one another could arguably be spent on other projects for society.
- ❑ **Price is higher than MC:** which is inefficient when compared to perfect competition.

Macroeconomics: An introduction

Contents

- 1 Introduction
- 2 GDP, GNP and NNP
- 2 Measurement methods
- 3 Macroeconomic equilibrium

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

- LO2** **Understand the nature of macro-economics and its relation with the measurement of economic growth.**
- LO3.1.1: *Measurement of national income:* Define macro- economics and discuss its scope and limitations
- LO3.1.2: *Measurement of national income:* Define gross national product, gross domestic product and net national product
- LO3.1.3: *Measurement of national income:* Explain the product approach, income approach and expenditure approach to the measurement of national income
- LO3.1.4: *Measurement of national income:* Explain circular flow of Income (covered in more detail in chapter 1)
- LO3.1.5: *Measurement of national income:* State the difficulties usually faced in measuring National Income.

1 INTRODUCTION

Section overview

- Macroeconomics
- Introduction to measuring the size of an economy
- National income
- Difficulties in measuring national income
- Difficulties of interpretation

1.1 General

Microeconomics is the study of decisions that people and businesses make regarding the allocation of resources and prices of goods and services.

Macroeconomics is the study of the behaviour of the economy as a whole.



Definition: Macroeconomics

Macroeconomics is the field of economics that studies the decisions of individuals, firms and countries in the aggregate (in total).

Governments attempt to manage the national economy to improve the welfare of the citizens of their country. They achieve this through their macroeconomic policies.

Most governments have the following macroeconomic objectives which would be generally expected to be beneficial to the population:

- Economic growth: This would increase the wealth of the country and hopefully the standard of living of the population.
- Low price inflation: Most population accept that a certain level of inflation is desirable (in fact, it is virtually unavoidable if the economy grows) but high inflation erodes wealth and reduces consumer confidence.
- Low unemployment: Unemployment is a waste of resource (as unemployed people are not contributing to the economy) and can have a high social cost in terms of poverty that might result from it. Higher employment levels increases aggregate demand (the total demand in the economy) and promotes growth.
- Equilibrium in the balance of payments: This refers to achieving a balance between earnings from exports and other inward flows to the economy and payments for imports and other outward flows from the economy.

Different governments (or different political parties in a country) might disagree on the relevant importance of each of the above, the priorities for action and the way in which the objectives might be achieved.

Macroeconomics is concerned with questions like the following:

- What causes the economy to grow over time?
- What are the key economic indicators that should be tracked to provide information on the health of the economy and the result of government action? Following on from the above, these would be:

- the rate of economic growth;
- the rate of inflation;
- the level of unemployment; and
- the balance of payments deficit or surplus.

What causes fluctuations in an economy and how can they be managed?

1.2 Introduction to measuring the size of an economy

A key macroeconomic objective is to achieve growth in the economy. Governments might instigate policies to encourage such growth. For example:

- A government might reduce interest rates. This would reduce borrowing costs and make it easier for firms to invest in capital projects.
- A government might invest in technical education in order to provide a work force which would allow expansion in certain industries.

It stands to reason that governments must be able to measure the size of the economy in order to understand whether it is growing and whether its policies are having an effect.

There are a number of measures which can be used to measure the size of an economy:

- National income
- Gross domestic product
- Gross national product
- Net national product

The above measures are linked to each other (as would be expected as they all attempt to cast light on the size of an economy).

Other measures of interest include:

- Personal income
- Disposable personal income

1.3 National income



Definition: national income

National Income is the monetary value of the flow of goods and services produced by the economy during the year, after indirect taxes

In other words, it is the amount of all products (apples, chairs, computers, hotels, and T-shirts) that any society produces using its land, labour, physical capital and human capital. It is equal to the sum of money values of all consumption and investment goods, along with government purchases.

1.4 Difficulties in measuring national income

A number of decisions must be made before national income is measured. A country must decide on:

- ❑ Which measure (or measures) to use;
- ❑ Which measurement method (or methods to use);
- ❑ How to use the information once it is collected and collated.

There are many difficulties associated with the measurement process.

Lack of trained staff: Collection, compilation and analysis of statistical data is a highly technical exercise and availability of sufficient trained staff is often difficult.

Illiteracy/unreliable record keeping: Due to illiteracy many producers keep unreliable data of their production.

Inadequate information caused by poor collection procedures. This could include a poorly designed process, lack of infra-structure to provide the information or lack of trained staff;

Not all information about the size of an economy is captured:

- ❑ The process only measures what is defined as legal production. Many kinds of productive works such as services of housewives, agricultural products used by farmer for own consumption are ignored.
- ❑ Barter transactions are either totally ignored or included on the basis of approximation.
- ❑ The measurement process overlooks the hidden economy (e.g. income and trade that is not declared to the authorities) also known as the black economy or the shadow economy.

Double counting is a problem.

- ❑ Firms produce goods and supply them to other firms who incorporate them into new goods. Including the production of every firm double counts the production of the economy. This is discussed further in section 3 of this chapter.
- ❑ **Transfer payment:** Within an economy, not every transaction that takes place contributes towards to the level of national output. In some instances, money is simply moved from one agent to another. An example of this is social security benefits. Money is transferred from the government to individuals. The national output remains unaffected by this transaction, and so it is not calculated in national income calculations.

Income of foreign firms creates a complication in terms of whether to include it in national income of the country of operation or country of origin.

1.5 Difficulties of interpretation

Measures of national income can be used to make:

- single country comparisons (e.g. tracing the economic progress of Pakistan over a period of time); and
- international comparisons (e.g. comparing the economic performance of Pakistan to that of other countries).

Difficulties in making single country comparisons

Inflation distortions

- Changes in the price level between years can give the impression of economic growth when in fact it is inflation.
- Overcome by the use of a GDP deflator to reduce current values to real values in terms of the prices of a chosen base year.

Standard of living is usually measured as national income per capita which overlooks:

- Inequality in the distribution of output between the rich and poor.
- The social costs of factors which affect the well-being of others without cost (these are called externalities), for example pollution, stress, crime etc.
- Doesn't reflect the different amounts of leisure enjoyed by different economies

Difficulties in making international comparisons

Problems in using national income figures to compare countries include

- differences in classification of activities between countries
- Differences in the extent to which they rely on the market to provide services and goods
- Exchange rate distortions harm comparability of figures
- Different accounting conventions
- Different climates e.g. hot countries spend less on heating and clothing than cold ones yet their standard of living is unaffected.

Different production priorities: e.g. one country may produce consumer goods while another may produce capital goods or defence goods. Both will have the same income though the standards of living will be different.

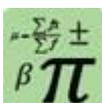
2 GDP, GNP AND NNP

Section overview

- Gross Domestic Product (GDP)
- Gross National Product (GNP)
- Net National Product (NNP)
- The link between GDP, GNP and NNP
- Other measures of interest to governments

2.1 Gross Domestic Product

Gross Domestic Product (GDP) is the market value of all the products, goods and services, which are produced within a country during a selected time (commonly in the country's financial year).



Formula: Gross domestic product

$$\text{GDP} = \text{C} + \text{I} + \text{G} + (\text{X} - \text{M})$$

Where:

- C** = amount of consumption in the economy
- I** = amount of investment in the economy
- G** = amount of government spending in the economy
- X** = amount of exports from the economy
- M** = amount of exports into the economy

GDP is the aggregate demand in an economy (this is explained in more detail in section 4 of this chapter).

The circular flow of income (see section 3 of this chapter) implies that the aggregate demand (AD) = the aggregate supply (AS) in an economy.

In other words the GDP is the total output from all of the sectors of an economy:

- Primary sector (agriculture, mining etc.)
- Secondary sector (manufacturing and construction; and
- Tertiary sector (services)

GDP per capita is often considered an indicator of a country's standard of living, though it is not a measure of personal income.

GDP does not include services and products that are produced by the nation in other countries. In other words, **GDP** measures products only produced inside a country's borders.

2.2 Gross National Product (GNP)



Definition: Gross National Product

A country's GDP, plus any income earned by residents from overseas investments, minus income earned by overseas residents within the domestic economy

In other words, GDP is the production within the geographical confines of a nation by all residents in that country (whether citizens or non-citizens) and GNP is the production of the citizens of a country only, wherever they are located.



Example: GDP compared to GNP

A Japanese company has a subsidiary in Pakistan.

The output of the subsidiary would be part of Pakistan's GDP and Japan's GNP.

2.3 Net National Product (NNP)

There is a further distinction that can be made to the GNP figure that an economist arrives at. A nation's **Net National Product (NNP)** removes capital depreciation from the calculation of national income.

This is useful when assessing what effect the change in output has had on society as a whole.



Example: Net National Product

A firm has an old machine, and so produces a new one to replace it.

A few years later this machine is also replaced.

In GNP terms, there has been an addition of two machines to the nation, and so the GNP figure will rise accordingly.

However, in that time, two machines have lost value, and are no longer used by society.

NNP is found by deducting the value of capital depreciation that has occurred (in this case the two machines that were replaced) from GNP.

2.4 The link between GDP, GNP and NNP

This can be represented as follows:



Illustration: Link between GDP, GNP and NNP

| | |
|---|---------------|
| Gross Domestic Product (GDP) | X |
| Less: Goods made in the country by foreign citizens | (X) |
| Plus goods made abroad by the country's citizens | X |
| Gross National Product (GNP) | <hr/> X |
| Less: Capital depreciation | (X) |
| Net National Product (NNP) | <hr/> <hr/> X |

2.5 Other measures of interest to governments

Personal income

Personal income is the aggregate of income received by individuals and companies that are not corporations.



Definition: Personal income

Income received by individuals and firms that are not classified as corporations.

This means that items such as retained earnings, and corporate income taxes are deducted from the level of national income. As we remember, national income takes the net national product and deducts indirect taxes, so this measure removes *retained earnings of corporations*, and *corporate income taxes*.

Disposable personal income

More deductions are made from personal income, when we consider the next level of income: *disposable personal income*.

This is concerned with the actual amount of money that individuals *on aggregate* have the ability to spend within an economy.

This is found by removing any payments that individuals must make with the government.



Definition: Disposable personal income

Personal income minus government obligations

The most obvious obligations that individuals make are taxes, however this measure also includes fines and other relevant payments.

3 MEASUREMENT METHODS

Section overview

- Broad approaches
- Circular flow of income
- Product/output method
- Income method
- Expenditure method
- Conclusion

3.1 Broad approaches

National income: factor cost

One overall approach in measuring national income is based upon the cost of the factors of production.

From an accounting perspective, this is relatively simple to measure as information can be extracted from the financial statements of all of the firms in an economy in order to find the price that was paid for certain goods and services and attribute that as the cost in production.

This has the added benefit of not taking into account any subsidies or taxes that might be imposed on the final product. This would skew the measure of national income, because the taxes and subsidies are not part of the value produced by the economy.

One of the problems with this approach is that basing the value of a product on what it costs to produce may be distorted with what somebody is willing to pay for it at various times.

National income: market price

An alternative is to use the market value of the final product.

The goods that are produced will often have a different value when sold on the market.



Example:

Firm A produces wooden tables.

The factor price approach (using the costs of factors of production).

| | Rs. |
|------------------------|--------|
| Wood | 500 |
| Labour | 1,000 |
| Machinery | 10,000 |
| Return to entrepreneur | 8,500 |
| | 20,000 |

A market price approach would use the price for which the asset was sold.

Sale price – Rs.20,000

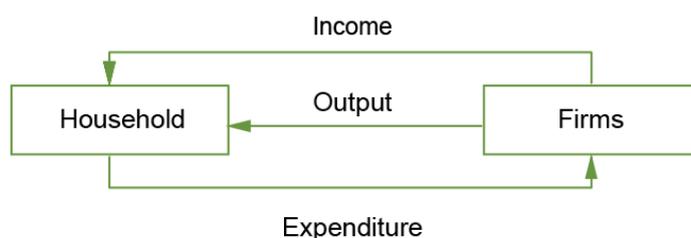
3.2 Circular flow of income

There are a number of ways of measuring the national income of a country, which should theoretically result in the same figure. In practice there are often imperfections in how it can be measured so several methods are used to get a better understanding of what the actual number might be.

The basis of the three approaches can be explained in the following diagram.



Illustration: Circular flow of income



The diagram above shows how all three methods should equate to the same amount, as all of them are showing the same value at different stages within the economy. For example, all of the expenditure that households have will be equal to the incomes that firms pay to those households, and the value of the output that firms produce.

The circle, however, is not wholly continuous. There can be withdrawals and injections into the flow at various junctures:

Withdrawals include:

- ❑ **Savings:** Households save an element of their income thus reducing consumption.
- ❑ **Taxation:** Amounts required by the government reduce households' ability to spend.
- ❑ **Imports:** Purchases from abroad result in money leaving the circle.

Injections include:

- ❑ **Investments:** This is a form of spending on future output in addition to expenditure.
- ❑ **Government spending:** Funds spent by governments inject money to the circle.
- ❑ **Exports:** Sales to abroad result in an injection to the circle.

Flow of national income – Short term and long term

In a national economy there are three withdrawals from and three injections into the circular flow of national income. Withdrawals from the national income flows are savings (A), Taxes (T) and Imports (M) and Injections into the circular flow of national income are. Investment expenditures by firms (I), Government expenditures (G) and Exports (X).

National income equilibrium is reached not only by the equality of aggregate demand and aggregate supply but also the planned withdrawals from the flows of national income must also be equal to planned injections into the circular flow of national income i.e. withdrawals = Injections or $S + T + M = I + G + X$.

- (a) Any difference in the balance of payments deficit or surplus is equal to the long values of import payments (M) and export receipts (X) of goods and services long. In the short run this difference is filled by borrowings or lendings from or to abroad.
- (b) The difference between public expenditure and public revenue can be filled by public sector borrowing requirements (PSBR) and public sector debt repayments (PSDR).
- (c) Although people who save and invest are different even then in the long run savings are made equal to investment through capital market.
- (d) Lord Keynes explained the difference between planned withdrawals and planned injections in terms of trade cycles.

3.3 Product/ output approach

This method finds **National Income** by adding the net values of all production that has taken place in all sectors during a given period.

The net values of production of all the industries and sectors of the economy plus the net income from abroad give us the **Gross National Product (GNP)**.

Subtracting the total amount of depreciation of the assets used in production, from the figure of **GNP**, gives **National Income**.

This approach measures the output from an economy.



Definition: Product approach

The total value of final goods and services produced during the year.

The term “final” goods and services relates to those that are consumed. It does not include components or capital goods which are termed intermediate goods.



Example: Bread

In measuring the value of bread in an economy, one could measure the product value of the grain (Rs.50/kg), then the flour (Rs.75/kg), then the final loaf of bread (Rs.100/kg).

When calculating all the output, an economist could add up the value of the farmer’s product (grain), and then the miller’s product (flour), and then the baker’s product (bread).

Doing so would have the value of the product as Rs.225/kg for bread, however this means the value of the products has been “double counted”, as the final value is only Rs.100/kg.

The value of the baker’s work is taking flour, and turning it into bread. The miller takes the grain from the farmer and turns it into flour. If we count the value of the bread, this already takes into account the value of the farmer and the miller, and prevents “double counting”.

Difficulties associated with the output method

Double counting: The outputs of some firms become inputs of others. For example, the output from a factory making electrical components will be used as inputs in the motor industry. If the total value of both industries' output were included in the aggregate then the value of the components used in the motor industry would be included twice.

To avoid this problem only the value added at each stage of production is added.

3.3 Income approach



Definition: Income approach

The total value of all the incomes earned from producing goods and services during the year.

This method measures the National Income after it has been distributed and appears as income earned or received by individuals of the country.

This method estimates National Income by adding up the rent of land, wages of employees, interest and profit on capital and income of self-employed people.



Illustration: Income approach

| | Rs. |
|--|-----|
| Income from people in employment | X |
| Income from people in self-employment | X |
| Profits of private sector businesses | X |
| Rent income from the ownership of land | X |
| | X |
| | X |

These incomes will equal the total value added in the process of making the product. Returning to the bread example above, this would involve adding together the incomes earned in the process of making a loaf of bread, by the farmer, miller and baker.

The calculation does not include:

- Transfer Payments (e.g. state pension, unemployment benefits and other social payments) which are ignored to avoid *double counting* the income:
 - when the original household earns it prior to it being taxed
 - when the household receiving the transfer payment receives it from the government.
- Income gained from stock appreciation. This is due to inflation and not a rise in output.
- Private transfers of cash from one person to another.
- Income not declared to the tax authorities (the “black” or “shadow” economy).
- Activity such as subsistence farming and barter transactions.

Difficulties associated with the income method

Double counting also becomes a problem when using the income method. The sum of all factor incomes is not the same as the sum of all personal incomes as these also include transfer incomes, which are subsistence payments for no actual productive process.

These payments are purely transfers from tax payers who provide the money to other persons such as the unemployed or disabled and thus should not be included twice as two forms of income.

Another major problem is that of self-provided services. Some goods and services are not actually traded through the market sector and are not therefore included as part of the aggregate output figure although they do form part of the country's output. Examples include repair and improvement work done on a DIY basis or housework carried out at home. There is no market measurement of the value of the output and thus it is not included. In some cases an imputed value is used for instance the value of owner occupied housing where the market rents of similar properties are used as guidelines.

A problem using the income method is the non-distribution of some factor incomes to factors of production. Companies as well as the government may retain profits and surpluses and thus an allowance has to be made in the national income figures to account for these undistributed amounts.

3.4 Expenditure approach

The expenditure approach involves counting the expenditure in the economy on goods and service, by different groups of people.

These groups were identified in the original definition of GDP as Consumption, Investment, Government Spending, Exports and Imports.



Definition: Expenditure approach

The total value of expenditure on purchasing final goods and services during the year.

This is measured by adding up the expenditure that has happened in the country, and includes: household consumption, government expenditure on consumables, export demand.



Example: GDP of a Country A

| | Rs (millions) | Percentage of GDP |
|--|------------------|----------------------|
| Personal consumption (C) | | |
| Durable goods | 500 | 6.25 |
| Nondurable good | 2,500 | 31.25 |
| Services | 2,000 | 25.00 |
| | 5,000 | 62.50 |
| Gross private domestic investment (I) | | |
| Non-residential | 1,100 | 13.75 |
| Residential | 395 | 4.94 |
| Change in business inventories | 5 | 0.06 |
| Gross private domestic investment (I) | 1,500 | 18.75 |
| Government consumption and gross investment (G) | | |
| | 2,000 | 25.00 |
| Net Exports (X-M) | | |
| Exports (X) | 1,000 | 12.5 |
| Imports (M) | 1,500 | 18.75 |
| | -500 | -6.25 |
| Total GDP | 8,000 | 100 |

The above figures show that *Personal Consumption* accounts for the largest portion of GDP with *Government Spending* as the second largest component of the economy.

Note that social security spending (i.e. paying benefits to disadvantaged members of society) does not feature because it is a transfer payment. It is counted in the *Personal Consumption* part of the calculation, rather than *Government Spending*.

Investment Spending is categorised into different types (I and G) and *Net Exports* simply aggregates the outflows and inflows of the country's trading.

Difficulties associated with the expenditure method

The main warnings that should be made with this approach is that something only gets counted if it is sold. A lot of production occurs without a transaction taking place (i.e. home cleaning, "Do-It-Yourself" home repairs). If there is a trend away from this activity, to one where people employ others to do this, then a large increase in GDP will be calculated, however the actual output won't be as significant.

Figures are distorted by indirect taxes and subsidies for which an adjustment must be made. Indirect taxes increase the total expenditure on goods and services compared to the amount received by the factors of production and vice versa for subsidies. The expenditure total is therefore adjusted to factor cost by deducting indirect taxes and adding back subsidies.

Further adjustments are necessary for changes in stock levels, for exports net of imports and an allowance for depreciation to allow for the capital used up in the production process.

General precautions for all measures of GDP

It should be noted that there are points that are affected by all three measures to GDP that we can consider.

For example, it takes no account for *quality of life* of the citizens in an economy. It may mean that they have higher material wealth on the whole, however things that count towards the happiness of society are not considered.



Example:

The country of Burma has been considered the "happiest country in the world" via measures of Gross National Happiness, however in terms of GDP is only 122nd in the world.

In addition, there is the added problem of accuracy of the figures which affects all three measurements.

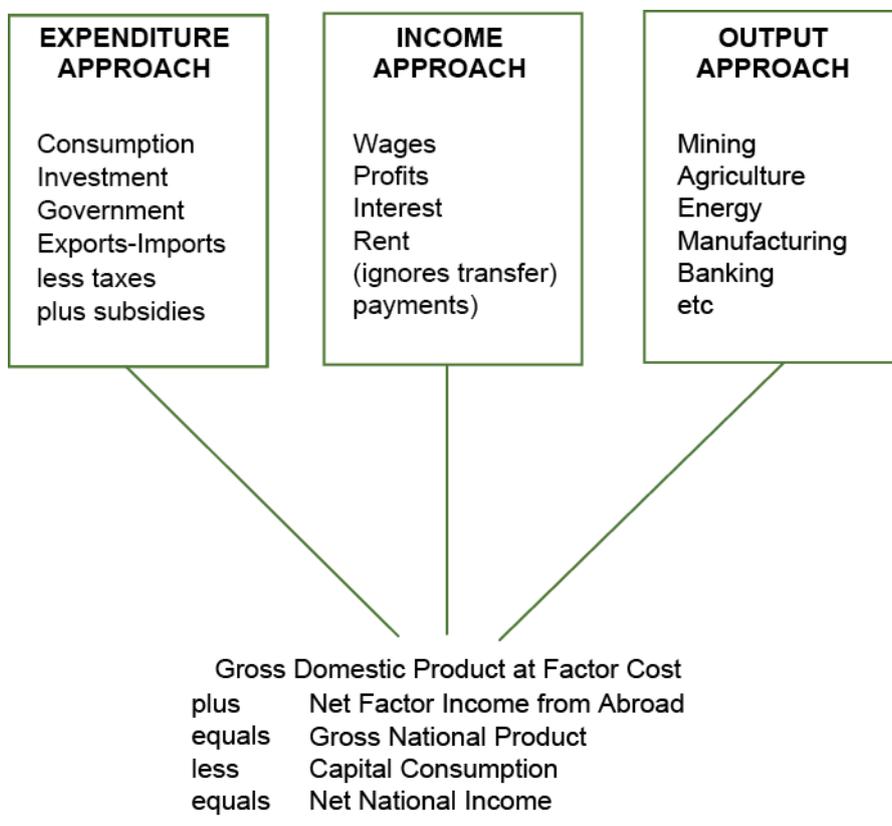
3.5 Conclusion

The above methods all agree on the figure for **Gross Domestic Product**.

The table below explains how this figure can be converted from **GDP**, to **GNP**, and finally into a value for **Net National Income**.



Illustration:



Definition: Capital Consumption

An imputed charge for the depreciation of the nations' capital stock and infrastructure during the year

All three measures offer a different insight into the state of the economy, and should be used in conjunction with each other to fully appreciate how the nation is performing.

4 MACROECONOMIC EQUILIBRIUM

Section overview

- General introduction
- Aggregate supply
- Aggregate demand
- Equilibrium of AS and AD
- Output gap
- Inflationary gap
- Deflationary gap

4.1 General introduction

Now that we have been introduced to the fundamentals of how to measure the performance of the macroeconomy, we shall look at how this can be used for broader analysis.

This will require us to briefly touch upon points regarding how the macroeconomy interacts, and some of the broader concepts that exist within the field.

4.2 Aggregate supply

The first important measure that we will learn is aggregate supply. Similar in concept to national income, it measures the volume of goods and services within an economy.



Definition: Aggregate supply

The total supply of goods and services produced within an economy at a given overall price level, in a given time period.

This is represented through an aggregate supply curve, which shows the relationship between the price level and quantity of output that firms are willing to supply. As with regular supply, the relationship between aggregate supply and price is often a positive one, meaning that at a higher price level firms are willing to produce more.

One thing to note here though is that the shape and behaviour of the aggregate supply curve is of debate amongst economists. First we shall present the theories of neo-classical economists, and second, the view of Keynesians (named after the seminal economist John Maynard Keynes).

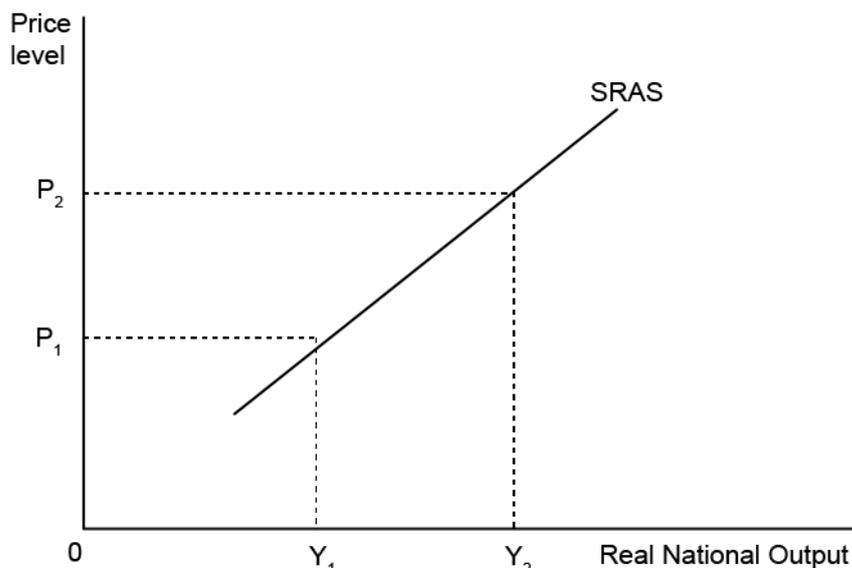
Short Run Aggregate Supply (SRAS)

As with other concepts in economics, our analysis of aggregate supply differs in the short run and long run. This, as we found before, has to do with the flexibility of factors, and the potential output that they can yield.

In the short run, the aggregate supply curve slopes upwards, as a regular supply curve does.



Illustration:



Higher prices in the economy lead to an expansion of aggregate supply in the short run.

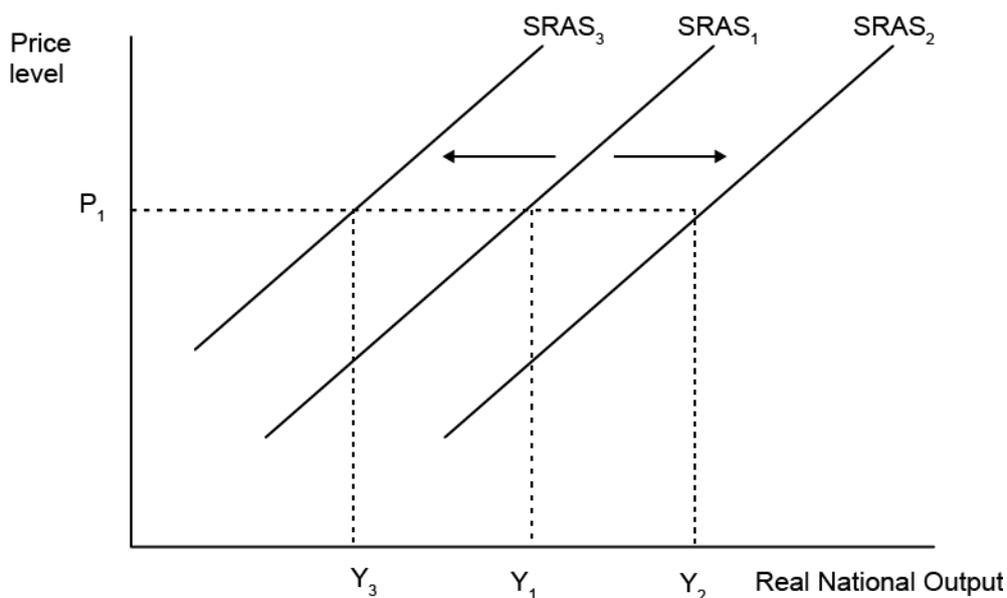
The level of aggregate supply is determined by supply side performance of an economy. It is a reflection of the productive capacity within an economy, as well as the costs of production in each sector.

Shifts in the SRAS curve

The SRAS curve will move around for a number of reasons, rather than just remaining static. As we know from earlier sections of the text, there are exogenous factors that are likely to cause a shift in a curve. Below is a diagram of an SRAS curve shifting, and then reasons that may cause it.



Illustration:



The shift from SSAS₁ to SSAS₂ shows an increase in aggregate supply at each price level

The shift from SSAS₁ to SSAS₃ shows a fall in aggregate supply at each price level

What causes the shift forwards or backwards in short run aggregate supply?

- Change in factor productivity of both labour and capital
- Change in size and quality of capital stock, through investment
- Change in size and quality of the labour force
- Change in unit cost of labour (i.e. wages)
- Change in producer taxes or subsidies
- Change in inflationary expectations (e.g. causing a rise in inflation, and a rise in wages, causing supply to shift inwards)

When aggregate supply is considered in the long run however, the shape of the curve changes, which we shall cover now.

Long Run Aggregate Supply (LRAS)

From what we know previously about supply in the short and long run, it is unsurprising that the slopes of the curves changes.

In the short run, supply changes to the price level, as the factors of production are adjusted to enable the most efficient use of resources.

In the long run however, it is assumed that supply stays independent of the price level. It is determined by the overall productivity of the resources in the economy.

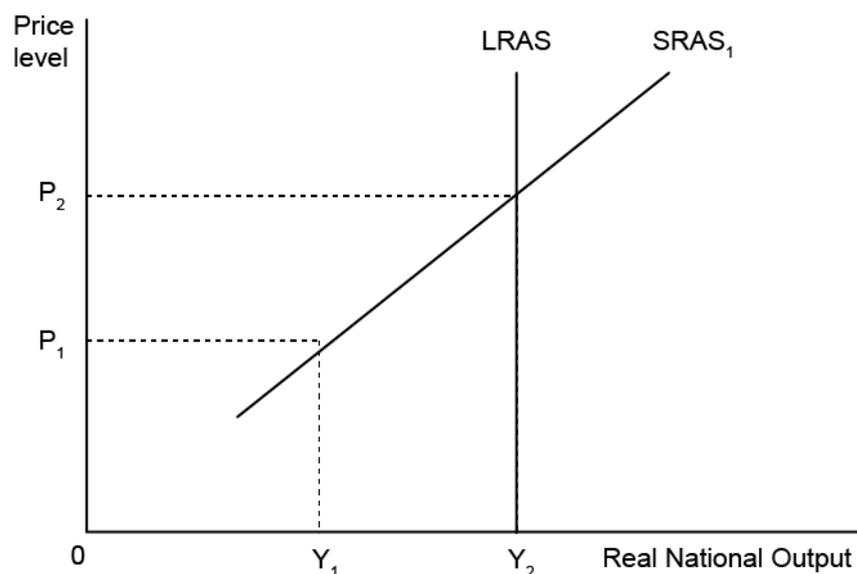
Another way of viewing this is that LRAS represents the *productive potential* of the economy. If all resources were at their most productive; that is the level of output that could be achieved.

Shifts in LRAS are therefore factors that affect the level of this potential.

Because it is independent of the price level, and signifies the upper limit of the capacity in the economy, the curve is a vertical line.



Illustration:



In the short run, producers respond to a price increase by increasing quantity

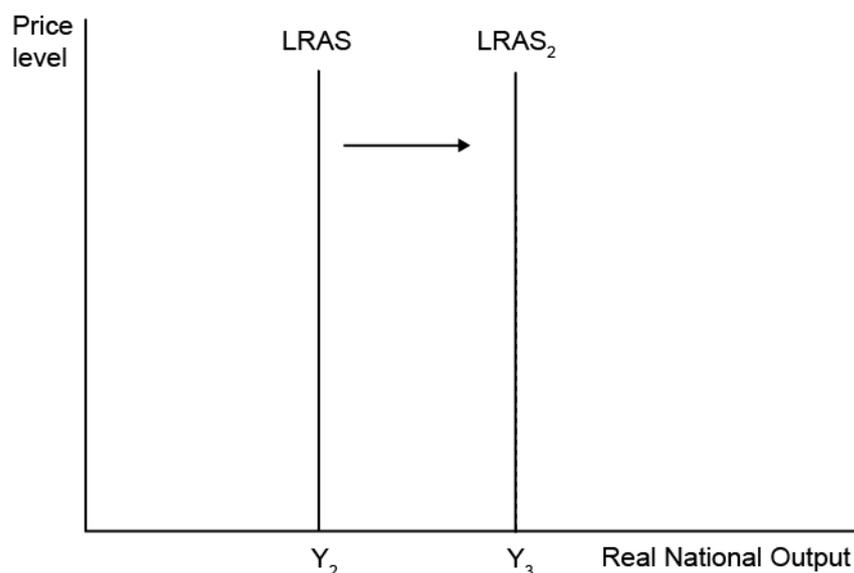
In the long run however, aggregate supply is assumed to be independent of price, and is therefore vertical.

By its nature, it is assumed that the LRAS curve doesn't fluctuate too greatly. Instead, if there are significant, permanent changes to the productive potential of the economy, then this will lead to a shift.

These factors would be permanent changes to the SRAS factors that are discussed above.



Illustration:



An increase in the quantity and productivity of the factors of production, or an advance in technological capabilities in the economy would cause an increase in the productive potential.

This is shown as the shift outward of the LRAS curve

Keynesian aggregate supply curve

From this approach to aggregate supply, we now turn our attentions to how Keynesian economists view the aggregate supply curve.

Keynes still viewed the macro economy in terms of price level and real output, however he saw no distinction between the short run and the long run.

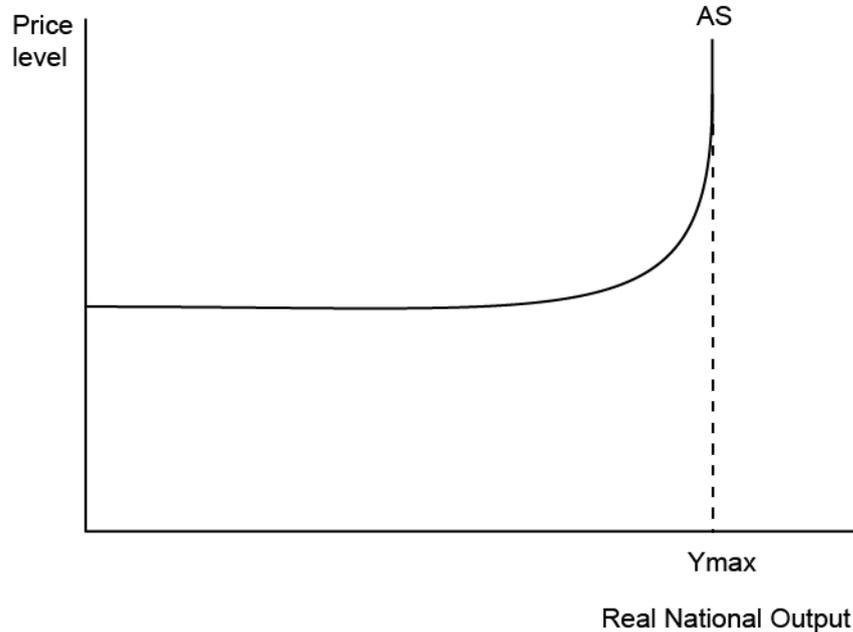
Keynesians still believe that when the economy reaches its productive potential, the AS curve will be vertical. However, when the economy isn't at full output, they believe that the AS curve will be flatter, because any resources aren't being fully utilised.

If there are underutilised resources, then as output increases, this won't put pressure on the price level, instead the economy will just use up spare capacity. It is only once the economy approaches its production potential will firms begin having the power to influence prices upwards.

Keynesian diagram of aggregate supply



Illustration:



Here we see that as output increases, the price level at which firms will supply, in aggregate, begins to increase. However only once the full employment level is approached.

The point where the AS curve goes vertical is also known as the level of *full employment*.



Definition: full employment

The point at which all factors of production are fully utilised in an economy.

This is where, without cause to shift to the curve outwards, it would not be possible to increase output beyond what was possible.

4.3 Aggregate demand

Aggregate demand is equally as important to the understanding of macroeconomics as aggregate supply is. Just as aggregate supply is the collective of what all firms have produced within an economy, aggregate demand is what has been consumed.



Definition: Aggregate demand

The total amount of goods and services demanded within an economy at a given overall price level, and in a given time period.

This is represented through an aggregate demand curve, which shows the relationship between the price level and quantity of output that agents are willing to spend. As with regular demand, the relationship between aggregate demand and price is often a negative one, meaning that at a higher price level households are willing to consume less.

Components of aggregate demand

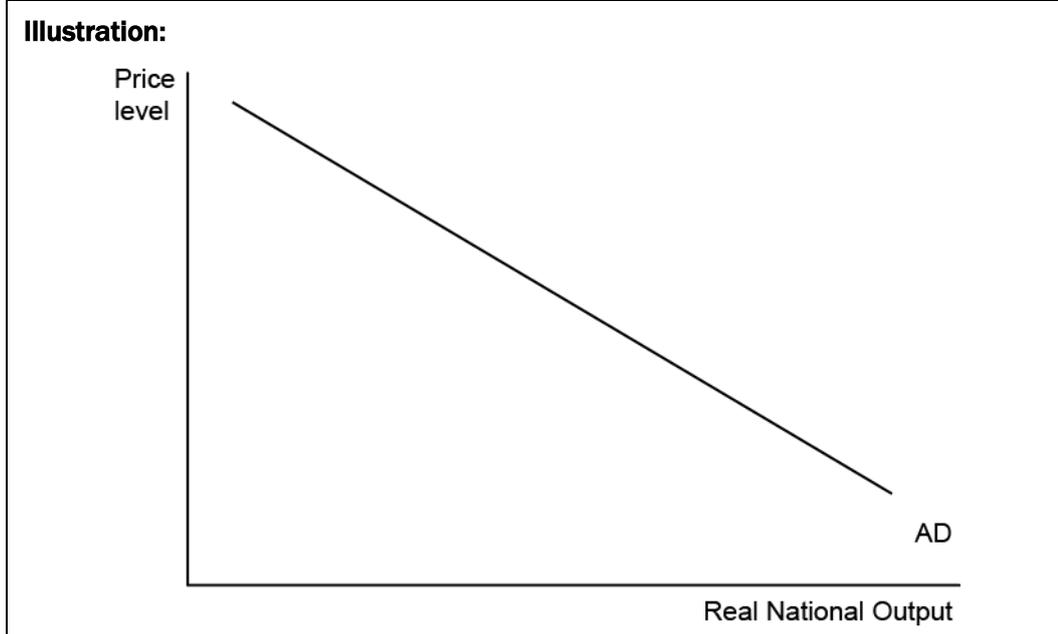
The factors that make up AD will be recognisable from earlier sections in this chapter on GDP. The reason for the similarity is that AD is a measure of all that is demanded within an economy, and so is equivalent to the expenditure amount.

Recalling, it is made up of:

- ❑ C: consumer expenditure on goods and services
- ❑ I: Investment spending
- ❑ G: Government spending
- ❑ (X-M): the net difference between exports and imports in the economy.

AD curve

To better understand the aggregate demand relationship, we shall draw a curve representing it below:

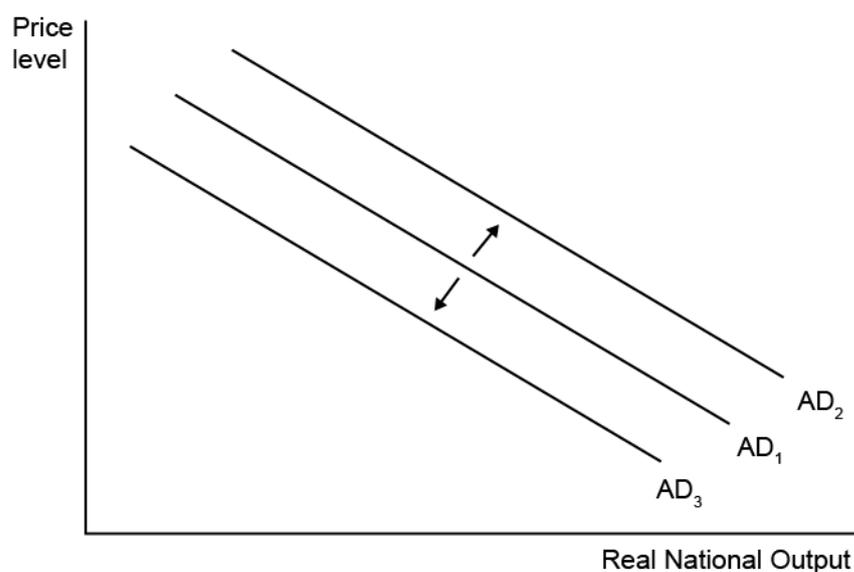


The y-axis represents the price level of all *final* goods and services in the economy. On the x-axis is the Real National Output.

We see that the AD curve is downward sloping, meaning that as the price level decreases, the level of demand in the economy increases.

Shifts in the AD curve

As with other graphs, a shift in the AD curve is not caused by a change in the price level. Instead, it is by some exogenous factor.

**Illustration:**

AD₁ to AD₂ is an increase in aggregate demand, and AD₁ to AD₃ is a decrease in aggregate demand

Some reasons for this shift in aggregate demand will be due to a change in any of the component parts of the equation. The following would cause a shift out of the AD curve:

- Consumers have more income and begin spending more in the economy
- Firms have a wave of optimism and begin investment in projects
- Government decides to spend more on infrastructure projects
- Exports become more attractive to foreign firms
- Imports become less desirable for domestic firms

Effective demand

Though we have looked at aggregate demand as an overarching concept, there are in fact distinctions that can be made, and more detail that can be gone into.

The first of these is effective demand, a key idea proposed by economist John Maynard Keynes.

**Definition: Effective demand**

Actual expenditure in an economy is based on existing/ actual income, rather than if the economy was at its productive potential (when all resources are fully utilised).

This asserts that agents in an economy will only make expenditures with a percentage of their income, rather than an assumption that if the economy is in the long run, all income could possibly be used to fuel aggregate demand.

More discussion on Keynes' theories of consumption and income will be found in the following chapter.

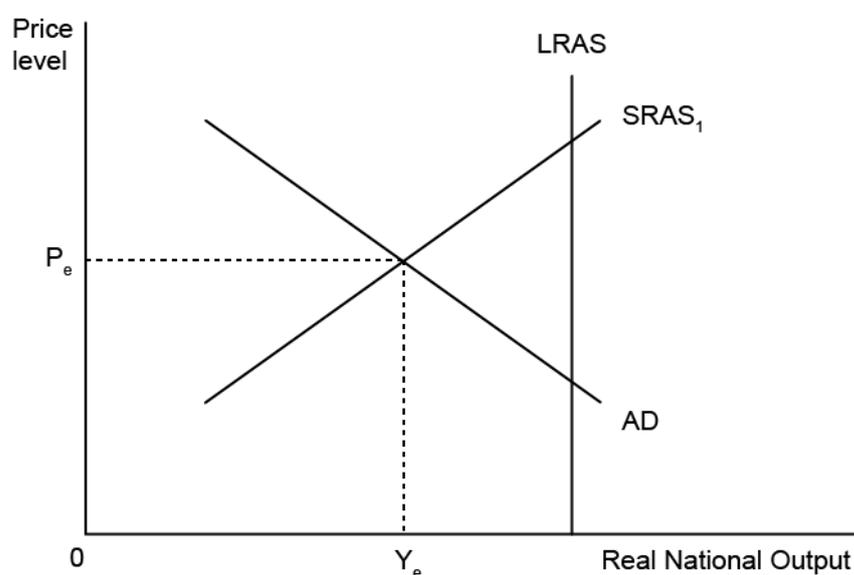
4.4 Equilibrium of AS and AD

Now that we have been introduced to aggregate supply and aggregate demand, we will see how these two will interact.

For this, we shall use the neo-classical approach to aggregate supply, and the aggregate demand.



Illustration:



The macroeconomy is in equilibrium at the point where SRAS (value of output produced within an economy) is equal to AD (level of demand for goods and services).

The reason it is *not* the LRAS is that this is the productive *potential* in the economy. SRAS is what is *actually* being supplied in the macroeconomy, and is therefore what equilibrium should be based upon.

If the general price level is above the equilibrium point, then firms will persistently find that their stock levels are being unsold. This then indicates that they should cut back on further production, to reduce the level of inventory.

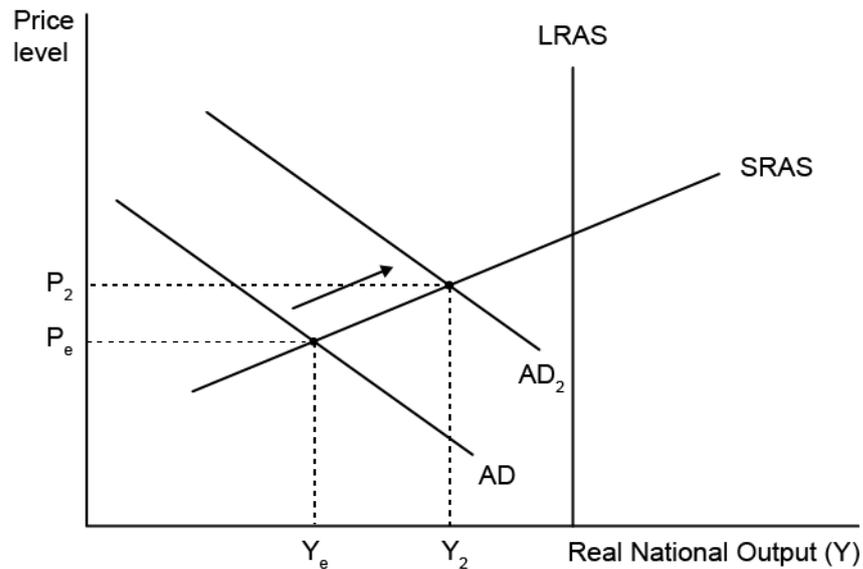
If, however, the general price level is below the equilibrium point, then demand will outstrip supply, stocks will quickly become run down, thus signalling to producers that they should increase supply.

These mechanisms ensure that the macroeconomy is restored to equilibrium.

Changes in aggregate demand

We have seen what effects a shift in AD will have when looking solely at the AD curve.

Here though, we shall see how it affects the equilibrium of national income:

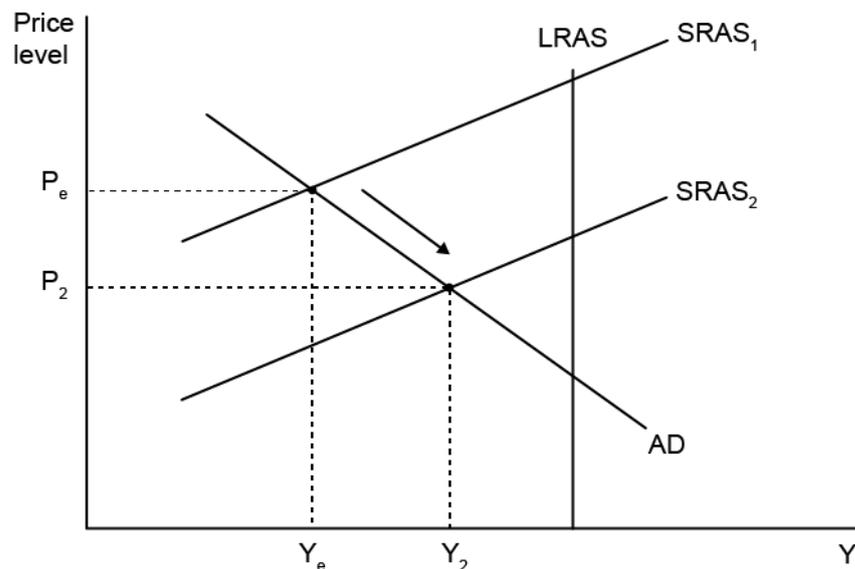
**Illustration:**

We see that an increase in aggregate demand (shift in the curve) causes an expansion of aggregate supply (movement along curve) leading to a new equilibrium at a higher level of national income.

In the process, this causes an increase in the price level within the economy.

Changes in short run aggregate supply

The change in conditions of aggregate supply is also something that will bring about a new equilibrium in the macroeconomy.

**Illustration:**

An increase in aggregate supply leads to an expansion along the AD curve

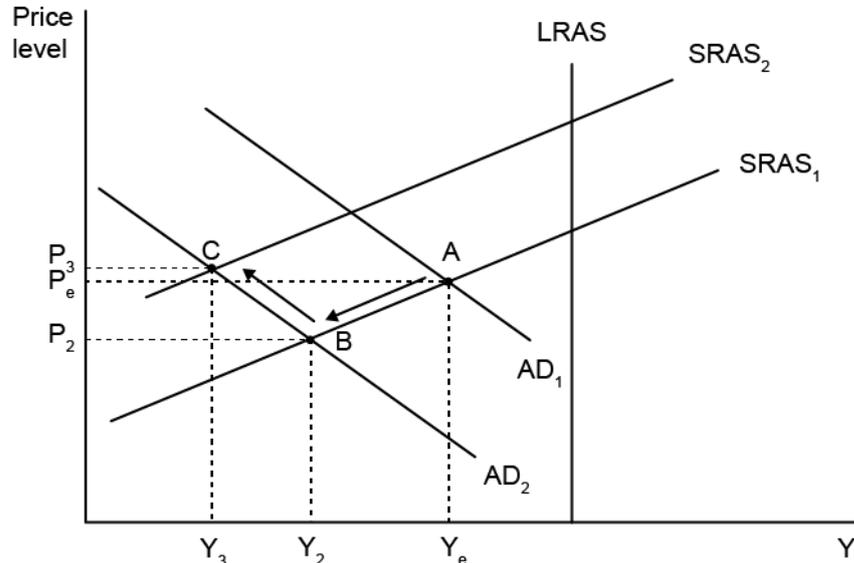
Here, the rise in supply (perhaps caused through a fall in production costs) has led to aggregate demand meeting it at a lower price level, thus increasing national output.

Changes in both AD and SRAS

There are scenarios where both aggregate demand and short run aggregate supply are shifted. Depending upon the magnitude, this can have an interesting effect on where the equilibrium point resettles.



Illustration:



Here, we can suppose that there has been a rise in the cost of imported raw materials.

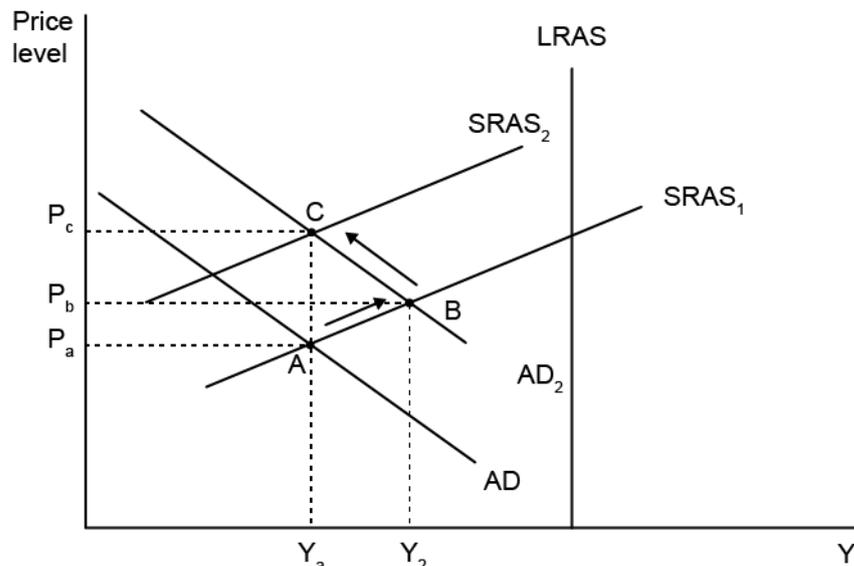
This leads to a decrease in the level of aggregate demand, and also a decrease in short run aggregate supply as the cost of production increases for firms.

As a result, we see how the equilibrium in the economy shifts back to point C.

Another scenario is where there is a rise in aggregate demand, perhaps caused by an increase in government spending, and also a decrease in the short run aggregate supply (caused by a rise in wage costs).



Illustration:



The rise in aggregate demand takes equilibrium from A to B, and the rising wage costs shift the short run aggregate supply curve back from B to C.

These two effects, in this instance, have cancelled each other out, meaning that the equilibrium level of output has been returned to Y_a .

However, notice also what has happened to the general price level in this case.

4.5 Output gap

The difference between the actual output of an economy and the production potential of an economy is known as the *output gap*.



Definition: Output gap

The difference between potential GDP and actual output in an economy.

There can be both negative and positive output gaps.

Negative gaps are when an economy is performing below its potential, and positive gaps are when it is above its potential.

The two scenarios are both important concepts, and we shall explore them further in the subsequent sections.

4.6 Inflationary gap

When the equilibrium in the macroeconomy is beyond the productive potential, it is said that there is an inflationary gap.



Example:

How can the economy be beyond its productive potential?

Whilst this might seem counterintuitive, it is possible.

It is expected in the future, and so arises when expected expenditure will not equal consumption at a future date in time.

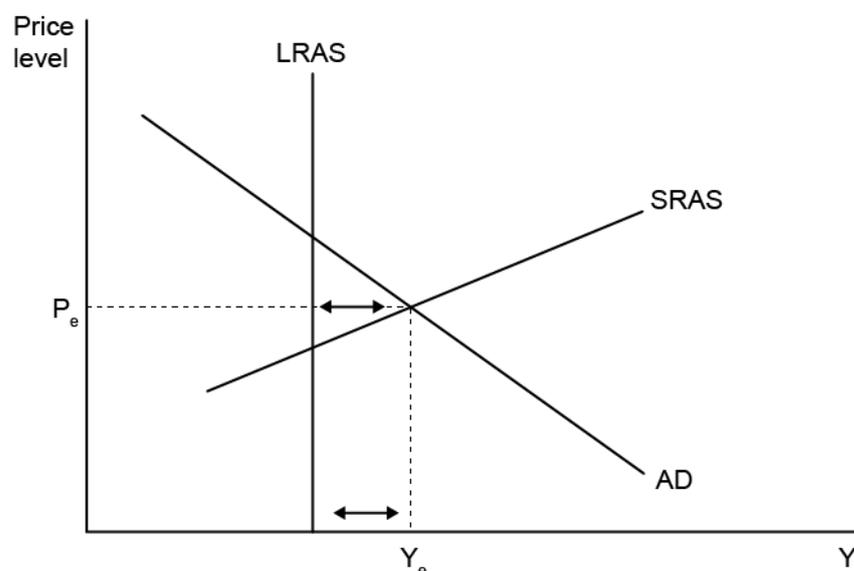
This is not sustainable, without a long term shift in the LRAS.

It can be thought of as an excess in planned expenditure in an economy.

On a diagram, this scenario looks like follows:



Illustration:



↔ = inflationary gap

SRAS and AD joining at the point Y_e is beyond the LRAS

To understand this concept more requires knowledge of the rise in the general price level. This is just a brief explanation. There is more detail on inflation in later chapters.



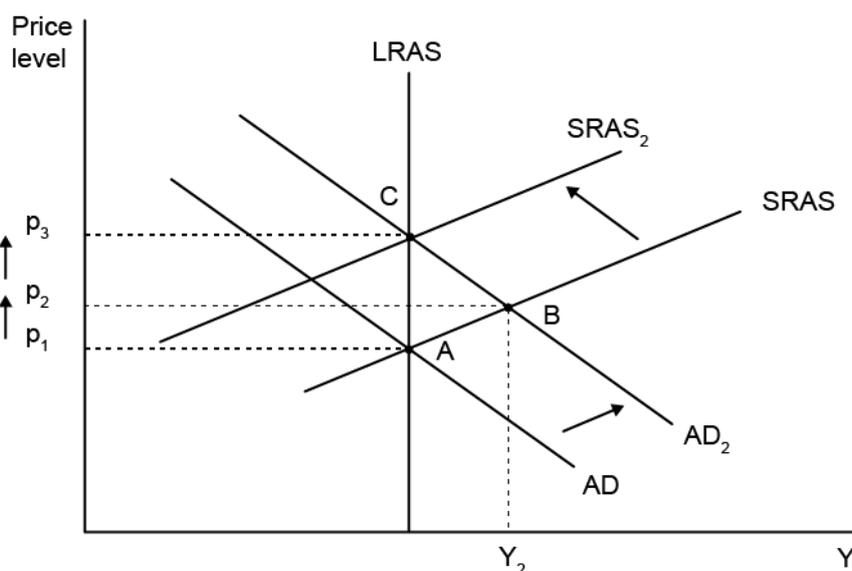
Definition: inflation

A continuous or persistent rise in general price level.

The movement of equilibriums in the macroeconomy can be better represented in the diagram below.



Illustration:



There is an increase in AD, and then a shift back in SRAS

Beyond the LRAS a shift in AD caused by an increase in government spending, results in the equilibrium in the economy moving from A to B. This increases the price level from P_1 to P_2 because if demand increases, consumers in the aggregate are willing to pay a higher price for goods.

When the equilibrium is at B, this is unsustainable. To produce that much output would mean that there is a shortage of labour. In the long run, this will mean wages will increase, causing a rise in the level of SRAS.

This takes the economy from B to C. In doing so, the price level increases from P_2 to P_3 .

This is important to note: a price rise *does not* equate to inflation.

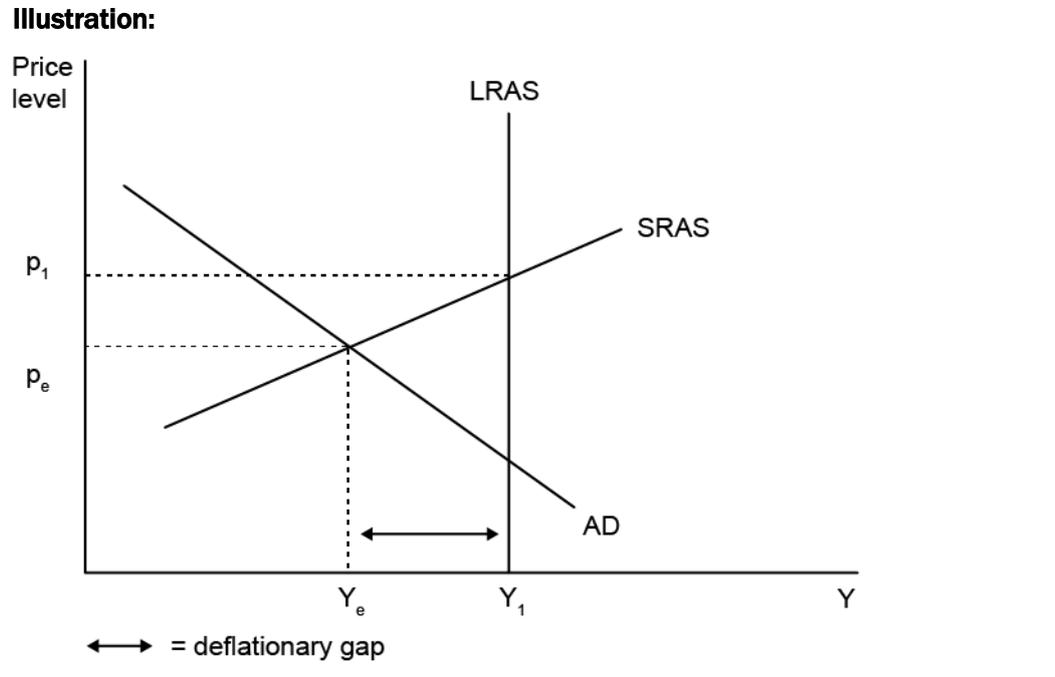
However, persistent price rises (i.e. two or more) is the definition of the start of inflation.

This therefore means that whenever output is beyond the LRAS, there is a tendency for inflation to occur. Therefore, it is known as the *inflationary gap*.

4.7 Deflationary gap

Conversely the deflationary (or recessionary) gap exists when the equilibrium in the economy is less than the production potential.

Graphically, it will look like the following:



The distance between Y_1 and Y_e is what constitutes the deflation gap, as the price level is below what it would be with full employment in the economy. The equilibrium price level is also below the full employment price level.

When no inflationary or deflationary gap exists this is called ideal equilibrium.

Consumption, savings and investment

Contents

- 1 Consumption and saving
- 2 Investment

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO2 Understand the nature of nature of macro-economics and its relation with the measurement of economic growth.

- LO3.2.1: *Consumption, saving and investment functions:* Understand the meaning of consumption and saving and its relationship with the income
- LO3.2.2: *Consumption, saving and investment functions:* Identify how Keynes' Psychological law of consumption explains the relationship between consumption and income with the help of average propensity to consume and marginal propensity to consume curves
- LO3.2.3: *Consumption, saving and investment functions:* Understand the determinants of the consumption function
- LO3.2.4: *Consumption, saving and investment functions:* Understand the stability of consumption and saving functions in the short run and discuss the reasons thereof
- LO3.2.5: *Consumption, saving and investment functions:* Understand the meaning of investment, induced investment and autonomous investment
- LO3.2.6: *Consumption, saving and investment functions:* Explain the relationship of investment with marginal efficiency of capital and interest rate.
- LO3.3.1: *Marginal propensity to consume and save:* Discuss the marginal propensity to consume and save

1 CONSUMPTION AND SAVING

Section overview

- Introduction
- Keynes' Psychological Law
- Determinants of the consumption function
- Keynesian analysis of consumption
- Propensity to consume and propensity to save
- Stability of consumption function

1.1 Introduction

This chapter provides further information on the wider measures for GDP and National Income, and gives more detail on some of the component parts of the macroeconomy.

The fundamentals of aggregate demand are based upon the levels of consumption and investment. It is useful to understand how these component parts are made up.

This analysis is made up by layering different theories on top of each other, and so it makes sense to become comfortable at each stage before progressing to the next. The way in which they are calculated might at first seem complicated. If at any stage you become confused, you should go back over the earlier steps.

In analysing the consumption function, it is important to first assess its interconnectedness with saving and income.

Consumption

Each household has an income, with which it can choose either to spend on goods and services immediately (i.e. consume), or to choose to not spend it in the current period (i.e. save).

This leads us to a definition of consumption as follows:



Definition: Consumption

Total spendings made by the household sector at a given level of income is called consumption.

We then define the functional relationship between consumption and level of income as the consumption function.

This relationship is as follows:



Definition:

Consumption = Income - Savings

and therefore:

Income = Consumption + Savings

Consumption and savings are interrelated. Since we have established the meaning of consumption, we shall do the same for savings.



Definition: Savings

The income remaining from the household sector after all consumption has taken place.

We then define the functional relationship between savings and the level of income as the savings function. As we shall see, keeping in mind that consumption and savings together make up income means that we will often see what is happening to one, is the reverse of the other.

This will become evident as we move through the chapter.

1.2 Keynes' Psychological Law

Keynes observed the actions of a wide range of society, and developed a law to encapsulate their behaviour. He then constructed an economic model based on the collective behaviour.

The law deals with households in the aggregate. In other words, it applies to the macroeconomy, rather than individuals per se.



Definition: Keynes' Psychological Law

People increase their consumption as their income increases, but not by as much as their income increases.

There are 3 propositions that we can infer from this law:

Aggregate consumption can increase due to increased aggregate income, but the increase in aggregate consumption will be less than the increase in income. This is because as basic necessities are fulfilled, people begin to save additional income, hence savings increase.

What isn't spent on consumption is saved.

The increase in income will lead to increased consumption or savings. It is not possible for an increase in income to lead to a decrease in consumption and savings.

1.3 Determinants of the consumption function

The consumption function refers to a list of variables that influence consumption. The main determinants in the consumption function are as follows:

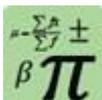
- ❑ **Real income:** as we will see in the next section, this plays an important role in how much one is able to consume. **This is the key factor.**
- ❑ **Distribution of wealth:** if it is unequal, more of the income is in the hands of rich people with a lower propensity to consume. A more equal distribution increases consumption
- ❑ **Expectations of price changes:** if prices are expected to rise, then the population will move to spend their income quicker in the present, hence increasing consumption
- ❑ **Changes in Fiscal Policy:** if low income households are taxed more, then overall consumption decreases
- ❑ **Changes in Interest Rates:** as interest rates increase, it usually decreases the amount of disposable income (by increasing mortgage repayments etc.) and thus reduces consumption

1.4 Keynesian analysis of consumption

John Maynard Keynes was an eminent economist who looked at the relationship between income, savings and consumption in more detail during the 1930s and 1940s.

His ideas about the consumption function are extremely important in understanding the make-up, and features of the macroeconomy.

He claimed that current real disposable income is the most important determinant of consumption in the short run. (Real income is money income adjusted for inflation. It is a measure of the quantity of goods and services that consumers can buy with their income). He proposed a mathematical formula as follows:



Formula: Keynesian theory of consumption

$$C = a + bY$$

Where:

C = consumer spending

a = autonomous spending

This is the level of consumption that would take place even if income was zero.

If an individual's income fell to zero some of his existing spending could be sustained by using savings (or by borrowing).

b = the marginal propensity to consume

This is the change in consumption divided by the change in income.

It is the percentage of each additional rupee earned that will be spent.

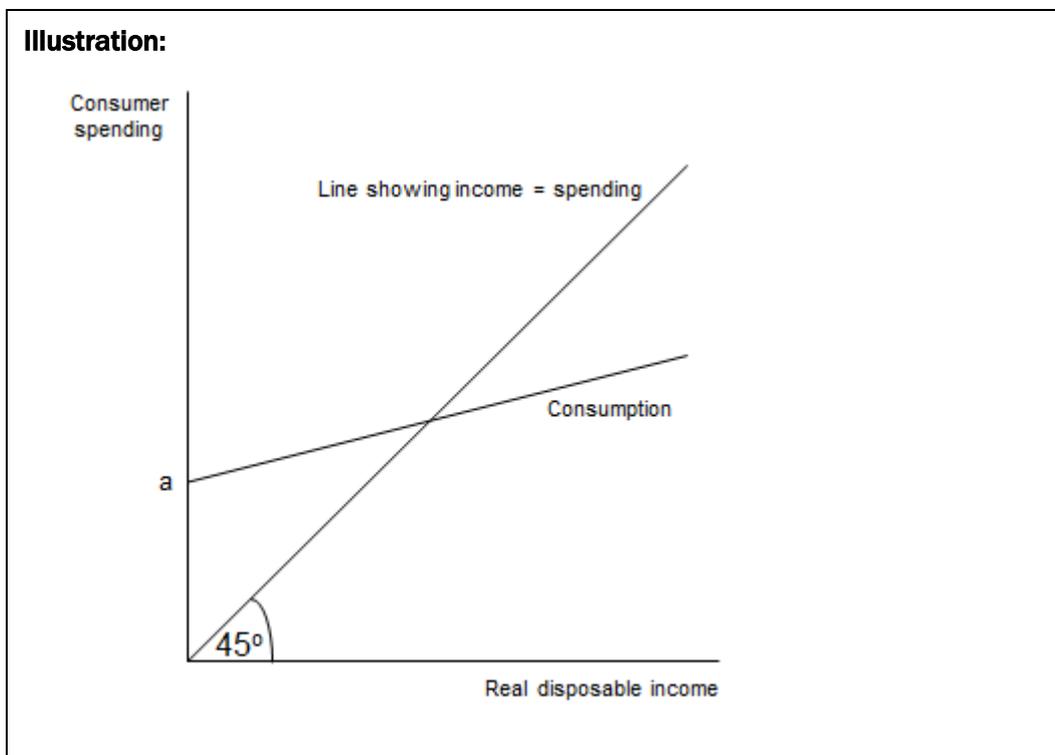
Y = real disposable income

This implies that consumer spending will occur even if real disposable income is zero, as there are basic necessities that all households have to consume.

The extra consumption resulting from an increase in income is called **induced consumption**. Thus, consumption at a given level of income is made up of autonomous spending plus the induced spending (the amount of which depends on the marginal propensity to consume).

The Keynesian consumption function shown above is an equation of a straight line which describes a positive relationship between disposable income (Y) and consumer spending (C). It follows that an increase in income leads to an increase in total consumer demand.

The gradient of the consumption curve is the marginal propensity to consume.



This model suggests that as income rises, consumer spending will rise. However, spending will increase at a lower rate than income.

People with low incomes have a higher average propensity to spend. People with low incomes will spend a high proportion of their income. Such people cannot afford the luxury of saving and must spend everything on consumption.

People with high incomes have a lower average propensity to spend. As incomes rise, people can afford to save a higher proportion of their income. Therefore, as income rise, spending increases at a lower rate than disposable income.

Implication

A transfer of money from high-income households to low-income households will lead to an increase in the overall level of consumption in the economy. This can be achieved by lowering taxes for lower income groups but increasing them for the higher earners.

Shifts in the consumption curve

Changes in some variables (other than real disposable income) can shift the curve.

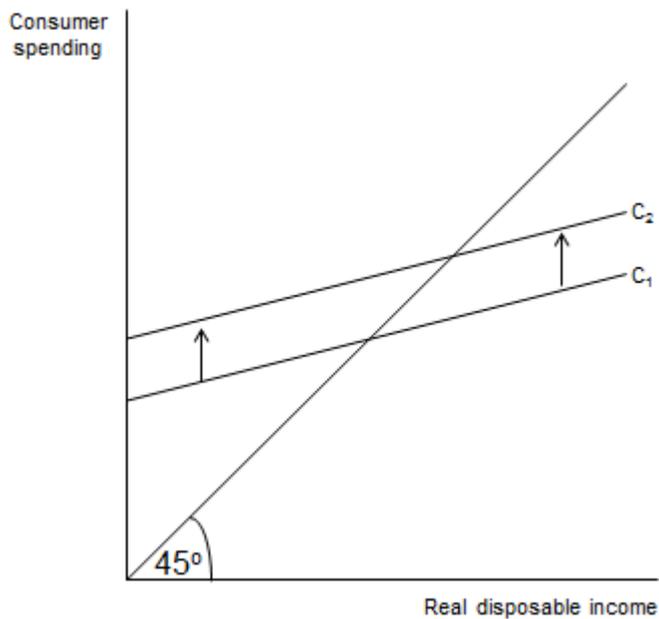
For example, a change in interest rates, consumer confidence might lead to a change in consumption spending at each level of income.

In the following diagram, the consumption function has shifted to the left. (C_1 to C_2). This means consumers are spending a larger percentage of their income.

This could be due to positive forecasts about economic prospects increasing consumer confidence.

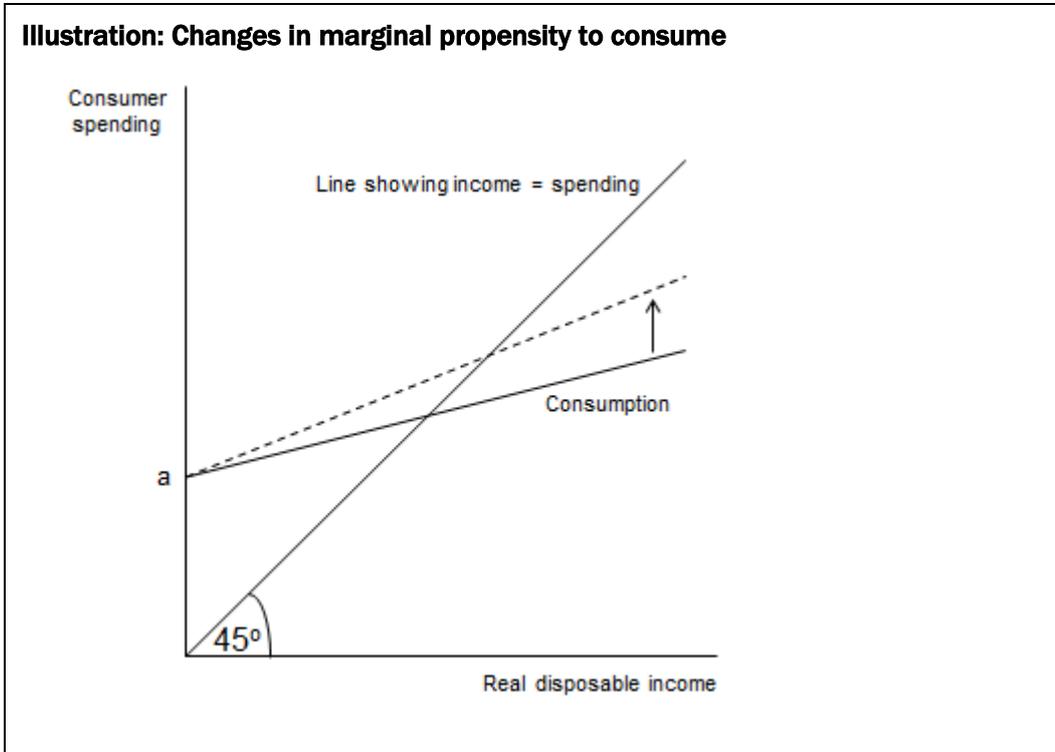


Illustration: Shifts in the consumption curve



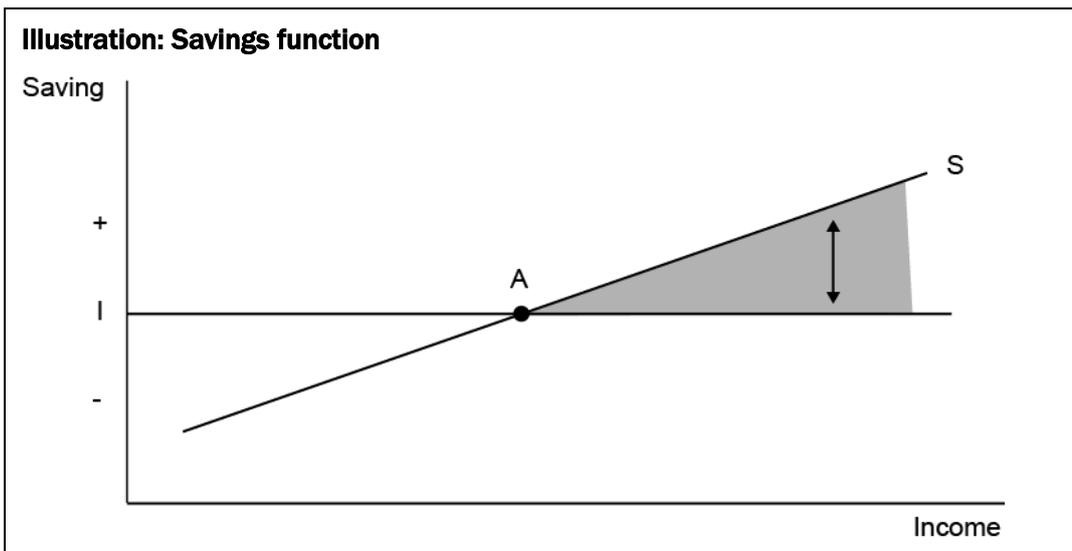
Changes in marginal propensity to consume

This refers to a change in gradient of the consumption curve. In the following diagram the curve has become steeper. This means that people are spending a higher percentage of their income. This might be due to increased confidence or easier availability of credit.



Savings function

A graph of the savings function can be derived from that of the consumption function.



Savings begin at the point when the consumption moves above the 45 degree line (i.e. point A above).

1.5 Propensity to consume and propensity to save

The propensity to consume refers to how the level of consumption changes with an increase in income. As with other concepts of this nature, it is necessary to analyse both the marginal propensity to consume and average propensity to consume.

The formal expressions are as follows:



Definitions

$$\text{MPC} = \frac{\text{change in consumption}}{\text{change in income}} \quad 0 < \text{MPC} < 1$$

$$\text{CPC} = \frac{\text{total spend on consumption}}{\text{total income}}$$

The same equations can also be adapted for the marginal and average propensities to save. Following from the assumption that income is either saved or consumed, we can introduce other identities which hold true:



Definitions

$$\text{MPC} = \frac{\text{change in consumption}}{\text{change in income}} \quad 0 < \text{MPC} < 1$$

$$\text{MPS} = \frac{\text{change in savings}}{\text{change in income}}, \quad 0 < \text{MPS} < 1$$

$$\text{MPC} + \text{MPS} = 1$$

Another way of viewing this is that the **marginal propensity to consume** (MPC) and **marginal propensity to save** (MPS) are both positive, but less than unity.



Example:

Income increases by Rs.10,000: Rs.7,000 is spent on consuming goods, and Rs.3,000 is saved. The MPC is $\frac{7,000}{10,000} = 0.7$ and the MPS is $\frac{3,000}{10,000} = 0.3$.

Together: $0.7 + 0.3 = 1$

1.6 Stability of consumption function

When looking at the stability of the consumption function, it is necessary to view it in both the short and long run.

As income rises, a household will (as a percentage of total income) spend less, and save more, meaning that over time, the APC will decrease (and thereby not remain constant).

As income rises the MPC does not change (until higher levels when it tends to decline).



Example: Stability of consumption functionx

| Income | Consumption | APC | MPC |
|--------|-------------|------|-----|
| 0 | 1 | | |
| 1 | 1.6 | 1.60 | 0.6 |
| 2 | 2.2 | 1.10 | 0.6 |
| 3 | 2.8 | 0.93 | 0.6 |
| 4 | 3.4 | 0.85 | 0.6 |
| 5 | 4 | 0.80 | 0.6 |
| 6 | 4.6 | 0.77 | 0.6 |
| 7 | 5.2 | 0.74 | 0.6 |
| 8 | 5.8 | 0.73 | 0.6 |
| 9 | 6.4 | 0.71 | 0.6 |
| 10 | 7 | 0.70 | 0.6 |

Calculation of the marginal propensity to consume

Income increases from 0 to 1

Change in consumption

Change income

$$\frac{1.6 - 1}{1 - 0} = 0.6$$

Income increases from 6 to 7

$$\frac{5.2 - 4.6}{1 - 0} = 0.6$$

2 INVESTMENT

Section overview

- Introduction
- Autonomous investment
- Induced investment
- Interest rates and investment
- Government means of influencing investment

2.1 Introduction

Another important aspect in building up our model of the macroeconomy is investment. The simplest explanation of investment is:



Definition: Investment

An asset, item, or project that is purchased with the hope of generating future income.

Naturally though, with such a broad definition, there are distinctions that can be made. Identifying and explaining these divisions will give us a greater appreciation of the types of investment that exist within the macroeconomy.

2.2 Autonomous investment

This type of investment is independent of the level of income and aggregate demand, and can be shown in the illustration below.

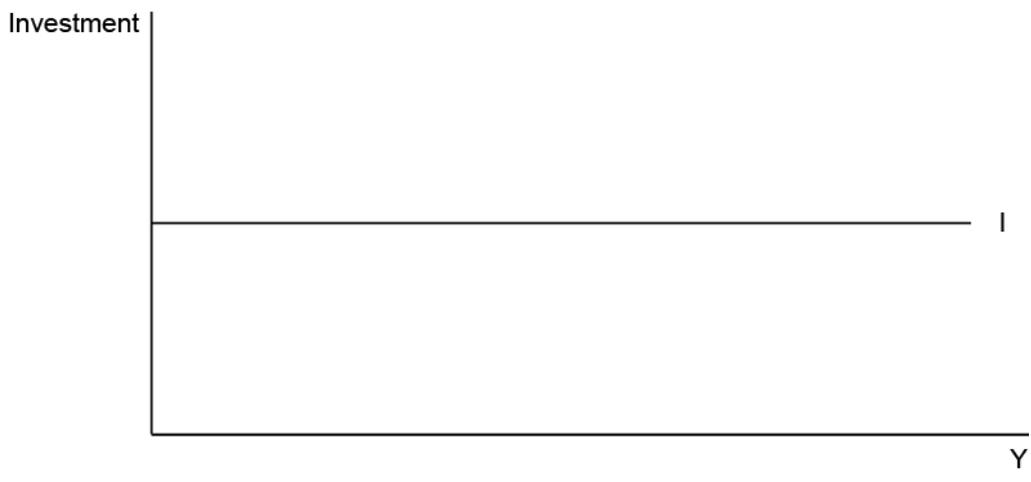


Definition: Autonomous investment

Investment that is motivated by the wellbeing to society that it delivers.



Illustration:



This type of investment is also independent of the profit it may bring, as it is not carried out for that purpose.

This type of investment is ordinarily undertaken by public bodies, or private organisations not pursuing profit

Examples of autonomous investment include: construction of highways, street lighting and other infrastructure projects.

2.3 Induced investment

Conversely, investment that is dependent on the level of income is known as induced investment.



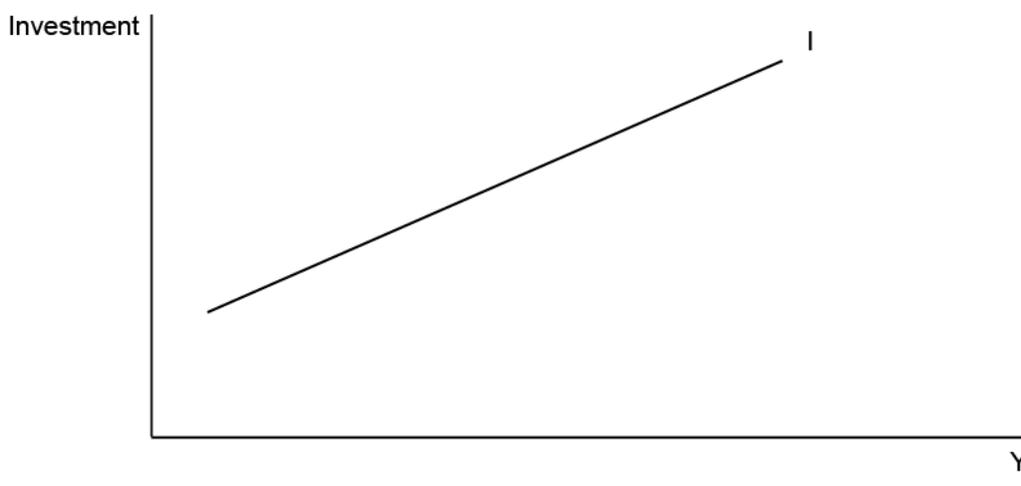
Definition: Induced investment

Investment that is motivated by the margin of profit that it delivers.

This can be presented in the following, representative illustration:



Illustration:



The greater the margin, the more will be invested until the economic gains no longer outweigh the costs.

This type of investment is associated with private enterprise in pursuit of maximising profit.

Examples of this include: improvements to machinery, human capital (i.e. staff training that will generate an economic return) and new assets.

2.4 Interest rates and investment

For the purpose of our analysis, we will be considering induced investment of the private, profit maximising firm.

The interest rate at which firms can borrow is an important factor to consider. A change in interest rates should affect the level of investment in the private sector of the economy.

Keynes stated that the two factors that determined the level of investment in an economy were:

- Marginal Efficiency of Capital
- Market rate of interest

These two concepts are considered further below.

**Definition: Marginal efficiency of capital (MEC)**

The rate of discount which makes the present value of the prospective yield from the capital asset equal to its supply price.

**Definition: Market rate of interest**

The rate at which a firm or household must pay for funds in the present, which will be paid back in the future. This rate is expressed as a percentage of the principal.

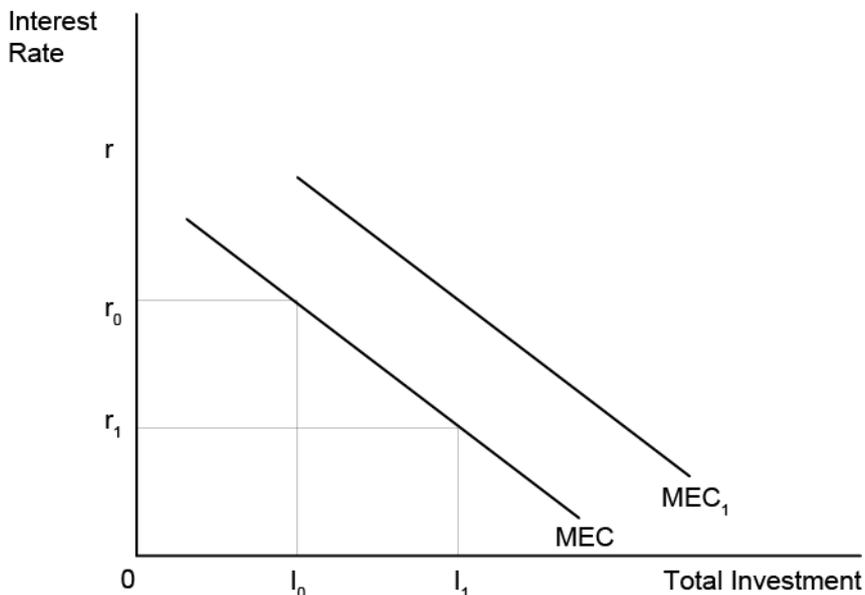
This then leads us to seeing an example of how the two interact.

**Example:**

A fall in interest rates should decrease the cost of investment relative to the potential yield that the investment might bring, thereby increasing the likelihood that investment will occur.

Firms will invest if the discounted yield (i.e. the benefit) exceeds the cost of the project.

The inverse relationship between the rate of interest, and the level of investment can be summarised as a **Marginal Efficiency of Capital** curve.

**Illustration: Marginal Efficiency of Capital**

The MEC schedule shows the total level of investment which will take place in the economy at each level of the interest rate.

At interest rate r_0 project I_0 is *marginally efficient* i.e. has a *net present value of 0* (or its internal rate of return equals r_0). All points to the left of the MEC have a positive NPV.

If the interest rate falls to r_1 then further projects become profitable up to project I_1 which is marginally efficient.

Factors that affect investment and MEC

The MEC can shift outwards (to MEC1) if the **expected rate of return** increases.

There are a number of reasons that could cause this:

Short Run factors

- ❑ **Demand for the good:** If demand is expected to grow or costs to fall, then entrepreneurs are likely to expect a better return, and therefore would look to invest. Converse is true for falling demand and higher costs.
- ❑ **Change in income:** If entrepreneurs receive a sizeable increase in income, perhaps through a tax concession or similar, then there will be more opportunity to invest.
- ❑ **Liquid assets:** If the assets an entrepreneur holds are liquid (i.e. can easily be sold for cash) then it might be possible for more investment.
- ❑ **Current rate of investment:** If there has already been significant investment in an industry, then the marginal returns to more investment may be negligible, which might mean marginal efficiency of capital will be lower.
- ❑ **Change in sentiment:** If businessmen are optimistic over the future economic climate, it may be that MEC is overestimated, and will therefore be higher.

Long Run factors

There are also other factors which will have less of a direct influence on MEC and investment, but might contribute to trends in the level of investment.

- ❑ **Population growth:** If the rate of population growth is increasing dramatically, then this will serve to boost future demand for goods, and thus encourage investment.
- ❑ **Technological development:** If there is an increase in the capabilities of an industry, then this may encourage investment. Further, if one industry is experiencing technological advancements (say, the automobile industry) then ancillary industries (e.g. steel, rubber) may also experience a boost in investment to 'catch up'.
- ❑ **Quantity of capital goods already in existence:** If many substitute goods exist already, then it is less advantageous to invest, as the MEC will be less in that industry.
- ❑ **Tax rates:** Anything that serves to reduce the profitability of venture will reduce the MEC. Taxes on inputs, or other parts of the process will do just this.

2.5 Government means of influencing investment

The government can influence the level of private investment in several ways:

- ❑ **Control interest rates:** By keeping interest rates low, for example, the government might encourage a higher volume of investments, whereas by allowing interest rates to rise, the government would probably cause the volume of investment to fall. Government can influence interest rates.
- ❑ **Provide direct encouragement to investing firms:** By offering investment grants, perhaps directed at particular regions, by lowering the cost of investment i.e. cost of doing business, by improving the rule of law, by providing tax incentives etc.
- ❑ **Seek to stimulate business confidence:** By developing and announcing an economic policy for continued growth which should be consistent with the stated goals. Frequent and sudden changes in economic policy results in loss of business confidence.
- ❑ **Encourage technological developments:** By financing research schemes of its own as well as those of private firms. In the long run, investment in education might be significant for the strength of innovative research and development by the country's industries.
- ❑ **Influencing the volume of consumption:** Sometimes the government indirectly influence the level of investment, for instance a policy to control the growth in the money supply, would help in credit control and would in turn affect consumer spending, especially in consumer durable goods. Changes in consumption affects investment levels, with the influence of the accelerator.
- ❑ **Government spending:** Higher government spending in infrastructure creates demand which stimulates investment by the private sector.

2.6 Impact of change in interest rates

Increase in interest rates

An increase in interest rates will discourage investment as it would be more difficult for firms to earn an adequate return on projects. (However, it might encourage people to save, thus resulting in availability of more funds for investment which would put downward pressure on interest rates).

Consumption would fall for a number of reasons:

- High interest rates encourage people to save. This would put a downward pressure on consumption.
- High interest rates would result in lower disposable income for those people with loans and mortgages.
- High interest rates make it more expensive to borrow. This would reduce consumption.

The opposite would hold for a fall in interest rates

Decrease in interest rates

A decrease in interest rates would encourage investment as it would be easier for firms to earn an adequate return on projects. (However, it might discourage saving, thus resulting in a reduction in funds available for investment which would put upward pressure on interest rates).

Consumption would rise for a number of reasons:

- Low interest rates discourage saving.
- Low interest rates result in higher disposable income for those people with loans and mortgages.
- High interest rates make it less expensive to borrow. This would increase consumption.

Multiplier and accelerator

Contents

- 1 Introduction
- 2 Determining output
- 3 Multiplier model
- 4 Accelerator model
- 5 Interaction of multiplier and accelerator

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO2 Understand the nature of nature of macro-economics and its relation with the measurement of economic growth.

LO3.4.1 *Multiplier and accelerator:* Comprehend the effect of the multiplier on the level of national income

LO3.4.2 *Multiplier and accelerator:* Understand the assumptions and limitations of the multiplier concepts

LO3.4.3 *Multiplier and accelerator:* Comprehend the principle of acceleration of derived demand

LO3.4.4 *Multiplier and accelerator:* Understand how the multiplier and accelerator interact

1 INTRODUCTION

Section overview

- General

1.1 General

Now that we are aware of how consumption, investment and savings interact, we look now to what effects this has on output in the economy.

We learnt in the Macroeconomics Introduction that output in the economy is determined when the Short Run Aggregate Supply (SRAS) curve meets the aggregate demand (AD) curve.

In the previous chapter, we found out more about the interaction of consumption, investment, and savings, and so will now apply this to two new phenomena: the multiplier and accelerator.

2 DETERMINING OUTPUT

Section overview

- Introduction
- Consumption and savings schedules
- Savings and investment schedules
- Consumption and investment schedules
- Interaction of the multiplier and accelerator effects

2.1 Introduction

Keynes developed a theory of the multiplier model in response to the Great Depression in the USA during the 1930s.

Remembering the Keynesian view of aggregate supply, it was flat at low levels of output, and then sharply rose as the economy reached full employment.

During the Great Depression, output and prices were persistently low across the whole country. Many government policies, such as taxes on imports to boost domestic supply, were adopted, however it was to no avail.

Keynes' view was that instead of focussing on the supply side potential of the economy, there should be a stimulation of aggregate demand, to increase output and national income in the economy.

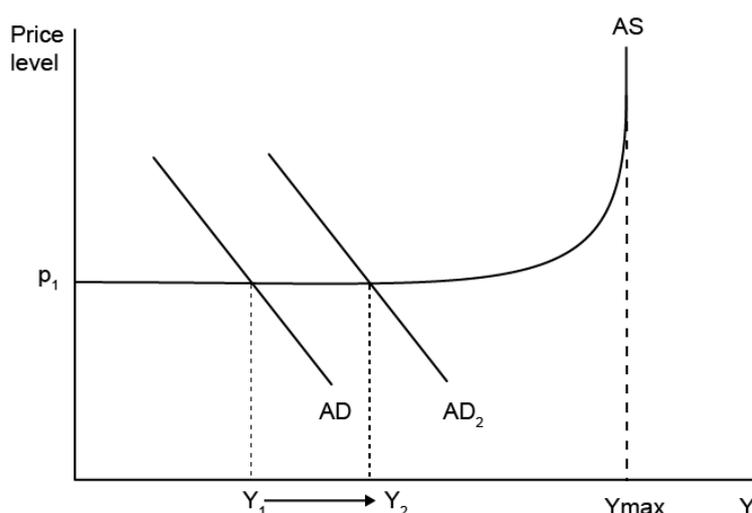
If aggregate demand is boosted

When the economy was in a deep depression, Keynes argued that the AS curve would be flat. There would be so much spare capacity for firms that an increase in production wouldn't lead to an increase in price.

For example, if there is high unemployment, if a firm needs to hire more workers to increase supply, then the cost to the firm will be comparatively low, compared to if the economy was at full employment, and wages would be high.



Illustration:



The increase in AD has caused output to increase from Y_1 to Y_2 , but the price level remains unchanged

This shows how a boost in AD has the effect of increasing output, thereby helping the economy move out of depression.

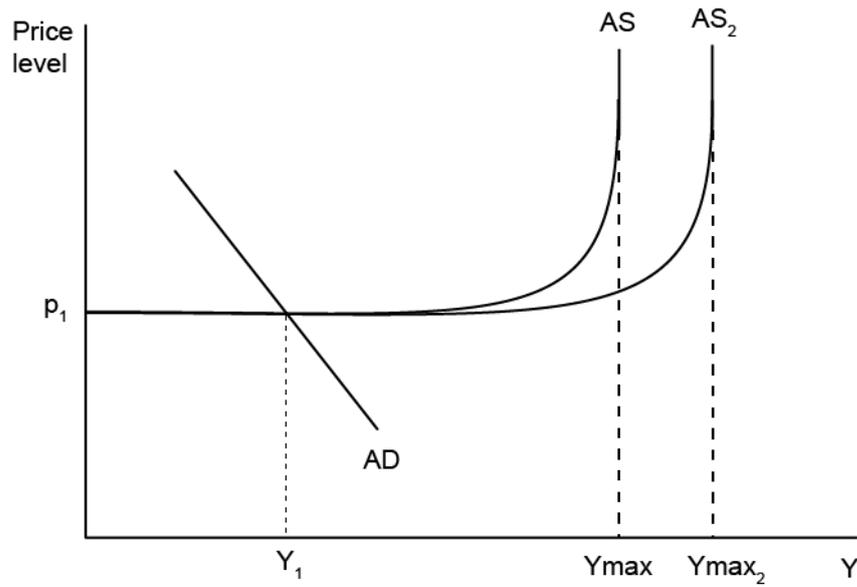
If aggregate supply is boosted

The types of policies that Keynes argued were not necessary were ones that looked to increase the competitiveness or capacity of supply. Examples of these are measures to reduce wages, or the cost of raw material.

From the point of being in a depression, Keynes argued that there would be no change in the output of the economy, because AD would remain stubbornly fixed. This is illustrated below.



Illustration:



The increase in AS has had no effect on the equilibrium output because the AS curve remains horizontal at that stage.

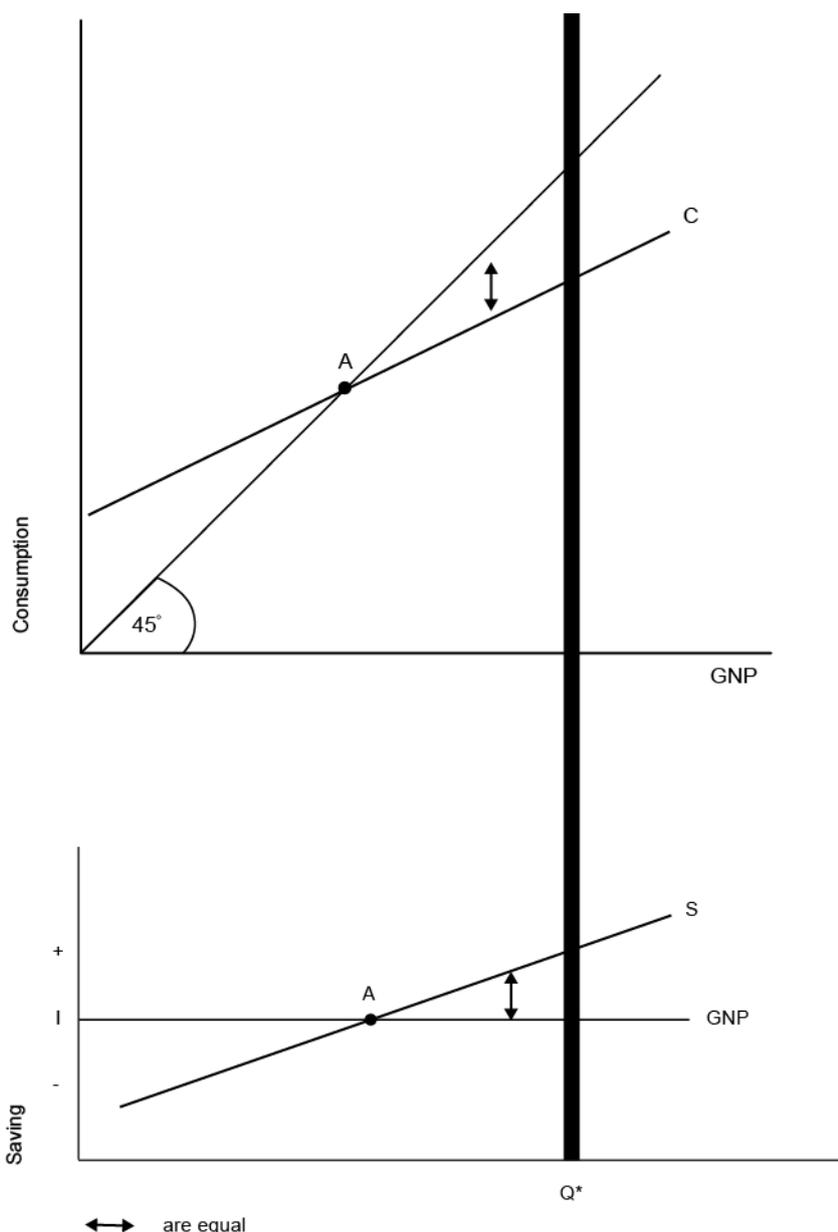
This view of the macroeconomy provides the setting for understanding the role of the multiplier effect.

2.2 Consumption and savings schedules

Covering what was learnt in the previous chapter, we will revisit the consumption and savings functions.



Illustration:



We know that consumption and savings are closely linked, and this is shown by the length of the arrows being equal, to show that when Consumption is below the 45 degree line, that amount is Savings. And also the equilibrium point A occurring at the same level of output.

The Q^* band represents the level of potential GNP in the economy. This is more or less the same concept as the LRAS from our study of macroeconomic equilibrium.

This shows also how the graphs of the two are effectively mirrored images, and will together add up to equal the 45 degree line.

2.3 Savings and investment schedules

We have also learnt about the factors that determine the level of investment. These are based upon the *expected* levels of future output, business confidence, interest and other regulation.

We will see how savings and investment schedules will interact with each to determine output.

Equilibrium between savings and investment

Output determination occurs when the savings of all of the households in an economy are equal to the desired investment opportunities.

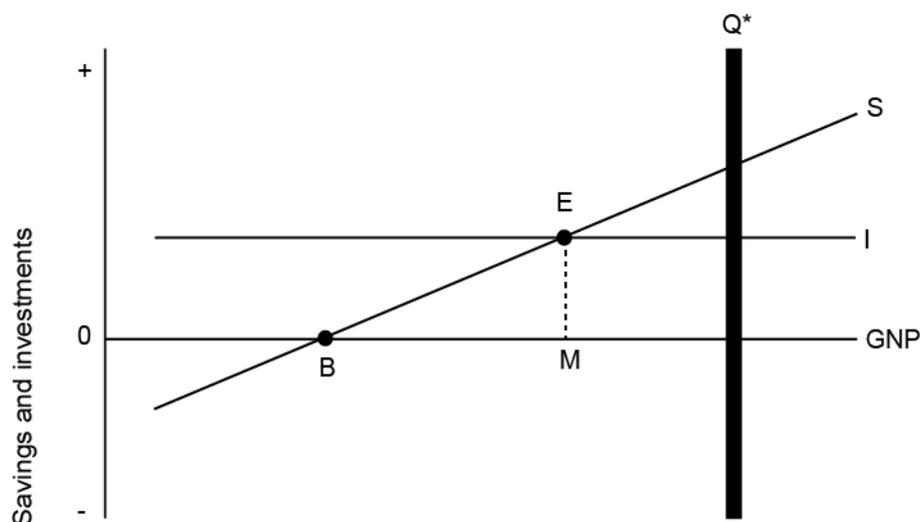
The simple process by which to think of this is:

- ❑ Rich households don't wish to consume all of their capital
- ❑ Entrepreneurs require capital to invest in projects
- ❑ An agreement is made between household and entrepreneur
- ❑ Therefore savings become used for investment
- ❑ This process is usually facilitated by banks

Let's view this diagrammatically:



Illustration:



For the sake of simplicity, we have assumed that intended investment will be made independent of the level of GNP, hence why it is flat.

At an output of M , households in an economy wish to save the value of ME . Firms will look to invest the value of ME also.

At no other point will savings and intended investment be in equilibrium.

It is worth noting also that these are just *planned* levels of savings and investment. It will not necessarily follow that agents in the economy will follow this level, however it is the intent that is important.

The two functions cannot remain at a point away from equilibrium, because forces will revert them back. For example, if output is beyond M , then households will save a higher portion of their income. This means that they will be holding

back from consumption, which means firms will not invest (because there will not be the demand to meet it).

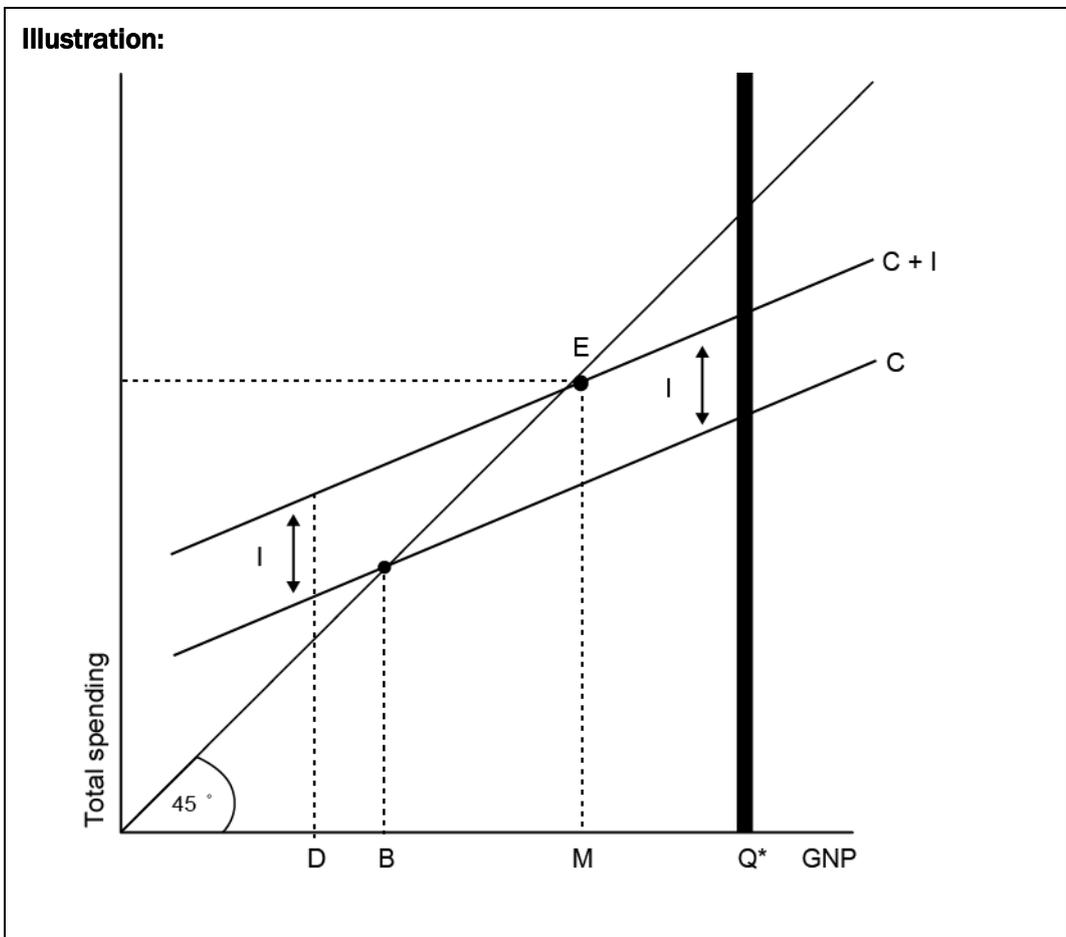
Should a firm continue investing at that level, eventually inventories would increase, firms would not be able to sustain such levels of production and would then cut back on staff. This would eventually take GNP back to the equilibrium point.

2.4 Consumption and investment schedules

Determining output through the combination of these two functions is another way of identifying the level of output in the economy.

This is done through measuring the total spending in an economy at different levels of output. By combining consumption and investment, we see the level of desired expenditure by consumers and firms at each level of output.

The economy is in equilibrium when this crosses the 45 degree line, because the total output is then exactly equal to desired levels of consumption and investment in the economy.



Disequilibrium in output determination

It is important to establish why equilibrium must occur at E – where planned consumption and investment is equal to planned output – rather than at any other point on the graph.

**Example:**

Suppose the economy is at output D. In the case of house builders, there would soon become a shortage of houses.

This is because at output D, consumers and producers are planning to spend more than output can provide. Due to the high level of C+I spending, the output of houses will quickly be consumed.

This will lead to a disequilibrium, as house builders then act to build more houses, to meet the demand.

As a result, output will increase.

Planned versus actual quantities

To recap, there has been a lot of mention regarding the *planned* outputs, or *desired* consumption which should be clarified.

The actual savings, and actual investment will always match, as calculated by statisticians. However there will often be a disparity between what firms and households plan to do, and what they actually do, when they find their planned sales or production is different from what occurs in the economy.

It is only at the equilibrium point when there will be no tendency for change.

3 MULTIPLIER MODEL

Section overview

- Introduction
- Multiplier effect
- Multiplier effect: extensions
- Multiplier effect: assumptions
- Multiplier effect: limitations

3.1 Introduction

With an understanding of how the consumption, savings and investment schedules interact, we are now prepared to understand an integral idea in macroeconomics: the multiplier.

The concept proposes that an increase in private investment can increase output and employment, and a decrease in investment will cause it to contract.

Keynesians believe that the increase in investment will have an overall impact on GNP that is greater than itself. The term *multiplier* is used to show that the spending done to boost investment has an amplified effect on output.

3.2 Multiplier effect

This leads us to a more formal definition of the multiplier.



Definition: Multiplier effect

The number by which a change in investment must be multiplied to result in the final change of total output.

We can initially illustrate this with a very simple case.



Example:

If there was an increase in investment in an economy by Rs.10 million, and the overall effect on the total output of the economy was Rs.40 million, then the multiplier effect would be equal to 4.

Similarly, if the overall total effect was equal to Rs.25 million, the multiplier effect would be 2.5.

How is this so?

Conceptually, it can be thought of as: *the consumption of one person becomes the income of another.*

When an item is bought, or money is invested, it is not just the initial change in the output that will occur, there are knock-on payments that will increase national output also.

**Example:**

Imran decides to build a wooden table with the value of Rs.1000.

This will increase the amount of national income by Rs.1000, owing to this investment.

However, there is also a chain of other payments that would be made.

Suppose the carpenters and wood merchants are paid Rs.1000. They too will use this money to spend on resources: new consumption goods. Let's say that they will spend Rs.750 of what they earned.

This means that their *marginal propensity to consume (MPC)* is $\frac{3}{4}$. Consequently, the firms that they spend this money on will see their incomes rise by Rs.750.

These firms also have an MPC of $\frac{3}{4}$, and so will spend ($\frac{3}{4}$ of $\frac{3}{4}$ of Rs.1000 which equals) Rs. 562.5 on other firms in the economy.

This chain will continue until all of the initial investment has been spent.

We can give more clarity to this by including numbers:

**Example:**

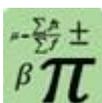
Imran's initial Rs.1000 investment will have the following net effect:

| | | |
|--------------|---------------------------------|-------------------|
| Rs.1000 | 1×1000 | |
| + Rs. 750 | $+ \frac{3}{4} \times 1000$ | |
| + Rs. 562.5 | $+ (\frac{3}{4})^2 \times 1000$ | |
| + Rs. 421.88 | $+ (\frac{3}{4})^3 \times 1000$ | |
| +... | + ... | |
| Rs.4000 | $\frac{1}{1-\frac{3}{4}} 00000$ | or $4 * Rs. 1000$ |

Here we see that the MPC is an important point in the power of the multiplier effect.

Had the MPC been lower, say $\frac{1}{2}$, then less of the income would have been passed on at each stage of the chain. This means that the overall impact on the economy would have been less.

This leads to a generic formula for the multiplier which is as follows:

**Formula:**

$$\text{Change in output} = \frac{1}{1-\text{MPC}} * \text{change in investment}$$

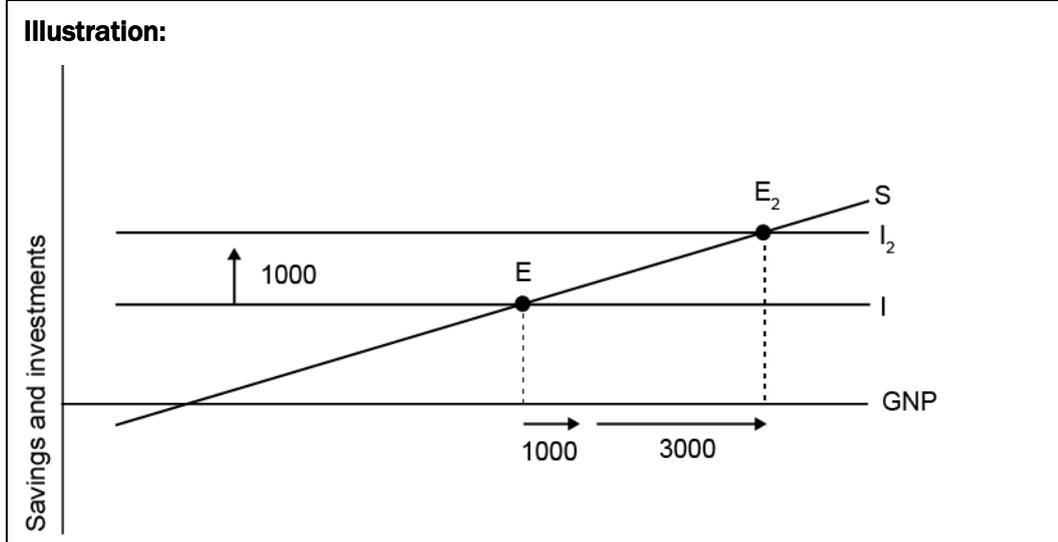
Alternatively;

$$\text{Change in output} = \frac{1}{\text{MPS}} * \text{change in investment}$$

If MPS (marginal propensity to save) is higher, then there will be more 'withdrawal' from the chain, as more income is saved, rather than spent in the wider economy.

Graphical representation

Returning to our previous diagram, it is possible to graphically show what has just occurred.



The Rs.1000 increase in investment leads not only to an Rs.1000 increase in GNP, but a further Rs.3000 increase also.

Therefore each Rs.1 of investment has been “multiplied” 4 times.

3.3 Multiplier effect: extensions

The model that we have provided thus shows a simple model of the economy, whereby the money that is earned by one party is then transferred the next as the inverse of the marginal propensity to save.

This introduces the concept in a concise manner. We shall now look at ways of accounting for other inclusions in the equation.

Marginal rate of tax on income

The idea of the multiplier works by a portion of income being passed on from agent to agent, each of whom then spends it in the wider economy.

The ‘leakage’ from this that we have seen is savings: households choosing a portion of their income to forgo current consumption for the future.

A further way that money will not be passed on from agent to agent is through taxes.

If the government taxes the income that someone receives, he is not able to use this portion of his income to spend on other service.

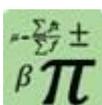


Definition: Marginal rate of tax on income

The percentage of income that is paid to the government in the form of tax.

It is also known as the marginal propensity of tax (MPT)

With the inclusion of taxes, the multiplier equation now looks as follows:



Formula: Multiplier with taxes

$$\text{Multiplier} = \frac{1}{\text{MPS} + \text{marginal tax on income}}$$

We can work through an example of this, as follows:



Example:

Marginal propensity to save = 0.2

Marginal tax on income = 0.2

The value of the multiplier then becomes

$$\frac{1}{0.2 + 0.2} = 2.5$$

For every Rs.1000 investment, the effect on output is Rs.2500

Marginal propensity to import

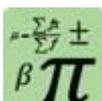
Building up our model further, we next introduce an element of trade. In an open economy, the flow of money will not just be circulating between the hands of society, there will also be exchange with those outside.



Definition: Marginal propensity to import (MPM)

The percentage of income that is used to buy goods and services outside of the domestic economy.

With the inclusion of imports, the multiplier equation now looks as follows:



Formula: Multiplier with taxes

$$\text{Multiplier} = \frac{1}{\text{MPS} + \text{MPT} + \text{MPM}}$$

We can work through an example of this, as follows:



Example:

Marginal propensity to save = 0.2

Marginal tax on income = 0.2

Marginal propensity to import = 0.1

The value of the multiplier then becomes

$$\frac{1}{0.2 + 0.2 + 0.1} = 2$$

For every Rs.1000 investment, the effect on output is Rs.2000

3.4 Multiplier effect: assumptions

To understand how much impact the multiplier effect will have on the economy, we need to look at some of the factors, and assumptions that underlie it.

The broad way of understanding it, is how much of the income that is generated by one party, be passed onto to another party and so on. Throughout this exchange, there are elements that will be extracted, thereby reducing the multiplier's impact.

- ❑ **Marginal Propensity to Consume:** How much of income generated through the investment will be spent on other goods and services in the economy. If MPC is high, then the multiplier effect is stronger.
- ❑ **Tax rate:** How much of this income will be returned to the government in the form of tax. The lower the tax rate, the higher the multiplier effect.
- ❑ **Fall in the aggregate demand:** The effect can also be negative. Suppose a local factory closes, removing the income of members of the community. The firms which survived off their consumption then lose their income, and so on
- ❑ **Supply-side capacity of the economy:** If there is no spare capacity in the economy, an increase in the government investment may lead to inflation, which would lessen the 'real' effects of the investment.

3.5 Multiplier effect: limitations

There are a number of limitations to the effectiveness of the multiplier effect. We have just seen a number of the assumptions that the concept is based upon.

Next, we shall examine two other limitations to the effect of the multiplier.

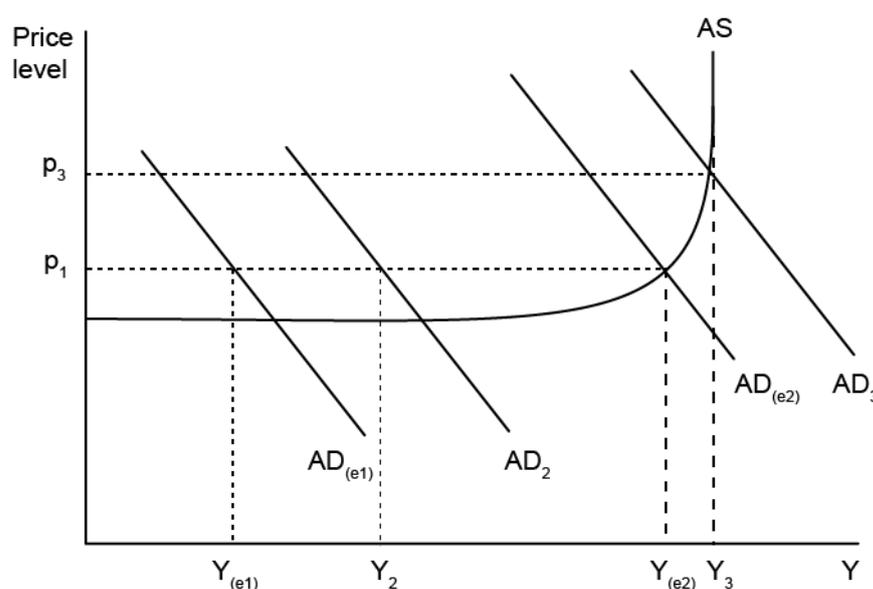
Elasticity of supply

As we discussed earlier, the effectiveness of the multiplier as a tool is dependent on how much the aggregate demand is able to shift, with regards to aggregate supply.

If AS is flat, i.e. there is a lot of spare capacity in the economy, then other investment projects can start at little change to the price level.



Illustration:



Here we see that, despite an equal increase in aggregate demand, the overall effect on output is not the same.

$Y_3 - Y_{e2}$ is less than $Y_2 - Y_{e1}$, because the elasticity of supply at DD_{e2} is greater.

Time lag

The second limitation with the effectiveness of the multiplier effect is that a time lag exists between when the initial investment will be made, and when the full effects of the multiplier will be felt.



Example:

Suppose that Rs.500million is set aside for a large public works investment project. The boost to the economy will not be instant.

There may be many time delays towards implementing the plan, and further, once the money does begin to get passed on to other agents, it may take months, or years for them to pass on to the next agent.

The overall effect may be not be so dramatic.

4 ACCELERATOR MODEL

Section overview

- Introduction
- Simple accelerator model

4.1 Introduction

The multiplier effect that we have just considered is focussed on how a change in investment will affect a change in output in the economy.

The accelerator effect looks at how capital investment levels within an economy are related to the rate of change in GDP. However it looks at what effect a change in the level of output will have on the rate of investment.

4.2 Simple accelerator model

The basic idea behind the accelerator principle is that the level of investment within an economy is a function of output. If output increases, then firms will have to invest more in order to maintain a higher output.



Definition: Accelerator principle

Investment levels in an economy are positively related to a change in the rate of GDP.

There are a number of other features that need to be brought in, so that we can fully understand the acceleration principle.

Begin by thinking of a firm making kitchen equipment. It has a level of stock that it maintains, to then sell to the market. If there is an increase in GDP, then there will be an increase in demand for the good, and therefore the firm must increase output, by increasing investment. This is to produce enough stock to meet the new demand.

The firm has a number of performance properties when it comes to the stock that it holds.

- For example, a capital – output ratio of 2:1 means that for each unit of output, it must have 2 units in stock.
- Net investment that the firm makes is twice the change in output, in order to meet future demand

Also, the value of stock from the previous year depreciates by 5% at the end of each year.

This can be examined in more detail using a numerical example.

**Example:**

| Year | Y (=Output) | Stock of capital [1] | Net Investment [2] | Depreciation [3] | Gross Investment [4] |
|------|----------------|----------------------------|--------------------------|---------------------|----------------------------|
| (0) | (100) | (200) | | | |
| 1 | 100 | 200 | 0 | 10 | 10 |
| 2 | 120 | 240 | 40 | 10 | 50 |
| 3 | 140 | 280 | 40 | 12 | 52 |
| 4 | 160 | 320 | 40 | 14 | 54 |
| 5 | 160 | 320 | 0 | 16 | 16 |

[1]: Capital : output ratio = 2:1

[2]: Net investment = 2*change in output compared to previous year

[3]: Depreciation = 0.05*Stock of previous year's capital

[4]: Gross investment = Net investment + depreciation

**Definition: Gross investment**

Gross investment = net investment + depreciation

The amount of investment required for all new investment, plus to service the fall in value of existing capital

An example of this is in the factory making kitchen equipment.

In Year 3, there is an increase in output of 20. This means that to meet this increase, the firm must invest twice as much to cover it: this is the *net investment*.

It is also the case that existing machinery will need replacing due to 'wear and tear'. In this case, this at the rate of 0.05, and is known as *depreciation*.

Together, these form gross investment, the amount that a firm will invest in each time period.

What we can see from the numerical example is that in Year 2, there is a jump in the level of gross investment from 10 to 50. This signifies a big amount of investment (a 500% increase!) compared to the previous year.

In Year 5, despite sales (output) remaining the same as in the previous year, the level of gross investment has dropped significantly, from 54 to 16.



Example:

| Year | Y (=Output) | % change in Y | Gross Investment | % change in gross investment |
|------|----------------|---------------|---------------------|------------------------------------|
| (0) | (100) | | | |
| 1 | 100 | 0 | 10 | |
| 2 | 120 | 20 | 50 | 400 |
| 3 | 140 | 16.67 | 52 | 4 |
| 4 | 160 | 14.3 | 54 | 3.8 |
| 5 | 160 | 0 | 16 | -70.4 |

The shows the disparity in the rates of change of output and gross investment.

As soon as output remained the same, there was a 70.4% drop in the level of investment.

This shows how when output is increasing, the level of gross investment jumps up dramatically.

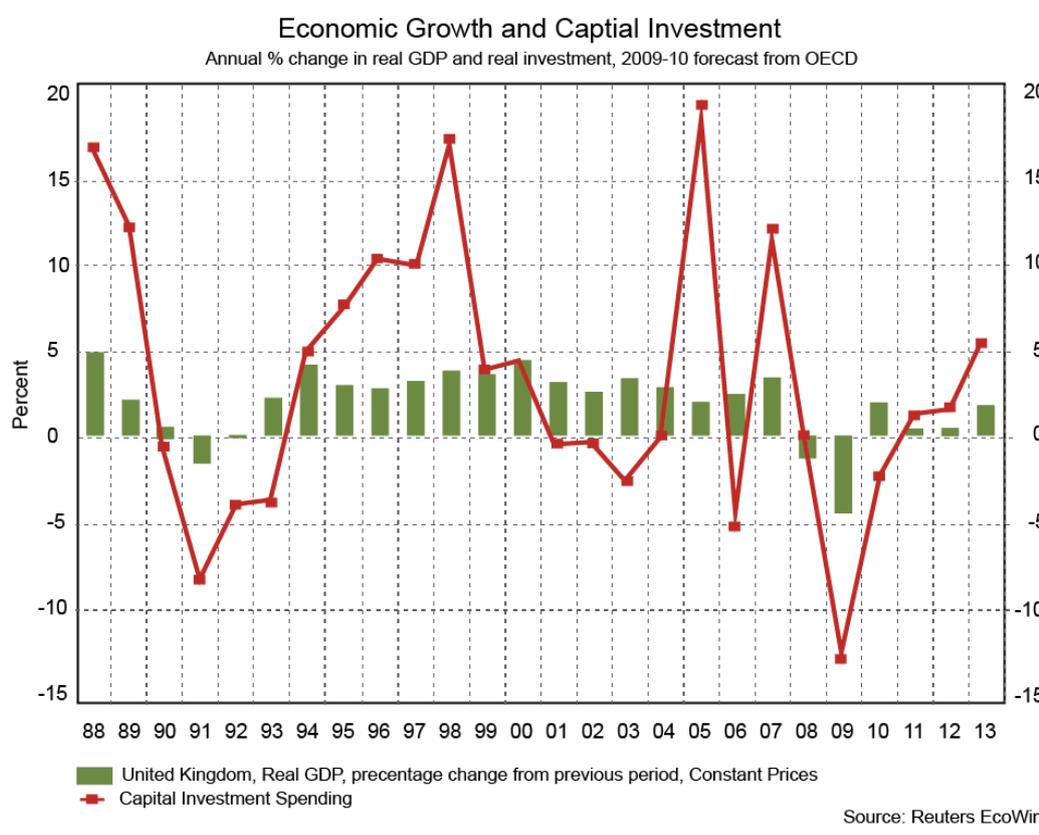
On the flipside, if output begins to drop, then we see a sharp decrease in the level of investment.

This is why it is called the accelerator effect: a change in output *accelerates* the change in the investment.

Below is a representative example, using real data, of the relationship between GDP and capital investment.



Illustration:



Limitations of the accelerator theory

Despite the example presented above making intuitive sense, there are some considerations for the applicability of the model.

- ❑ **Adjustment/ time lag costs:** The time and resources to adjust levels of capital stock are not considered in the simple model. These costs may be business costs due to installation of new machinery. In searching for the optimum level of capital stock, firms may reach this point smoothly, rather than jump in between.
- ❑ **Spare capacity:** There may be spare capacity within the firm which means it does not need to increase net investment by such a large amount – its existing resources could manage.

5 INTERACTION OF MULTIPLIER AND ACCELERATOR

Section overview

- Introduction
- Applying this to the wider economy
- Business cycles

5.1 Introduction

We have now been introduced to these two important concepts in macroeconomics. We will see how the two can interact, and what effect this will have on the state of the economy.

By what we know, of the two, we can see how a change in the level of output can induce a change in the level of investment (accelerator) which can induce a change in the level of output (multiplier) which can induce a change in the level of investment...

Thus, the two can work together, causing even greater swings in the output of an economy.

5.2 Applying this to the wider economy

What this tells us is how small changes in the economy can have knock-on effects throughout the rest of the economy.

If the economy is expanding

Suppose that output is growing

- This induces investment via the accelerator principle.
- The new investment gives further rise to output through the multiplier effect.
- This means that the rate of growth of output will be self-sustaining.
- However, the rate of growth will eventually meet a point where GNP can no longer keep up. If this is the case, the level of (desired) output will soon exceed the production capability of the economy.
- Consequently, the rate of investment in the economy will have to decrease, as firms would no longer want to commit resources, when there will not be demand to meet it.
- We have seen how when output slows, there is a sharp scaling back of investment that is undertaken.

With a scaling back of investment, we are likely to also see a sharp fall in output, due to the reverse effect of the multiplier. This effect will then be accelerated again, causing output in the economy to drop significantly.

5.3 Business cycles

The basic chain of events above describes the theory behind business cycles.



Definition: business cycle

The recurring fluctuations of output that an economy experiences over a long period of time.

This is covered in more detail in Chapter 10

Money

Contents

- 1 Introduction to money
- 2 Functions of money
- 3 Demand for money
- 4 Supply of money
- 5 Quantity Theory of Money
- 6 Inflation

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO2 **Understand the nature of nature of macro-economics and its relation with the measurement of economic growth.**

LO3.5.1 *Money and its value:* Understand the main functions of money

LO3.5.2 *Money and its value:* Understand credit money and its advantages and disadvantages

LO3.5.3 *Money and its value:* Understand sources of the money supply

LO3.5.4 *Money and its value:* Understand the quantity theory of money

LO3.5.5 *Money and its value:* Understand the measurement of the value of money

LO3.5.6 *Money and its value:* Understand inflation and its kinds and impacts

LO3.5.7 *Money and its value:* Understand the causes of inflation and measures for overcoming inflation

LO3.5.8 *Money and its value:* Understand the unemployment and its types and Phillips Curve

1 INTRODUCTION TO MONEY

Section overview

- Definition
- The key idea
- Difference of opinion
- Classical economists
- Keynesian economists
- Monetarists
- Conclusion

1.1 Definition

Money, in its modern form, is a relatively recent phenomenon for the human species. It may at first seem odd to have a world without money. However, for much of human existence, trade between groups of people has often been by various levels of bartering. Barter is where one type of good is exchanged for another.

From a self-sufficiency standpoint, the ability to barter was a remarkable step in the social evolution of the human race. No longer would someone have to produce all the goods needed to survive. Instead, a person could produce wool and another grain, and through bartering they would each have the materials to eat and be clothed.

As long as each party is happy, then this simple exchange of goods is fine. However, in the more complex world that we live in today, it is necessary to use money in its current.



Definition: Money

An officially-issued legal tender used as a medium of exchange, usually through currency notes and coins.

1.2 The key idea

The important concept to understand with money is how some people want more liquidity and others want less liquidity.



Definition: Liquidity

The degree to which an asset can be converted into tradable value.

The most liquid asset is cash (money).

Those who want less liquidity will lend money to those who want more of it, for a price. This price is called: the interest rate.



Definition: Interest rate

The amount charged, as a percentage of the principal, by a lender to a borrower for the use of assets. Interest rates are typically paid back on an annual basis.

In the context of this chapter, the asset in question will be money. Interest rates could be charged on the use of many other financial assets (bonds, T-Bills etc.) and on some non-financial assets.

1.3 Difference of opinion

Money plays such an important role in the economy that it is inevitable, as with other areas of the subject, that there is debate around its characteristics and how it should be used to meet policy goals.

Below are some differing views of what role money plays in the macroeconomy.

1.4 Classical economists

Classical economists are characterised by their faith in markets to balance out the forces of supply and demand. For them, money acts as a lubricant to allow a smoother interaction between buyers and sellers in a marketplace.

Using money instead of bartering was a huge step in creating greater efficiency in the market system.

However, it is also believed by classical economists that it has little additional use. It essentially plays a *passive* role in the economy.

Other forces will determine the level of output that a firm wishes to produce, the distribution of wealth, and demand for commodities.

1.5 Keynesian economists

For Keynesians, as well as allowing smooth trade of goods in an economy, money also has another role: it acts as a store of value. By this we mean, rather than simply saying that money can be used to facilitate transactions, money can be used to purchase goods and services in the future.

Should one think that he can purchase more with his pot of money in the future than in the present, then he might forgo consumption in the present, in order to purchase in the future.

This goes against the classical view of the neutrality of money.

More on the Keynesian view of the demand for money is found later (section 4).

1.6 Monetarists

The third economic school of thought is monetary economics.

Monetarists are a branch of new classical economists that, as the name suggests, believe that money has a very important part to play within an economy.

They believe that aggregate expenditures in the economy are influenced by the market rate of interest, and therefore money can affect the level of output in the short run economy.

However, they further believe that money influences the long run unemployment in the economy. If monetary policies are used to increase aggregate demand, it is thought that this use of additional money may cause a short term boost in output, but will ultimately lead to inflation in the economy.

1.7 Conclusion

These are the three core views on the role of money within an economy. The Keynesian and Monetarist theories will be discussed at greater length in subsequent sections of this chapter.

Where possible, it is important to consider the different outlooks on money as we progress through the reading.

2 FUNCTIONS OF MONEY

Section overview

- Definition
- Functions of money
- Kinds of money
- Characteristics of money
- Credit money

2.1 Definition

Money, in its modern form, is a relatively recent phenomenon for the human species. It may at first seem odd to have a world without money, however for much of human existence, trade between groups of people has often been various levels of bartering.

Barter can only be of value if there is a double-coincidence of wants.

Exchanging a bag of grain for a bag of wool only works if there is someone who wants to purchase a bag of grain. But not only that, this person must be able to provide something of value to the other. And then they must also be able to meet, and exchange.

There are several problems with barter that we shall see below:

- ❑ **Ability to exchange:** Finding someone who has the opposite needs to you is problematic in a complex society.
- ❑ **Rate of exchange:** We may establish that one bag of grain is of equivalent value to one bag of wool. However, how much is one apple worth? Or two loaves of bread? Fixing a measure across different product types is near enough impossible.
- ❑ **Storing/ saving:** If a baker uses bread as a medium of exchange, how will he store value? The bread he bakes will have no value if it is stale. Also, should a carpenter wish to save, he would need a lot of space to store his tables, which would be used in exchange.
- ❑ **Divisibility:** If trading a table for a bag of grain, the carpenter may believe his table to be worth more than the grain. How though does he factor this into the exchange? To chop up the table into the 'correct' amounts would be pointless.

2.2 Functions of money

The problems that come with bartering have led to the evolution of money in its current form. The functions that money should be able to possess, in part due to identifying the problems of the barter system, are explained below.

There are four functions that money undertakes in modern society

1. **To act as a medium of exchange:** Allowing economic agents to exchange goods without the need to barter.
2. **To act as a unit of account:** Allowing people to compare the relative price of goods and services through a common denomination.

3. **To act as a store of value:** Allowing people to forgo immediate consumption if they have a surplus of resources, and to retrieve it at a later date in order to consume.
4. **To act as a standard of deferred payments:** Allowing people to consume goods and services in a current time period, whilst continuing to pay in future periods.

Effects of inflation

A persistent rise in prices will affect the functions of money in different ways. For ease of interpretation, we will assume that economy is in a state of hyperinflation, as the effects are much more pronounced.

As a *medium of exchange*, people may not trust that the money they are holding will be exchangeable for goods and so money will lose this functionality.

As a *unit of account*, inflation will distort the relative prices between goods making comparisons difficult.

The most important way in which inflation degrades the functionality of money is through its use as a *store of value*. High inflation means that money does not keep its value, because purchasing a good tomorrow will require more money than today.

As a *standard of deferred payments*, inflation distorts people's willingness to accept deferred payments, as the value they receive will not be consistent with the present.

2.3 Kinds of money

There are three main categories of money that can be used within an economy. Whilst all will share the same functions, it can be created in different ways

- **Commodity money:** has value even if it wasn't used as money (also known as intrinsic value). The most common is gold, as this is said to hold value aside from its monetary properties, as it is used in jewellery, and other goods.
- **Commodity-backed money:** differs slightly from commodity money. Whilst commodity money uses the commodity itself, commodity-backed money can be exchanged for the commodity on demand. The most famous case of this is the Gold Standard.
- **Fiat money:** is money with no intrinsic value. The value comes solely from the fact that the government has decreed that it has money for that purpose. It is used by most countries, as it can be designed to allow a stricter adherence to money's main functions.

2.4 Characteristics of money

The form which money takes, distinct from its functions, means that there are a number of shared characteristics. These characteristics have persisted over time and will be present in successful current forms of money.

- **Durability:** it retains the same shape and substance over an extended period of time. It will not deteriorate nor degrade over time. This is important to maintain the functions of *medium of exchange* and *store of value*. It is not confined to just physical durability though, if issued by the government, it must be assumed that the government too will be durable, for the paper that they issued to have value.

- **Divisibility:** means it can be divided into small increments to facilitate exchange of a variety of goods. Historically, precious metals have been used as money as they can be easily divided up.
- **Transportability:** means money can be easily moved between locations when such an exchange is necessary. In its current paper form, money can be easily transported, however, if money took the form of concrete blocks, then moving it to a market would be problematic. Precious metals have historically been fairly transportable, however it could still not been as mobile as paper.
- **Noncounterfeitability:** it is not easily duplicated. It will fail as a medium of exchange if people can create their own easily. Preventing the duplication of money is a task that the government must oversee to ensure the functions of money remain intact. To ward off counterfeiting, a government will employ a number of measures (such as watermarking) to make the process of duplication more difficult.

2.5 Credit money

The final function of money that was mentioned is now covered in a bit more detail now.

The idea that money allows one to enjoy the benefits of something in the present, and then pay it back over a period of time is known as a credit agreement.



Definition: Credit money

Any monetary claim against a physical or legal person that can be used for the purchase of goods and services.

This can include a simple verbal, or written agreement, and any other financial instruments that *aren't immediately payable* such as bonds.

There are many cases where people wish to spend money before they have it. Credit money facilitates these transactions, based on a trust between these parties that the money will be repaid.

Advantages of credit money

- ❑ allows immediate consumption of expensive goods, based on future earnings (this includes houses, education, cars, which could otherwise not be bought).
- ❑ allows firms to invest, expand and generate future revenue, rather than use retained earnings.

Disadvantages of credit money

- ❑ there is often an element of risk involved that the person issuing credit may not receive full payment from the person receiving credit.
- ❑ it may not be possible to establish trust between parties.

3 DEMAND FOR MONEY

Section overview

- General introduction
- Definition
- Classical view
- Keynesian view
- Keynesian liquidity preference
- Total demand for money

3.1 General introduction

We have now established how money is superior to other forms of exchange such as bartering, and what an important role it plays within the modern economy.

As well, the different schools of economic thought have been touched upon who each have their opinion on the importance of the role the money in the functioning of the economy.

The next step for us is to look at the demand for money.

3.2 Definition

It is a widely accepted idea that people would like more money.

But why? Is it because of the goods that they can buy with it? Is it so that they can invest it? Is it for the innate pleasure in simply possessing it?

The answer to this question has divided economists throughout the history of the subject.

3.3 Classical view

Classical economists believed that there should be no demand for money, as money is neutral.

To quote the founder of modern economic thought, Adam Smith, "Money is like a road which helps in transporting the goods and services produced in a country to the market, but this road does not itself produce anything".

3.4 Keynesian view

Despite the classical view, economic thought has developed somewhat since the time of Adam Smith (1723-1790), and we now appreciate that there are influences on the demand of money.

Four main factors influencing total demand

Though there are many influences that will affect how much money is demanded in an economy, we shall highlight the most important four:

1. The level of prices
2. The level of interest rates
3. The level of real national output (GDP)
4. The pace of financial innovation

We shall explore these in the subsequent sections.

3.5 Keynesian liquidity preference

Elaborating on earlier points about money, Keynesians believe that demand for money depends upon someone's *liquidity preference*.



Definition: liquidity preference theory

The idea that, all else equal, people prefer to hold cash (liquidity) rather than assets that are illiquid. They will, however, be paid a premium to hold more illiquid assets.

This makes intuitive sense. If a friend asked you for Rs1000 and said they would pay it back tomorrow then, if you trusted them, you may be happy to lend it to them. If they said that they would pay you back in one year, then this increases the risk that they will not be able to do so. Therefore, to compensate you against the risk of it not being paid back, you might ask for a “premium” (i.e. more than your Rs1000) when they pay it back.

It is the Keynesian view that there are three reasons why someone would wish to hold money.

- ❑ **Transactional:** ability to pay for goods and services
- ❑ **Precautionary:** the money people hold for emergency purchases
- ❑ **Speculative:** as a store of wealth

The speculative point merits more discussion. Keynes assumed that wealth could be stored either in cash or bonds, and that the price of a bond is inversely related to the interest rate.



Definition: Bond

An investment that is bought up front by an investor, and which then pays a fixed amount in return at regular time periods (usually annually).

This can be explained better through an example:



Example:

Suppose a bond is issued for Rs.4000, and its annual return is Rs.400. This means the annual rate of interest is 10%.

If the market interest rate falls to 5%, then the price of the bond will increase to Rs.8000.

This is because, in order to maintain an annual return of Rs.400, Rs.8000 would need to be invested in another asset.

This means that as the interest rate falls, the price of bonds increases. Therefore there is an inverse relationship between interest rates and the market price of fixed government securities.

Keynes believed that each individual had their opinion on what was the “average” rate of interest. If the market interest rate was above the average rate, then it would be rational to expect it to fall, and vice versa.

When interest rates are high, individuals would expect the rate of interest to fall, and the price of bonds to rise. Therefore to speculatively benefit from this, they should use their speculative balance of money to buy bonds (because if/when the price of bonds rises, they can sell them and make more money). The *speculative money balance is low when interest rates are high*.

When interest rates are low, individuals would expect the rate of interest to rise, and the price of bonds to fall. Therefore to avoid the losses involved with a fall in the price of bonds, individuals would sell their bonds, thus increasing the balance of speculative cash. The *speculative money balance is high when interest rates are low*.

In short, there is an inverse relationship between the rate of interest, and the speculative demand for money.

3.6 Keynesian liquidity trap

In cases where interest rates are very low (at, or near zero) monetary policy can cease to have any impact on aggregate demand. This is known as the Keynesian liquidity trap.



Definition: liquidity trap

A situation where prevailing interest rates are low, and savings rates are high, causing monetary policy to be ineffective.

It centres around the expectations of households and businesses in periods of low interest rates. When interest rates are very low, people may downgrade the forecasts of return on their investments, such as stocks, property or bonds.

A low interest rate may also be an indication that the economy is unhealthy, and therefore in an act of precaution, they may decide to hoard cash, or move savings to short-term investment bearing accounts.

With low interest rates, their expectation will be that they will rise in the future, thereby making saving an even more attractive proposition. Their behaviour will manifest itself as postponing consumption, despite the very reason of a low interest rate policy being to stimulate spending.

Consequently monetary policy is no longer effective at boosting demand in an economy.

Overcoming the liquidity trap

A number of policies can help to break out of the liquidity trap:

Fiscal policy: becomes a very important instrument in raising demand, for example running a larger budget deficit.

Rising inflation expectations: higher inflation will cause savings to be worth less. This will disincentivise hoarding of cash, as its real value will decrease. Therefore consumption will increase.

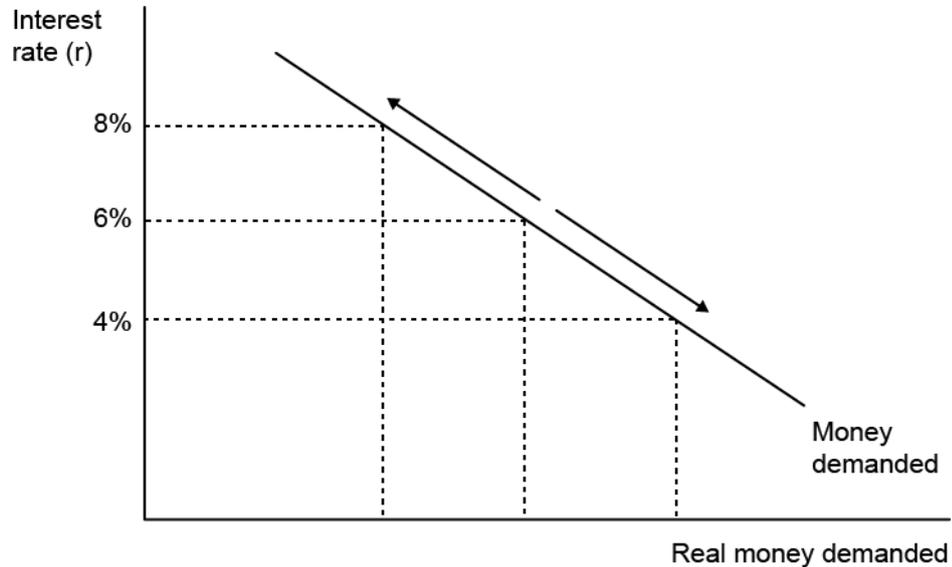
Expectations of low interest rates: if a Central Bank convinces people that interest rates will stay low, they will have less reason to postpone present spending.

3.7 Total demand for money

Aggregating the transactional, precautionary and speculative demand for money, we get the total demand for money. This is sometimes known as the *liquidity preference curve*, and is inversely related to the rate of interest.



Illustration:



As the rate of interest increases, the total amount of money demanded falls

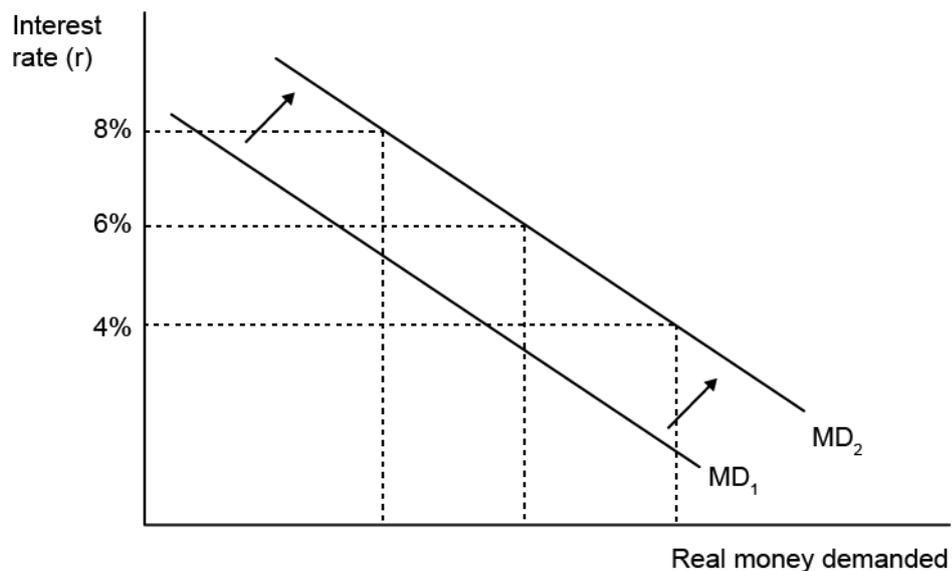
Money demanded and an increase in GDP

Suppose that economic growth increases in the economy. Consequently real incomes increase as well as the number of people employed in the economy. This will cause an increase in the demand for money at each level of interest rate.

Consequently there is an outward shift in the demand for money.



Illustration:



An increase in GDP increases the total amount of money demanded, causing an outwards shift

Money demanded and an increase in financial innovation

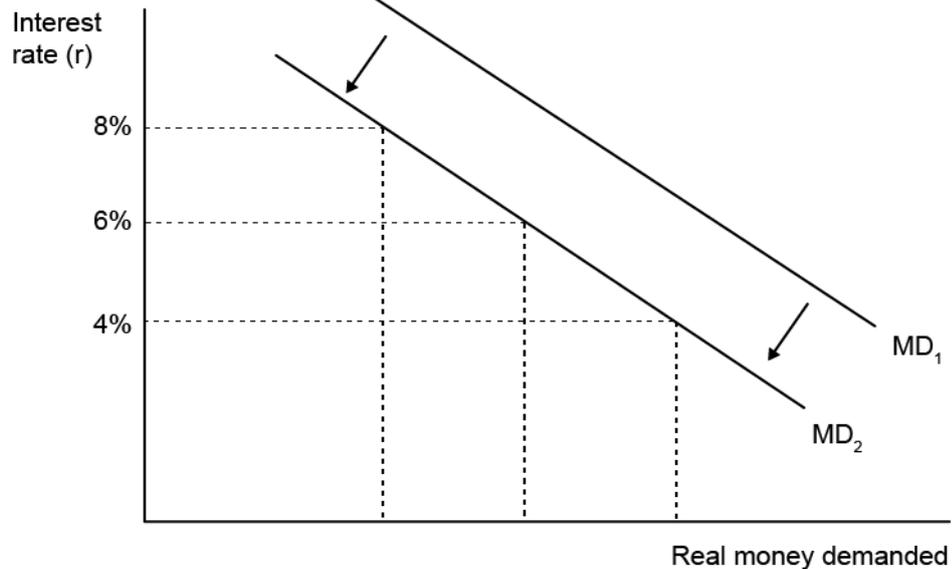
Financial innovation is a loose term that, on the whole, incorporates a new means of spending money.

In recent years, a major innovation has been the rise of financial products, such as credit cards and debit cards, which reduce the need for people to withdraw cash in order to purchase goods and services.

Consequently financial innovation has reduced the demand for cash balances at each level of interest rate.



Illustration:



The rise in financial innovation has decreased the level of money demanded.

4 SUPPLY OF MONEY

Section overview

- Definition
- Measuring money
- Importance of money supply
- Methods of controlling the money supply

4.1 Definition

Now that we have an idea of what determines the demand for money, our next step is to establish what makes up the supply.

There are a number of important aspects to take into consideration regarding the level of money supply. The first is what constitutes money?

4.2 Measuring money

It is important to note that there are different types of financial instrument that can still be classified as money. Though we are most familiar with the money that is held in our pockets (notes and coins) it is too narrow to simply describe this as “money”.

The central authorities in many countries adopt a scaled system for the categorisation of different types of money:

Transactional money (M0): that which is used to buy and sell things within an economy

Checking accounts (M1): money that is in peoples’ accounts that they have immediate access to

Savings deposits (M2): money that belongs to people, but which they cannot access immediately

Large time assets (M3): such as institutional money market funds

The key variable amongst these different sources of money is their level of liquidity. We see that the types of money here are categorised by their liquidity, with large time assets being the most illiquid, and transactional money, by its nature, already being fully liquid.

One of the most important points to understand is that to hold any value, the supply of money must be *finite*.

If the currency could be produced to an unlimited extent, then people could use it to bid up the price of all goods in the economy, meaning prices and incomes would be sky-high.

Consequently, power over the money supply is left with the government.

4.3 Importance of money supply

The reason that money supply is important is that money is intertwined with almost all aspects of daily life.

An increase in money supply has the effect of lowering the interest rate at which people can borrow, hence directly affecting the level of investment of and consumption within an economy.

The ultimate control of the money supply lies with a country's central bank, however we shall wait until Chapter 13 to discuss this further.

4.4 Methods of controlling the money supply

There are various means by which the government can attempt to control the money supply.

Open market operations

This involves a central bank buying and selling bills on behalf of the government on the open market.

This affects the credit-creating abilities of the commercial banks. For example, if the central bank sells bills, the public will pay for them by drawing on their accounts with the commercial banks. As these banks have to maintain a stable ratio between cash and loans, they will have to cut back on their lending and hence the growth of the money supply will be curtailed.

Interest rates

A government, through a central bank can influence interest rates through the issue of Treasury Bills which results in all major financial institutions altering their rates accordingly. If the government raises interest rates this reduces the demand for money since less people will want to take out bank loans, thus less money is created.

Special deposits

A government can require commercial banks to deposit a certain proportion of their assets at the central bank. This effectively reduces their ability to create credit and thus would support a contractionary monetary policy.

Government borrowing

The government can influence the money supply with the level of its own borrowing:

- higher borrowing by the government reduces the money supply;
- lower borrowing by the government increases the money supply.

5 QUANTITY THEORY OF MONEY

Section overview

- Definition
- Implications of the theory

5.1 General

The basic idea behind the quantity theory of money is that if the supply of money increases, the general price level will do so too. This leads to uncontrollable inflation which, as we shall see in the subsequent chapter, is seen as a negative for society.

The theory has its roots in some of the earliest studies of society. David Hume (1711-1776) wrote of how an influx of gold into a country led to short term prosperity, followed by a reversion of living standards, as the price level increased.

The equation for the quantity theory of money that is used today was formally presented by economist Irving Fisher in 1911.

It stresses that an important relationship to consider when studying money, and especially the supply of money, is its relationship with the overall price level in the economy.

The equation is as follows:



Definition: quantity theory of money

$M = P \times Y$

where:

M is the money supply

V is the velocity of circulation of money

P is the average price level

Y is the real value of national output

V is the number of times a unit of currency (i.e. Rs.1000 note) is used in a given time period. It is often possible to predict this value, and so it can be treated as a constant.

5.2 Implications of the theory

Given this explanation of how the different components in the economy interact, we shall now go into more detail regarding what this means for the outlook of the economy.

As stated, it is assumed that the velocity of money can be treated as a constant. Further, there is an assumption that the real value of GDP is not influenced by monetary variables. For example, an increase in the production potential of the economy might be due to an increase in the rate of productivity, or capital stock, but not an increase in money supply.

Therefore Y is treated as a constant also.

If V and Y are treated as constant, then *a change in the rate of growth of the money supply will necessarily equate to a change in the general price level.*

Government policy

As such, if government decides that they wish to control the general price level, the quantity theory of money suggests that they should keep in check the growth of the money supply.

However, this strategy may not always be effective.



Example:

During the 1980s and 1990s in the United Kingdom, a policy of keeping the growth in money supply constant was adopted.

However, it was soon apparent that the assumption of V being constant was not applicable. An increase in financial innovation meant that the rate at which money was changing hands was no longer predictable.

The erratic swings in the levels of money velocity meant that the relationship between money supply and price level broke down.

6 INFLATION

Section overview

- Definition
- Measuring inflation
- Types of inflation
- Impact of inflation
- Causes of inflation
- Remedies to inflation
- Inflation and unemployment
- The Phillips Curve

6.1 Definition

Since understanding the role of money in society, and learning about its connection with the price level, we shall next investigate the concept of inflation.



Definition: Inflation

A continuous or persistent increase in the general price level.

A one-off price rise does not constitute inflation. However, if there are *continual price rises*, then inflation is said to be increasing.

Another important point to note is that a fall in the inflation rate *does not* equate to a fall in prices. It merely means that the rate at which prices were increasing has fallen.

Real vs nominal prices

There is also a distinction that should be made between terms that are denoted as “real” and terms that are “nominal”.



Definition: Real rate

A price change adjusted for inflation.

If the price of a car went from Rs.10,000 to Rs.11,000 (10% rise), but inflation was 6%, then the real increase in price was (10%-6%) 4%. It is the measure of how much the price changed as compared to the average price of other goods.



Definition: Nominal rate

A price change unadjusted for inflation.

The car has a nominal increase in price of 10%.

6.2 Measuring inflation

If we know that inflation is caused by continuous increase in the general price level, how then do we measure this change?

Conceptually, this is achieved through measuring the prices of a set of goods at various points in time, and then seeing by how much they have increased or

decreased. Some may rise, and some may fall, but the overall change in the price level is an indication of the inflation level.

The most common way in which this is done is through the *consumer price index (CPI)*.



Definition: Consumer prices index (CPI)

A measure of the weighted average of prices of a basket of goods and services.

The CPI is calculated by taking price changes for each item in the predetermined basket, averaging them, and then weighting by their importance.

It is an *index* because the changes in prices are measured in relation to an index of 100.

If the price of bread increases from Rs.150 to Rs.165 (10%) then the new price in indexed terms would be 110.

The reason that the items are “weighted” is that certain goods and services are said to contribute to the cost of living more than others. For example, most people buy food as an everyday occurrence, and so a change in price will affect the cost of living. However, people may only infrequently purchase a house. Nevertheless, it still plays a role in the rate of inflation.

This can be explained in the following example:



Example:

| Category | Price Index | Weighting | Price x Index |
|----------------|-------------|-----------|---------------|
| Food | 106 | 18 | 1908 |
| Shelter | 105 | 43 | 4515 |
| Clothing | 110 | 7 | 770 |
| Transportation | 98 | 19 | 1862 |
| Medical care | 108 | 5 | 540 |
| Leisure | 88 | 8 | 704 |
| | | 100 | 10299 |

The price index is calculated by the equation:
sum of (price weighting)/sum of weights

In this instance we see that the rate of inflation is 99999/999 2222.22

Rounding up, this means that the price index is 103.

Measuring the price after the inflation rate a year on requires some consideration.



Example:

Let's say that the weighted price index after the next year was 106.

This does not mean that inflation has risen by 6%, because the index that the annual change is based upon is 103.

The calculation is therefore:

$$\frac{666-333}{333} 0000 = \%. \%. \%. \%$$

Limitations of CPI as a measure

Though it is widely regarded as the best measure for inflation, the CPI is not without its downfalls.

- ❑ **Not fully representative:** because it is taking the “average” basket of goods, this won’t be what everyone is faced with. Single people will have different spending habits to married couples, as will rich and poor families.
- ❑ **Changing quality of goods and services:** a price rise may come about because of an improvement in the quality of the good, or it may be due to an increase in costs. This is not distinguishable, and can be problematic if a price rise is wrongly attributed as inflationary, when in fact it is a superior product.
- ❑ **Index-number problems:** it is debatable which is the most appropriate “base year”, as this can drastically change the values of numbers.

6.3 Types of inflation

Though inflation is the persistent increase in prices, it can come in different forms. We shall discuss these now:

Low Inflation

Though subjective to measure, low inflation typically means that the price level will increase at a rate each year of perhaps up to 5%. Throughout Western Europe during the late 1990s, this was typically the case.

High inflation

This is where prices begin to rise a lot quicker. It is likely that prices may be increasing at an annual rate of 60%, or even 100% (therefore doubling each year). Examples of this include Brazil during the 1970s.

Hyperinflation

Prices are rampant, and can increase by a rate of 1,000,000,000% annually! Prices increase so quickly, that money becomes worthless – it is no longer a store of value, and cannot be used for transactions. Prices increase so quickly that people begin to hoard “things” that can be used to barter.

The most extreme example is in Germany during 1922-1923, where holding an asset worth Rs.1000million at the beginning of 1922, would be worth less than a sugar cube 18 months later. This eroded wealth, and had huge social consequences.

Deflation

This is where the price level consistently falls year on year. It is when the rate of inflation becomes negative. A recent example of deflation is Japan in the 1990s.

Economic history would suggest that if inflation increases above “low inflation” it may then move into high inflation. The fact that it may *accelerate* is what makes politicians and central bankers especially worried, and why many policies are implemented to stop inflation increasing too much.

6.4 Impact of inflation

It has been implied that inflation can be a bad thing for an economy, especially if it reaches the levels of high, or even hyperinflation. We shall now investigate why this is the case.

Different types of inflation are likely to have an effect on the economy in different ways.

The main impact that occurs is that there is a divergence in relative prices. The general price level will increase, however the rate at which wages increase by is often not as much.

If, as an employee of a firm, you receive a wage that increases by less than the general price level, this then means that you have less disposable income. The price of goods is increasing, but you now have less money to spend on buying it.

The disparity between the price level and the wage level is something that can be costly to the economy.

Therefore the two noticeable impacts of inflation are:

- ❑ **A redistribution of wealth:** which will be different amongst social classes
- ❑ **Distortions:** in the relative prices and output of different goods, industries, and even employment in the economy as a whole.

Costs of inflation

This then means that there are a series of costs that are associated with high inflation.

- ❑ **Income redistribution:** Higher inflation can have a regressive effect on lower income families, and elderly people in society. Especially if the price of food and utilities increases drastically.
- ❑ **Fall in real incomes:** If wages are cut (to help tackle inflation) then this means that real incomes have reduced.
- ❑ **Negative real interest rates:** If the savings interest rate is lower than inflation, than those who rely on savings as their income will become poorer.
- ❑ **Cost of borrowing:** as we shall see in a later section, in response to high inflation, governments may increase the interest rates. This will increase the cost of businesses getting a loan, which may stifle investment.
- ❑ **Business competitiveness:** if prices in one country are higher than another, then when selling comparable goods, the country with lower inflation will have a lower price and therefore have much better international competitiveness.
- ❑ **Business uncertainty:** with high and volatile inflation, businesses are less likely to commit to big projects, as they are uncertain as to the economic future.

6.5 Causes of inflation

From seeing the impact that inflation can have on an economy, the next step is to evaluate what might be the cause of inflation.

There are a number of potential causes for an increase in inflation. They can broadly be divided into two categories:

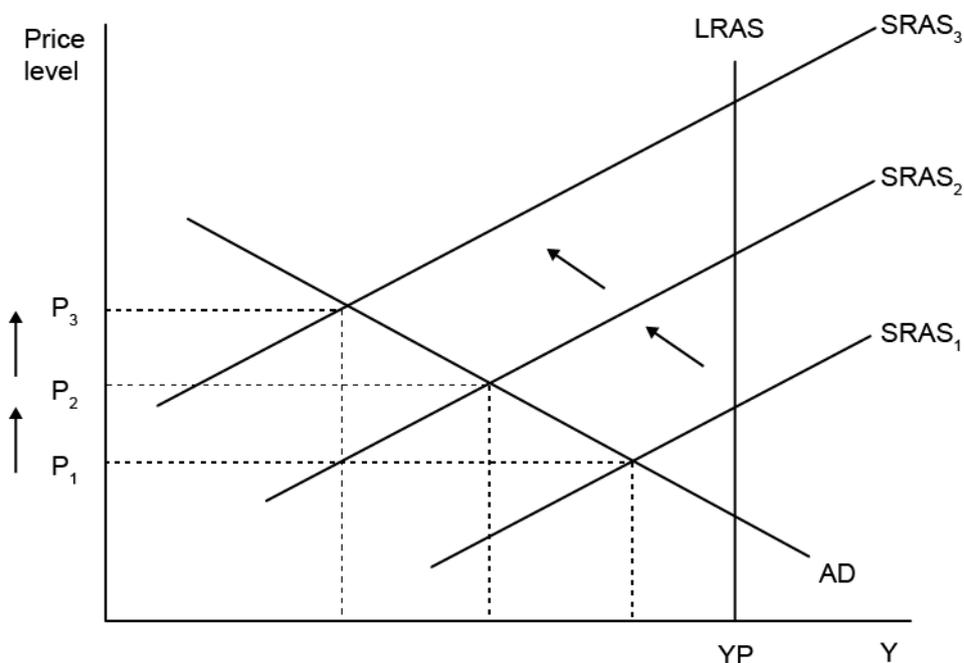
Cost-push inflation

This is where the cost of inputs in a product increases, so in order to preserve profit margins, a firm will push up the final price of the good. There are some inputs that affect a number of different product categories, and so contribute greatly to inflation.

An example of this is oil prices. In the 1970s, the price of oil in the USA increased drastically. This meant that any product that relied on oil as part of its production process was susceptible to increase its price. This happened on several occasions which led to an abnormally high inflation rate.



Illustration:



As costs increase, this shifts back the SRAS, thereby increasing the price level in the economy.

There can be several reasons for an increase in costs:

- ❑ **Rising labour costs:** An increase in wages often occurs when unemployment is low, and skilled labour can demand more of a wage increase.
- ❑ **Expectations of inflation:** This has an important link to actual inflation. If people in the economy expect inflation to be higher in the following period, then they will ask for a higher wage, in order to protect their real income. In doing so, this will increase the costs to a firm, increasing their costs and therefore fulfilling the expectation of higher inflation. When higher inflation does materialise, employees then expect it to be higher in the following year, and hence the chain of events continues. This is called the *wage-price spiral*.
- ❑ **Component costs:** An increase in the price of raw materials is a higher cost incurred by the firm.
- ❑ **Higher indirect taxes:** Such as increased duties on fuel or particular types of food will increase the final cost of goods sold.
- ❑ **Cost of imports rising:** If there is a fall in the exchange rate, then firms will see the price that they pay for imports increase, thereby increasing the costs to their firm.



Definition: Wage-price spiral

An effect whereby a rise in wages increases the disposable income of people, which therefore increases demand for goods, increasing prices. The rising prices (inflation) cause greater demand for higher wages, therefore increasing disposable income and so on...

This effect is known as a spiral as it is self-perpetuating.

As shown in the diagram, the effects of these factors cause the short run aggregate supply curve to shift inwards, and so will also reduce the level of output in the economy.

Demand-pull inflation

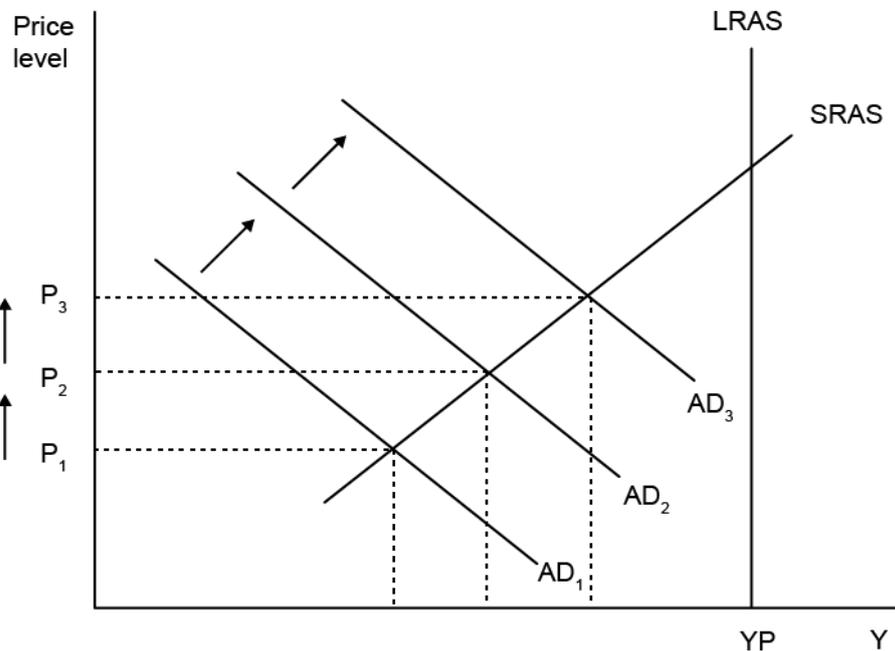
Rather than just being an increase in the costs of a firm, there can conversely be an increase in aggregate demand which leads to a rise in the level of inflation.

This is when aggregate demand for goods and services outstrips aggregate supply. If quantity cannot increase to meet it, then the price of those goods will rise until equilibrium is reached.

When many consumers are attempting to buy, say, a new type of car, and firms do not have the capacity to supply to the market, then the price levels will increase. It could also be because of an increase in money supply allowing consumers to spend more as banks have greater ability to issue credit.



Illustration:



As costs increase, this shifts back the SRAS, thereby increasing the price level in the economy.

Demand-pull inflation is more likely when the SRAS is inelastic, therefore when resources are near to full employment. If there has been a boom in GDP levels then, with scarce resources and excess demand, firms can increase their profit margins, thereby contributing to higher inflation.

The main causes of demand-pull inflation are:

- ❑ **Fiscal stimulus:** will increase AD in the economy. If there is an increase in government spending, then the effects of the multiplier might make this an even greater increase.
- ❑ **Monetary stimulus:** a fall in interest rates may spark an increase in demand, therefore leading to “too much money chasing too few goods”. The surplus money in the economic system would increase the price level and therefore inflation.
- ❑ **Depreciation of the exchange rate:** if exports become cheaper to foreigners, and a comparative amount of imports aren’t bought, then AD will shift outwards, causing a rise in the level of inflation.
- ❑ **Fast growth in other countries:** especially if they purchase from the economy in question, will increase the demand for those goods, and therefore increase AD.

6.6 Remedies to inflation

As we can see with two different categories of inflation, it is not always possible to administer exact policies that will curb inflation from increasing exponentially.

When faced with **cost-push inflation**, the response is often to get control over the cost of inputs.

- ❑ **Limit wage increases:** wages can be a significant input cost, and so by keeping wages low, this will assist in reducing the upward pressure on final prices.
- ❑ **Limit cost of utilities:** as noted earlier, another significant input cost is energy, and so the government can reduce the increase of these prices to temper inflation.
- ❑ **Reduce cost of imports:** this can be done by allowing the domestic currency to appreciate in relation to the currency it is importing from, thereby reducing the costs of domestic firms.

When faced with demand-pull inflation, the response is to reduce the level of demand in the economy:

- ❑ **Raise interest rates:** this will reduce consumers’ real disposable income, and hence they spend less.
- ❑ **Raise taxes to reduce disposable income and spending:** this could include increasing a Value Added Tax (i.e. a tax associated with buying goods) as a way to discourage spending.
- ❑ **Reduce money supply:** by removing money from circulation, the central authority reduces the ability for transactions to occur, thereby reducing the potential for prices to rise.

6.7 Inflation and unemployment

One of the most critical relationships that exists in macroeconomics is between inflation and unemployment.

High rates of both are seen as a negative for the economy, and it is often tested as to whether a relationship exists between the two.



Definition: Unemployment

The state of being without employment and actively searching for work.

The unemployment rate is often used as a proxy for the health of the economy. This is found by dividing the number of unemployed people in an economy by the number of people in the labour force.

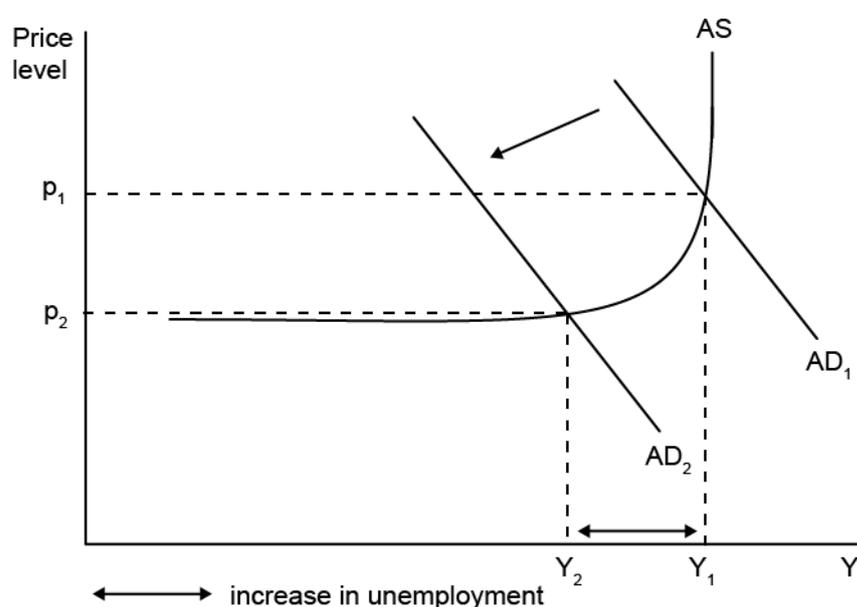
Types of unemployment

There are various reasons why someone might be unemployed, and these can be categorised in the following manner.

Demand-deficient unemployment: when an economy is in recession or a period of low growth, aggregate demand may be deficient to meet the potential output in an economy. Firms therefore cutback production; in the process reducing the amount of labour that is required.



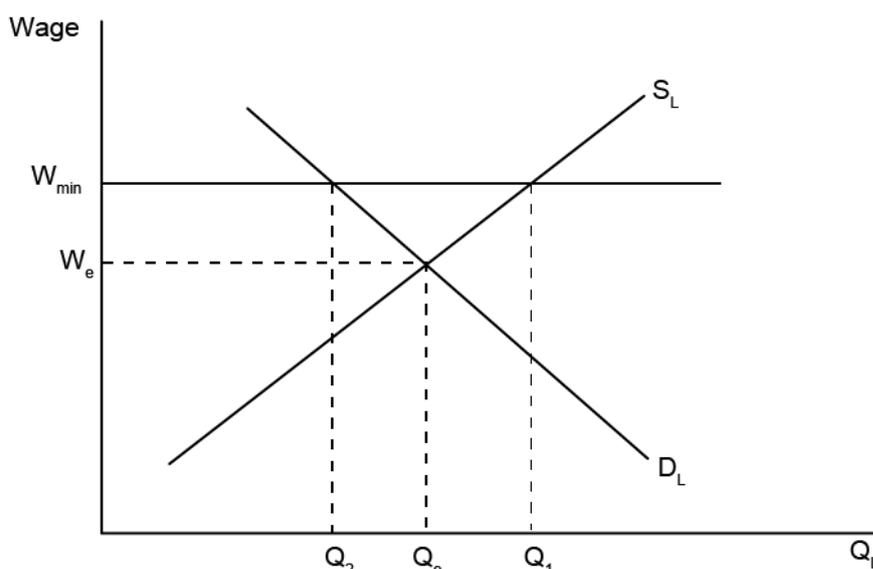
Illustration:



Structural unemployment: is unemployment that arises through inefficiencies in the labour market. This often occurs through a misalignment of skill sets in certain geographical locations.

It is more prominent if labour is unwilling to move geographically in search of new work, or if firms are unwilling to take on people with different skill sets.

Real wage unemployment: also known as classical unemployment, occurs when wages are kept artificially high through powerful trade unions. A higher minimum wage means that the demand for labour is less, because firms cannot afford to employ that many people.

**Illustration:**

The suggested remedy to this is to have no minimum wage, and allow the supply and demand for labour to reach market equilibrium.

Frictional unemployment: is when people are searching for or are transitioning from one job to another. This can often just be temporary, and can take a while whilst people's skill sets adapt.

Voluntary unemployment: occurs when people choose not to enter the labour force at the prevailing wage rate. It may be more beneficial for them to receive social security, rather than go into a job and be required to pay tax.

6.8 The Phillips Curve

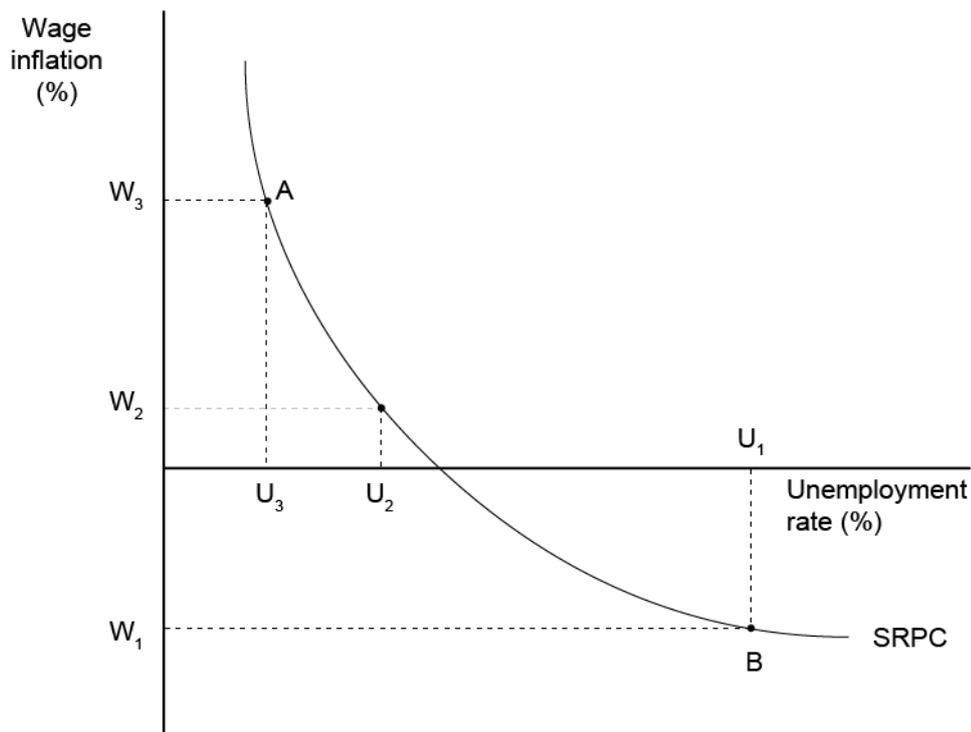
In 1958 an economist from New Zealand, named William Phillips, published a study of the historical link between unemployment and the rate of change of money wages.

From this, a more formal link between inflation and unemployment was found, indicating that there was a trade-off between the two.

This trade off can be explained like so:

- ❑ As unemployment falls, labour shortages may begin to occur where skilled labour is in short supply. This puts upward pressure on wages.
- ❑ At high levels of unemployment, individuals do not have the bargaining power to increase their own wage, therefore inflation is likely to stay low.

The relationship can best be displayed on a graph:

**Illustration:**

At point A, the trade off between inflation and unemployment is great, because resources are near full capacity.

At point B though, there is more spare capacity in the economy, meaning that the level of wage inflation is so low, that it's negative.

Phillips Curve: developments

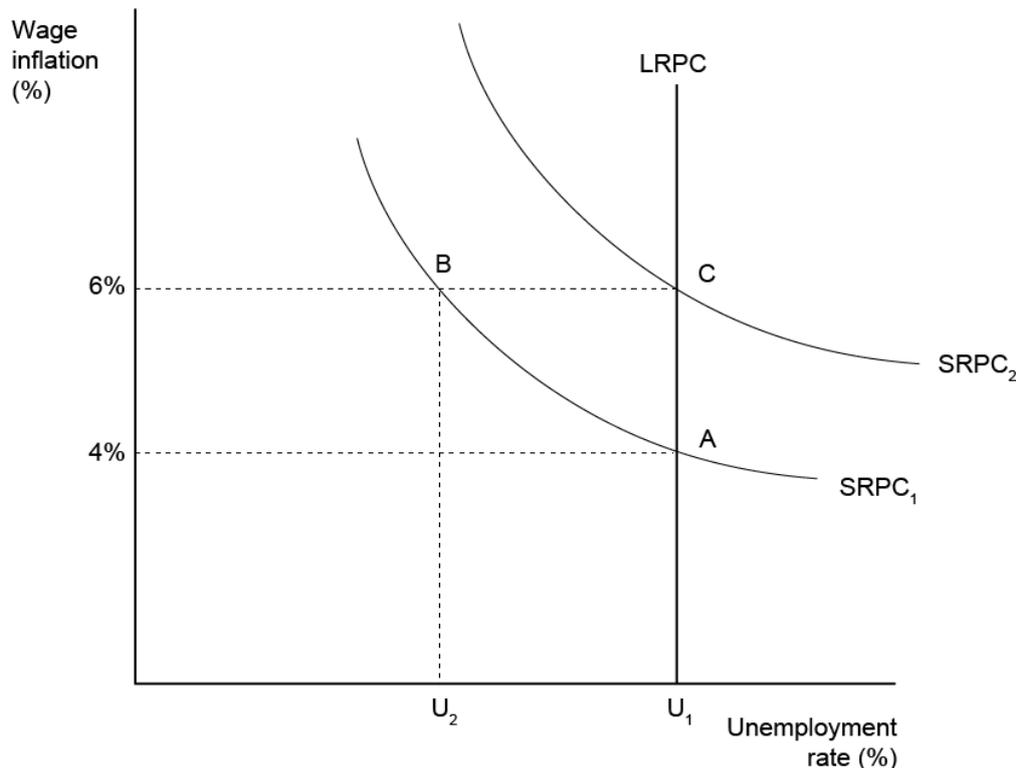
Monetary economist Milton Friedman developed the theory of the Phillips Curve by saying that there was in fact a Long Run, and a Short Run Phillips Curve.

He agreed that the trade off between unemployment and inflation existed, however only in the short run. In the long run, there was no such trade off.

The argument was that each SRPC was based upon a fixed expectation of inflation. If there was an increase in the expectation of inflation, then this would cause the SRPC to shift higher.

In his opinion, boosting AD would only have a short run effect on unemployment. In the long run, people would adjust their expectations to account for higher inflation, and a new SRPC curve would form.

This can be shown in the diagram below:

**Illustration:**

The economy begins in equilibrium at A.

There is an increase in government spending to boost AD, decreasing unemployment and taking the economy to point B where inflation is 6%

A point B, firms' costs and individuals' wage demands increase, meaning output falls, unemployment rises, and hence SRPC1 shifts to SRPC2.

This means that in the short run, a trade off may occur, however in the long run, it is not possible to expand beyond the LRPC.

Natural rate of unemployment

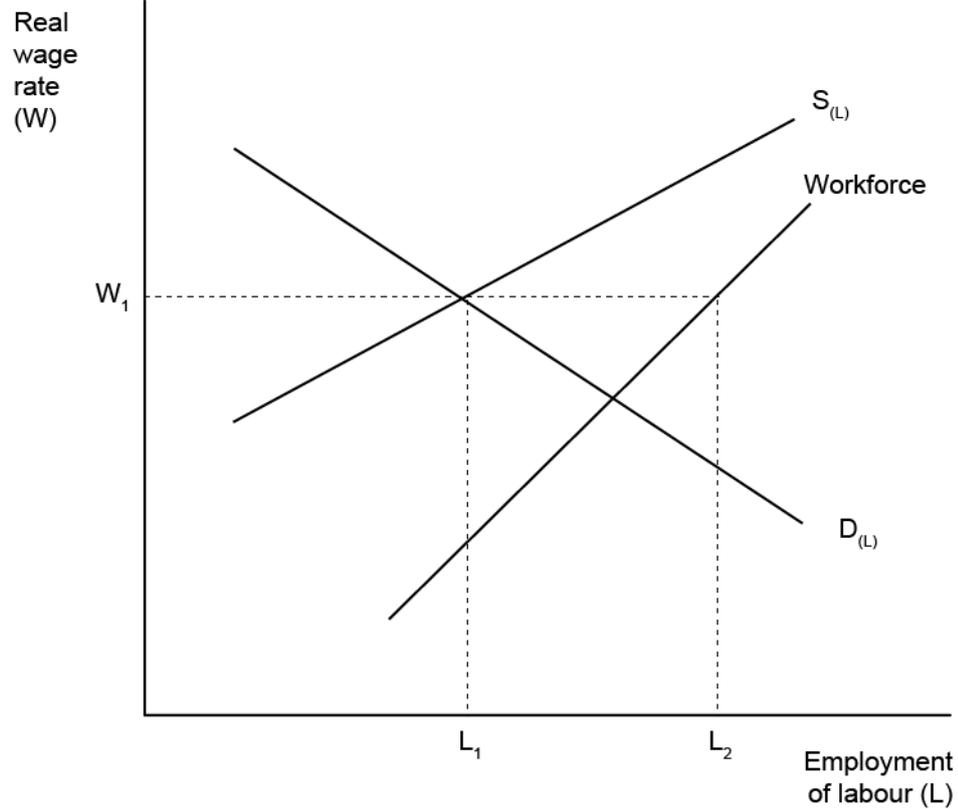
The implication of this is that there will always be a level of unemployment in the economy which is unavoidable. Looking at historical data, this would appear to be the case.

The people who are affected by this are known as frictionally, or structurally unemployed. This is known as a type of "voluntary unemployment" because they are choosing to abstain from the labour market.

Whilst this might seem unfair, in economic terms these people who do not participate in the labour market at the current wage are unemployed. Even if a whole industry has declined and there is not any work in the local economy, they could in theory move to another part of the country and engage in work.

This means that in an economy there will always be a level which will persist, and is therefore known as the *natural rate*.

Diagrammatically, this can be shown as below:

**Illustration:**

L_1 shows the equilibrium between the supply and demand for labour at the wage level W_1 .

The “workforce” contains all of those people who are actively supplying their labour, but also those who are voluntarily unemployed.

This means that $L_2 - L_1$ workers in the workforce choose not to partake at a given wage level. These people are those who make up the level of natural unemployment in the economy.

We can see how the lines converge as the wage gets higher. This is to be expected because, at a higher wage, more of the voluntarily unemployed workforce will choose to rejoin the workforce.

Growth and taxes

Contents

- 1 Growth and recession
- 2 Fiscal policy
- 3 Taxation

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

- LO2** **Understand the nature of nature of macro-economics and its relation with the measurement of economic growth.**
- LO3.6.1 *Growth and recession:* Understand different phases of the business cycle
- LO3.6.2 *Growth and recession:* Understand the indicators of growth and recession
- LO3.7.1 *Fiscal budget:* Explain the fiscal policy and its objectives and how they are achieved through fiscal budgets
- LO3.7.2 *Fiscal budget:* Discuss the limitations of fiscal policy
- LO3.8.1 *Direct and indirect taxation:* Define direct and indirect taxation,
- LO3.8.2 *Direct and indirect taxation:* Understand functions of taxation, types of taxes and characteristics of good tax policy
- LO3.8.3 *Direct and indirect taxation:* Explain the advantages and disadvantages of direct taxation
- LO3.8.4 *Direct and indirect taxation:* Explain the advantages and disadvantages of indirect taxation.

1 GROWTH AND RECESSION

Section overview

- Introduction
- Objectives of growth
- Business cycles
- Indicators of growth and recession

1.1 Introduction

Moving from the role of money, and price levels, we turn now to consider the level of output in an economy, and what might cause the fluctuations that we can observe.

Throughout economic history, there have been bouts of prosperity and depression. Economists view these recurring patterns in a country's output not as random, but as a causal chain of events which can be used to predict the future path a country may take.



Definition: Economic growth

Economic growth is a long-term expansion of a country's production potential.

Rather than unsustainable short run increases, economic growth is seen as a more permanent increase in what output the economy is able to produce. From our earlier chapters, it is akin to the level of the Long Run Aggregate Supply.

1.2 Objectives of growth

Depending upon the type of economy and society there will be different objectives as to what is meant by growth. Some may see it as simply the output that is generated, whereas other societies may place higher regard on, say, an equitable distribution of resources.

To better evaluate this, we shall consider the advantages and disadvantages of growth.

Advantages

- ❑ **Higher living standards:** an increase in the real income of the individuals in an economy.
- ❑ **Employment effects:** with economic growth, the capacity in an economy increases and therefore there is more opportunity for employment within society.
- ❑ **Fiscal benefits:** with higher GDP growth, firms and individuals will increase the amount of taxes that they pay. This gives government better opportunity to meet their objectives.

Disadvantages

Despite seeming obvious that long-term growth in an economy is beneficial, we should also consider some of the downsides that come with this growth.

- ❑ **Environmental concerns:** fast growth may be at the expense of the natural environment. This has been attributed to the swathes of deforestation in many rural areas of the world, as the wood has been used to fuel economic growth.
- ❑ **Inequality:** there is also an argument that economic growth merely exacerbates inequality that is present in an economy. Whilst it might reduce absolute poverty, the level of relative poverty in countries may increase dramatically with a drive for economic growth.
- ❑ **Inflation risk:** if demand outstrips supply due to rising incomes then, as we have seen, there is the risk that demand-pull inflation will set in, causing the general price level to increase to an unsustainable level.
- ❑ **Working hours:** with an increased economic output, there are concerns that workers may be exploited, working longer hours than they should. This might upset work-life balance, leading to social problems.

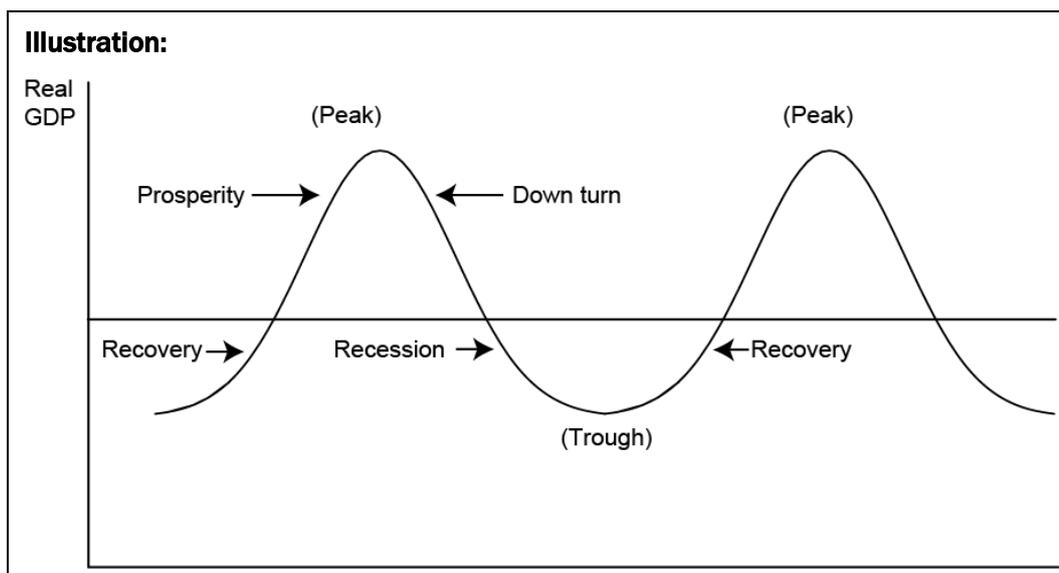
1.3 Business cycles

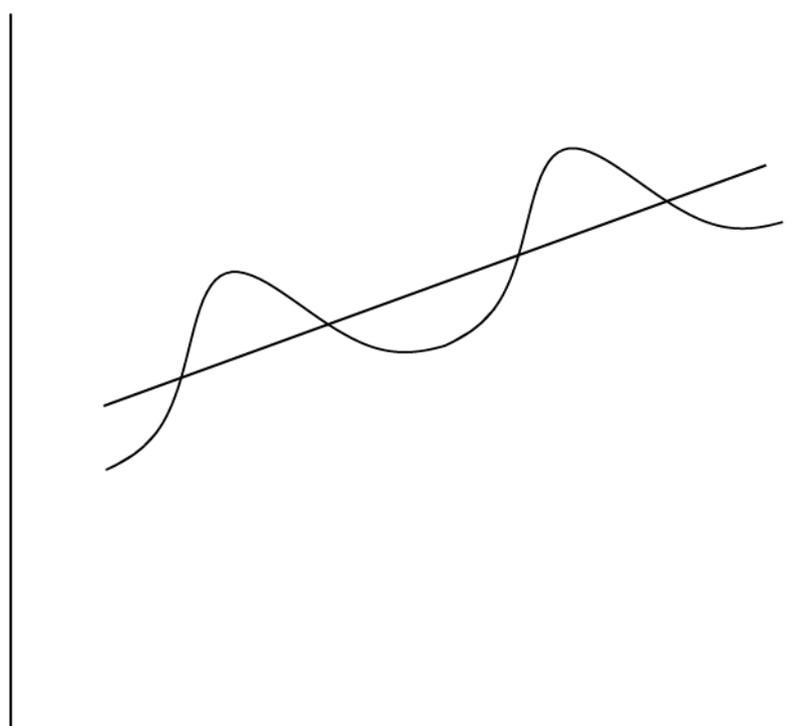
From seeing the merits and demerits of economic growth, we next move to evaluate what patterns of output emerge regularly in economies. The patterns of output fluctuations are known as business cycles.

Though no cycle will be identical, there are distinct phases in each which one can analyse, recognise, and therefore use an indicator for future events.

It has been observed throughout economic history that there is often an upwards trend in the level of economic growth. Peaks and troughs form, but after each cycle, the level of Real GDP is greater than before.

To ensure a clear understanding, the “trend line” has been drawn flat in the diagram below. It is useful to consider the trend line as the diagram below though.



**Illustration:**Real
GDP

Time

Each phase in the cycle has certain characteristics, and follows a logical flow of events. We shall begin the cycle as the economy is about to uptake.

Prosperity (Boom period)

The economy is expanding, meaning output, income, employment, prices and profits should all increase.

At this stage, banks issue credit more freely which facilitates firms to invest in increasing output to meet the demands of consumers with higher income. Output grows, as does overall business optimism.

A growing economy also means that there may be inflationary pressures, caused by high demand, and insufficient levels of output. To temper these pressures, central banks are likely to increase interest rates.

As output increases and increases, there comes a point where it can expand no further, which is when the cycle reaches its *peak*.

Downturn

At this stage, economic activity begins to slow down.

When demand begins to decrease, firms begin to scale back their production and investment plans. There is a steady decline in output, profits, prices and employment as demand falls, and firms respond by reducing their output.

Banks reduce the credit they issue, firms cancel orders that they place, and people begin to lose their jobs, which further decreases the level of aggregate demand.

This eventually takes the economy into a state of recession.

Recession/depression

With unemployment levels high, incomes low, consumer demand low and investment low, the economy slips into a state where output remains very low.

There is an under-utilisation of resources as machinery lies dormant. Business confidence is extremely low, as profits and prices go lower and lower.

Economic activity is at its lowest, meaning the business cycle is at its trough.

Recovery

From the low point, there is an increase in levels of economic activity as demand begins to increase slightly. With an increase in demand, production increases, causing an increase in investment.

This causes a steady rise in output, incomes and business confidence. This leads to an increase in investment, somewhat helped by banks increasing credit.

Assets in the economy begin to be utilised again, and levels of GNP increase once more.

As this continues, the economy then enters a phase of Prosperity, and the cycle continues...

1.4 Indicators of growth and recession

With this series of events occurring throughout the cycle, there are certain markers that can be identified, and used to indicate at what stage the economy is in.

These indicators can be categorised into three types, depending upon at which stage the data is analysed.

Leading economic indicators

The nature of these indicators is that they are used to forecast at what stage the economy will be in, at some time in the future. These in particular give an indication for whether a peak or trough will be reached in the following 3-12 months.

- Index of business confidence
- Manufacturers' new orders
- New building permits for private housing
- The money supply

Coincident economic indicators

These indicators are events and measures that occur at the same time as a peak or trough occurs. They are used by governments to assess at what stage in the cycle the economy is in.

- Number of people in employment
- Industrial production
- Personal incomes
- Manufacturing and trade sales

Lagging economic indicators

These indicators are used to assess whether an economy has reached a peak or trough 3-12 months after it would have occurred.

- Consumer Price Index (i.e. level of inflation)
- Average duration of unemployment
- Interest rates
- Average income

It is never an exact science to classify at what stage in the business cycle an economy is in, which is why the variety of indicators presented above are used; to give the best estimate of how the economy has/ will perform.

2 FISCAL POLICY

Section overview

- Introduction
- Objectives
- Public sector finances
- Balancing objectives
- Use of Fiscal Budgets

2.1 Introduction

In response to all of the analysis we have undertaken on the macroeconomy, we look now at how the government acts to control it.



Definition: Fiscal policy

Policies undertaken by a government to influence macroeconomic conditions, and therefore economic activity, through the use of taxation and spending.

There is a very important distinction which must be made with regard to the policies that a government undertakes. In some instances it will be to stimulate the economy, whereas in other cases it will be to rein it in, if it is growing too quickly.

We therefore have these two types of policy:

Expansionary



Definition: Expansionary policy

A macroeconomic policy that seeks to increase the rate of economic growth.

An expansionary policy can be applicable not just to fiscal policy, but also for monetary policy. Nevertheless in this case there are a number of policies that a government can undertake to boost the rate of economic growth such as:

- Tax cuts
- Tax rebates
- Increased government spending

Contractionary

By contrast, contractionary policies look to slow down growth in an economy.



Definition: Contractionary policy

A macroeconomic policy that seeks to slow down the rate of economic growth.

Again, this doesn't just have to take the form of fiscal policy. If an economy is suffering from high inflation, it may be that the country's financial department looks to halt the high level of growth that occurs. This can be done through some of the following policies:

- ❑ Increase taxes
- ❑ Reduce subsidies
- ❑ Wage freezes

2.2 Objectives

As with any action that a government would undertake, there are certain objectives that are set to ensure the proper management of the economy, and give them guidelines for particular policy decisions.

These objectives can be numerous and their actions depend upon what the current state of the economy is; however some key themes do emerge:

- ❑ **Keep inflation low:** ensuring the price level remains stable avoids persistent problems throughout the economy.
- ❑ **Keep employment high:** governments have a social objective to ensure high levels of employment.
- ❑ **Steady economic growth:** most economists agree that consistent, gradual economic growth is favourable.
- ❑ **Equilibrium in Balance of Payments:** this ensures that the value of a country's imports and exports are equal.
- ❑ **Run a balanced budget:** meaning whatever the government spends, it can pay for.

2.3 Public sector finances

An important part of how the macroeconomy is run is how the government pays for the policies that it must implement. The money that it spends on projects is often not within its possession initially, and so it must borrow in order to pay for them.

Sources of public sector borrowing

The main way that a government will finance itself is through issuing sovereign bonds, T-Bills, or other financial instruments. In simple terms, it receives money now from investors and in exchange must pay them back at a future date. This gives governments liquidity and allows them to finance their work.

This is, however, classified as a debt for the country. It is based upon the assumption that the government will pay back the holder of the bond at the prescribed future date.

National debt

The levels of national debt can become an indication of a country's financial stability. If it is unable to meet the obligations that it has to its investors, then it is likely that a debt crisis may ensue, whereby investors become less confident that they will receive their money back, and so ask for a higher premium which increases the cost of borrowing for governments making it more difficult to implement policies.

Public debt

This is the accumulation of not only the national debt that the government has, but also the total amount of debt held by the public (consumer debt, credit debt, mortgage debt).

2.4 Balancing objectives

By their nature, the objectives that a government wishes to meet may be in conflict with one another.

In order to establish steady economic growth, there will be a need for the government to utilise expansionary fiscal policies.

This, though will risk keeping inflation low, and also running a balanced budget.

If the government wants to control inflation and the trade deficit it runs, then the opportunity cost of this decision is that there may be a slowing down of economic growth and, as we have seen through the Phillips Curve, an increase in unemployment.

Therefore, it will be impossible for a government to be able to achieve all of its goals. Instead, it must prioritise, and balance the objectives so that a good combination is achieved.

2.5 Use of Fiscal Budgets

These objectives can be somewhat contradictory, and for this reason, a fiscal budget has been established to keep governments in check.

This also ensures that the government only spends money that it is likely to receive. If it has a deficit (i.e. spends more than it earns), then it needs to fund the additional spending through other means, such as borrowing.

A government cannot borrow indefinitely, meaning that this is not a sustainable practice.



Example:

If the government wanted to keep employment high, it could employ everybody in the country to do a mundane task, like digging holes. However, doing this would run the risk of inflation becoming high, and it could also mean it doesn't have sufficient revenues to pay the wages.

Therefore, using fiscal budgets, the government constrains which projects it can and can't undertake in order to meet its objectives. Certain ones will take priority, meaning that it won't always be possible to meet every objective. However, remaining within the budget is used to ensure government spending isn't rash, and brings an element of control to balancing economic activities.

3 TAXATION

Section overview

- Introduction
- Functions of taxation
- Types of taxes
- Good characteristics of a tax
- Direct taxation
- Indirect taxation

3.1 Introduction

We have just discussed the importance of governments only spending money that they receive. This next section is concerned with the main way in which governments receive their income: through taxation.

3.2 Functions of taxation

Taxes exist for several purposes within an economy:

- ❑ **Fiscal:** taxes form the budget from which governments can allocate resources across the economy.
- ❑ **Allocation:** it acts as a means of distributing wealth between various groups of citizens: wealthy to poor, as a means of maintaining a social stability.
- ❑ **Regulatory:** ways of changing the behaviour of individuals or firms through imposition of taxes.
- ❑ **Incentive:** stipulating special tax arrangements for certain members of society as a result of past achievement.

3.3 Types of taxes

Within an economy, taxes can be raised in a number of different ways. In order to generate a substantial level of taxation, the government has different options at their disposal. The distinction is made between the types of tax depending on how the taxable base changes. The taxable base is the household's income, or the business' profit.

Regressive taxes

A tax where lower income entities pay a higher fraction of their income than higher income entities.

Proportional taxes

A tax where everyone, regardless of income, pays the same fraction of income in taxes. This is also known as a "flat tax".

Progressive taxes

A tax where higher income entities pay a higher fraction of their income than lower income entities.

These can take effect in a number of different forms. For example, a car duty is likely to be somewhat regressive in nature. This is because a car makes up a greater percentage of a lower-income household's income, and therefore will affect them more than a higher-income household.

3.4 Good characteristics of a tax

As with any regime that a government imposes, there will be good ways and bad ways of conducting it. There are a number of characteristics that we can draw out that are important in creating a system that is "good".

- ❑ **Efficiency:** a tax should raise revenue without creating negative distortions in the economy, such as disincentives to work and invest.
- ❑ **Equitable:** taxes should be paid based upon someone's ability to pay.
- ❑ **Benefit principle:** a principle whereby people should pay taxes based upon the utility that they gain from its implementation.

There can often be trade-offs between these different principles.



Example:

A government could give a tax break to higher income individuals to encourage higher labour productivity. However this could equally been seen as less progressive, thereby increasing potential inequality in society.

Conversely, setting the tax rate too high could cause disincentive effects against people working hard.

3.5 Direct taxation

There are two main types of taxation – direct and indirect – both of which deserve discussion in their effectiveness of raising government revenues.

Firstly, a direct tax is one where the money is raised *directly* from an entity in the economy.



Definition: Direct taxation

A tax paid directly to the government by the person on which it was imposed.



Example:

The main example of this is income tax.

The person pays tax based on the income that he earns. This tax cannot be shifted to another entity, instead it has to be fulfilled by the person.

Other examples include: inheritance tax, capital gains tax, national insurance contributions and corporation tax.

From a government's perspective, there are advantages and disadvantages with this form of raising revenue.

Advantages

- ❑ **Equitable:** people with higher income pay more into society than those with less income, creating a more equitable distribution of (net) wealth.

- ❑ **Cost of collection is low:** meaning it is an economical way of raising revenue, saving expense.
- ❑ **Relative certainty:** the government can estimate how much it will receive allowing better planning of projects.
- ❑ **Flexible:** if a government needs to raise revenues quickly, it can do so by raising direct taxes.

Disadvantages

- ❑ **Possible to evade:** it is possible to falsify tax claims meaning the correct amount is not always paid.
- ❑ **Unpopular:** it is very obvious when a direct tax is being paid meaning the end user will often try to find ways to avoid paying it.
- ❑ **Discourage savings/ investment:** if too high, then it would leave consumers and firms less money to put to other causes that could reap reward.

3.6 Indirect taxation

There is also indirect taxation that is raised not through generating the money directly, but by the choices that agents make in the economy.



Definition: Indirect taxation

A tax that increases the price of a good, meaning the tax is paid when the good is bought.



Example:

An example of this is fuel taxes.

The government can choose to impose a tax on petrol as a means of discouraging consumption, but also to increase revenues. This tax is often passed onto the consumer in the form of a higher petrol price. Every time petrol is bought, the government effectively generates tax revenues.

Other examples include: Value Added Tax, Customs Duty, Excise Duty, and levies.

Once again, there are advantages and disadvantages with this form of raising revenue.

Advantages

- ❑ **Change the pattern of demand:** the government can alter the demand for a product (say, alcohol or cigarettes).
- ❑ **Can correct externalities:** if a product causes direct external costs (e.g. health costs associated with alcohol or cigarettes), the tax can be used to mitigate these.
- ❑ **Less easy to avoid:** often these are part of the final price, ensuring taxes are paid.
- ❑ **Allows people greater choice:** consumers make choices and then tax is paid, rather than having income taken away immediately.

Disadvantages

- ❑ **Increases inequality:** regardless of income, people are still faced with the same tax on a good
- ❑ **Cause cost-push inflation:** by increasing the price of inputs for goods.
- ❑ **Establish a “black market”:** if taxes make prices too high, can incentivise people to source the goods from alternate (sometimes illegal) markets.
- ❑ **Higher uncertainty:** if in a recession, people are buying less goods, then this means the revenue received will decrease much more.
- ❑ **Distorts the market:** can lead to disequilibrium in the market for products that have been taxed.

Monetary policy

Contents

- 1 Central Banks
- 2 Other Banks

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO4 Understand the nature of banking systems

LO4.2.1 *Role of a central bank:* Describe the functions of a central bank

LO4.3.1 *Monetary policy:* Understand the meaning of monetary policy

LO4.3.2 *Monetary policy:* Understand the objectives of monetary policy and the mutual conflict of the objectives

LO4.4.1 *Types of banks and financial institution:* Define a bank and describe its kinds.

1 CENTRAL BANKS

Section overview

- General introduction
- Functions of the central bank
- Monetary policy
- Contractionary policies
- Expansionary policies
- Objectives of monetary policy
- Limitations of monetary policy

1.1 General Introduction

We next turn our attentions to an organisation that serves many functions in an economy, and is known as the central bank.

Though there were precursors in the Netherlands and in Sweden, the first central bank was established in the United Kingdom in 1694. The Bank of England raised funds, and began issuing bank notes as a means of funding a conflict between France and England.

Almost all countries have a central bank today, or are part of a monetary union that acts as a central bank for all of them. They are based on the original Bank of England model.



Definition: Monetary union (or currency union)

Where two or more states share the same currency. They operate under the same central bank.

The most notable is the European Monetary Union, that combines 17 member states using the same currency.

The central bank operates in a similar vein as the banks described in the previous section, however it is nevertheless a separate institution with its own roles and objectives.



Definition: Central bank

The entity responsible for overseeing the overall monetary policy in a country (or countries). It is also concerned with meeting a number of objectives such as: currency stability, low inflation and full employment.

1.2 Functions of the central bank

The responsibilities of the central bank are generally universal, however there will be some variation between countries.

- **Sole supplier of currency:** The central bank has the responsibility of supplying the notes and coins throughout a country in order to bring uniformity, but also to exercise greater control over it.

- ❑ **Banker to the government:** It offers advice and also funding for governments looking to fund projects, in the same way a commercial bank would to its customers.

The central bank will organise and advise upon the public debts of a country through working with a government.

- ❑ **Banker to the banks:** By holding cash reserves from each bank for safe keeping, the central bank brings a level of protection to the banks. Having a centralised cash reserve yields greater confidence in the system, and a better buffer against financial shocks.

Further, a central bank can offer a counselling service to commercial banks if ever they find themselves in financial difficulty, and in need of advice.

- ❑ **Lender of last resort:** If a commercial bank is unable to use other sources to meet its financial requirements then they use the central bank. This brings greater liquidity to the system, and helps protect savers' deposits.

- ❑ **Exchange rate controls:** The central bank has control over a country's foreign currency, and gold reserves. These are used in times to manipulate the exchange rates with other countries, and also other policy objectives, such as the balance of payments.

- ❑ **Clearing agent:** As all commercial banks have accounts with the central bank, when undertaking transactions, they can do so within the central bank, reducing the necessity of issuing and transferring cash.

- ❑ **Establish specialised banks:** In some cases, a central bank will allow the creation of banks to serve a particular purpose, usually not for commercial means. For example, a bank that organises the funds for agricultural workers, or another sector of the economy.

This shows, at least in part, how the central bank performs a number of operations within the economy. In part, the reason for this is to share responsibility for the economic performance of a country with the government.

The central bank is often trusted more than the government to fulfil government objectives, because it does not have the primary objective of being re-elected.

1.3 Monetary Policy

As we have seen from the definition of a central bank, it oversees an array of functions in an economy. It performs these functions in a number of ways, and through the broad definition of monetary policy.



Definition: Monetary policy

Using a variety of techniques to influence the use of money and credit within an economy in order to meet certain objectives.

Monetary policy is based around controlling the growth and size of the money supply, in turn affecting the interest rate that is set in the economy. The primary objective that the central bank tries to meet is to keep inflation low and steady, and it does this through controlling the level of spending in an economy.

It can use monetary policy as a way of controlling the actions of individuals in an economy. There are a number of processes that the central bank can do.

Change reserve requirements

Suppose the central bank is looking to reduce the level of aggregate demand in an economy. It can do so through manipulating the reserves that commercial banks must hold. In order that the reserves are kept safe, commercial banks will have them deposited at the central bank.

1. Reduce reserves available to banks: the central bank controls the level of reserves that commercial banks must hold with them. By decreasing the level of reserves that they must hold, and keeping the reserve ratio constant, the commercial banks must reduce the level of loans that they give out.
2. A Rs.1 reduction in the level of reserves that commercial banks must hold translates, through the multiplier effect, to be a much bigger contraction in the overall money that they loan out. This causes the money supply to decline.
3. As the money supply contracts, money becomes “tight” (i.e. less available and more expensive). This reduced level of money in the economy raises the interest rate, and reduces the amount of credit available in the economy. Consequently interest rates rise for mortgage borrowers and firms looking for investment are discouraged from borrowing, and spending more money.
4. High interest rates reduce the wealth of firms and individuals, causing a drop in consumption and investment. This causes a shift to the left of aggregate demand ($AD = C+I+G+(X-M)$). In short, tight money has a contractionary effect on aggregate demand.
5. The effect of tight money reduces the level of aggregate demand, causing a drop in output, employment and inflation.

This is a very important aspect of what a central bank does. By affecting the level of reserves that commercial banks must hold, it is able to affect the level of output and spending in the real economy. This is a powerful tool for the central bank.

Open-Market Operations

The central bank can buy or sell government securities on the open market, to change the level of reserves that are held by commercial banks.

Again, let’s suppose that the central bank wishes to reduce the level of aggregate demand in the economy; the process will follow like so:

1. Central bank decides it wants to decrease the level of aggregate demand and so agrees to sell Rs.1 billion government bonds from its portfolio of reserves.
2. The bonds are sold to dealers in government bonds, who then resell them to commercial banks, and other financial institutions.
3. The buyers pay for these bonds by the central bank reducing the balance of reserves that the commercial banks hold with them.
4. As we have seen, if the cash reserves of a commercial bank drop, then the level of demand deposits that it can take drops by a magnitude of the money multiplier.
5. Consequently, the level of money supply tightens, and aggregate demand declines.

It is useful to practice these steps a few times, and even what would happen if the reverse (i.e. central bank wishes to increase aggregate demand) scenario occurs.

Discount-rate policy

The central bank also makes loans to commercial banks. When banks are borrowing, this helps to increase their total level of reserves, and when the level of borrowing declines, the total reserves decline.

It is difficult for a central bank to set the exact level of borrowing that occurs between commercial banks and itself. It may believe that commercial banks need to borrow more, but it is not possible for them to set precise levels.

The central bank can however encourage more borrowing by lowering the discount rate that it offers to commercial banks, as a means to induce them into borrowing more.

That said, the use of the discounted rate that banks can borrow at is meant only to be used sparingly. If the short-term interest rate was, say 10%, and the discount window was 8%, then commercial banks may be tempted to undertake all of their borrowing from the central bank. This behaviour is seriously frowned upon, and banks will often be publicly reprimanded for doing so.

In changing the discount rate, the central bank can induce commercial banks to increase or decrease their level of borrowing, and therefore the level of reserves that they hold.

The discount rate is used as a proxy against which banks offer interest rates to individuals in the economy. In the press, the discount-rate can also be referred to as the “base rate”.

The logic goes that commercial banks will charge a premium on the base rate that will remain constant throughout. If the base rate falls, the interest rate faced by consumers will fall also, hence affecting the activity in the real economy.

Moral persuasion

The central bank can also discourage behaviour from banks by simply conducting personal discussions with them, and persuading them not to go through with actions that may jeopardise the wider objectives that the central bank has.

This is not a particularly easy instrument to measure, but is nevertheless an important part of the central bank’s arsenal.

Exchange rates

The Balance of Payments (see Chapter 12) can be in a deficit or surplus which will affect the monetary base, and therefore the money supply.

The central bank can buy or sell foreign reserves (often in large quantities) in order to ensure that the exchange rate doesn’t adversely affect the outcome of the real economy.

1.4 Contractionary policies

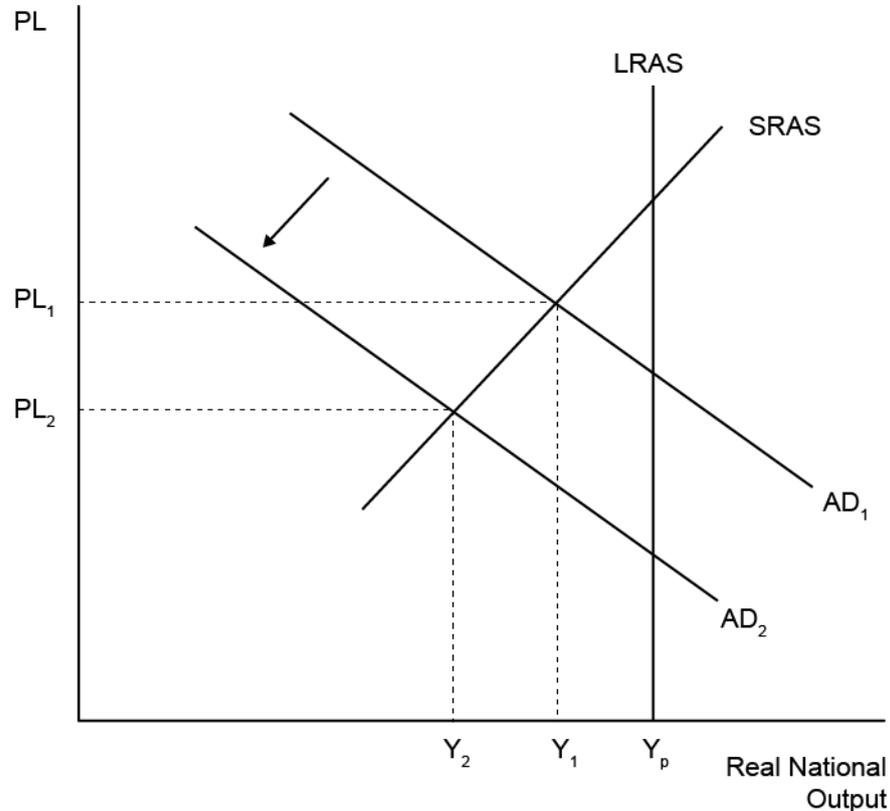
The monetary policies that we have observed can be used to either expand or contract the level of output in an economy, through a mechanism that takes the actions of the central bank, and sees the effect in the real economy.

We shall now run through an example of both a contractionary, and expansionary policy, and how this changes the macroeconomic equilibrium that exists.

**Example:**

The central bank is concerned that the economy might be overheating, and therefore decides to reign in the level of aggregate demand in the economy.

It does so through increasing the base rate (interest rate) that it sets throughout the economy.



By increasing the rate of interest that banks can borrow from the central bank, commercial banks must reduce the level of reserves that they hold.

In order to cover the higher cost of borrowing, they will either reduce the total amount of loans that they issue, or increase the cost of borrowing to those individuals with existing loans (and who haven't pre-determined the fixed level of interest that they will pay).

These both have the effect of reducing the level of disposable income that individuals have, hence reducing consumption. It also reduces the level of investment that occurs in the economy, as a higher interest rate disincentivises firms to invest in long term projects.

This results in a decrease in aggregate demand which, as the diagram shows, reduces the level of output from Y_1 to Y_2 , and the price level from PL_1 to PL_2 .

1.5 Expansionary policies

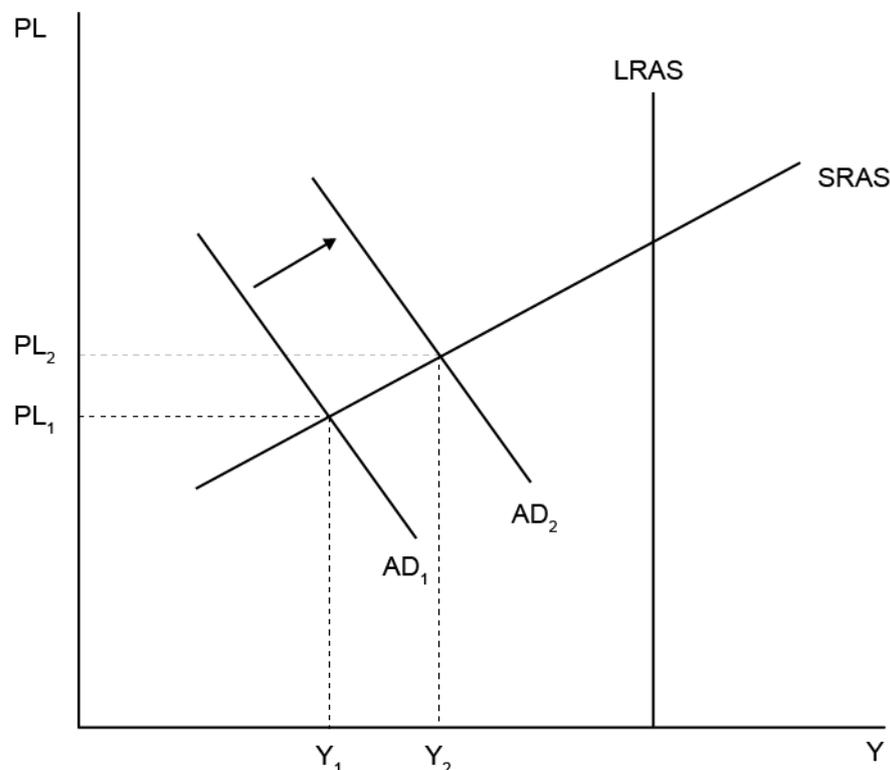
An expansionary monetary policy will be used when the central bank wishes to stimulate the level of demand within an economy.

If the level of output is low, meaning central bank objectives are not being met, then they will look at ways of stimulating aggregate demand through one, or a combination of, monetary policies.

**Example:**

The central bank is concerned that the level of output in the economy is too low, and therefore decides to try and increase the level of aggregate demand in the economy.

It does so through buying government bonds in a round of open market operations.



By purchasing government bonds from commercial banks, the central bank transfers money to the banks, increasing the cash reserves that they hold.

The commercial banks, with their bolstered reserves, will look to then loan out these additional reserves, to the level of the reserve rate. Doing so increases the reserve level for second-generation banks, which do the same. Consequently the initial increase in cash reserves to the first bank translates to a multiplied effect across the wider economy.

This increases the level of money supply in the economy, and brings down the market rate of interest. Consequently firms and consumers then increase their investment and consumption respectively, and the level of aggregate demand increases.

This is shown in the diagram by an increase in output from Y_1 to Y_2 , and the price level from PL_1 to PL_2 .

1.6 Objectives of monetary policy

We have seen that monetary policy can be used to expand, or contract the money supply in an economy. This is done to meet a number of objectives that the central bank wishes to achieve in an economy.

As with other objectives that must be made, there is often a conflict of what can be achieved.

There are numerous objectives that monetary policy looks to achieve and, as we shall see, it is not possible to satisfy all of them.

- ❑ **Price stability:** Keeping inflation low and steady for a more stable economic performance.
- ❑ **Economic growth:** With appropriate economic policy, the government wishes to develop the overall per capita income within the country.
- ❑ **Exchange rate stability:** Achieve stable exchange rates between countries in part through adjusting for the balance of payments.
- ❑ **Full employment:** Here, it is necessary to increase production and demand for goods, allowing resources to be fully utilised and the economy to reach full employment.
- ❑ **Credit control:** Making banks exercise control over their issuance of credit, but also ensuring that the most vulnerable in society are receiving their fair share.

Though these objectives are all desirable, it is not possible to achieve all of these at once – some conflict between them exists.

Price stability vs full employment

By undertaking monetary policy to increase full employment, a central bank could undertake policies to increase aggregate demand. Doing so could drive up inflation, putting more pressure on the price stability target.

Economic growth vs exchange rate stability

In order to boost economic growth, a central bank may decide to manipulate exchange rates to increase the likelihood of exports. Doing so would jeopardise stability in exchange rates.

Economic growth vs credit control

A way to grow the economy might be through the expansion of credit, as it would spur investment and spending. However, this comes with heightened economic risk of credit defaulting.

1.7 Limitations of monetary policy

Despite the many advantages that monetary policy can bring, there are limitations to its effectiveness in the real economy.

These can take place in a number of ways:

- ❑ **Existence of non-monetary sector:** This is especially so in developing countries. If a large portion of society are not using money for exchange (for example bartering in rural areas), then they are not using commercial banks, which limits the effect of policies reaching these people.
- ❑ **Existence of non-banking financial institutions:** These are organisations that offer credit to consumers, however do not come under the supervision of the central bank.
- ❑ **High liquidity in financial markets:** When a central bank looks to tighten the money supply, its effects will be hindered if agents in the economy have access to highly liquid assets. Hence if the central bank tries to tighten money supply, agents can counter this by creating their own liquidity.

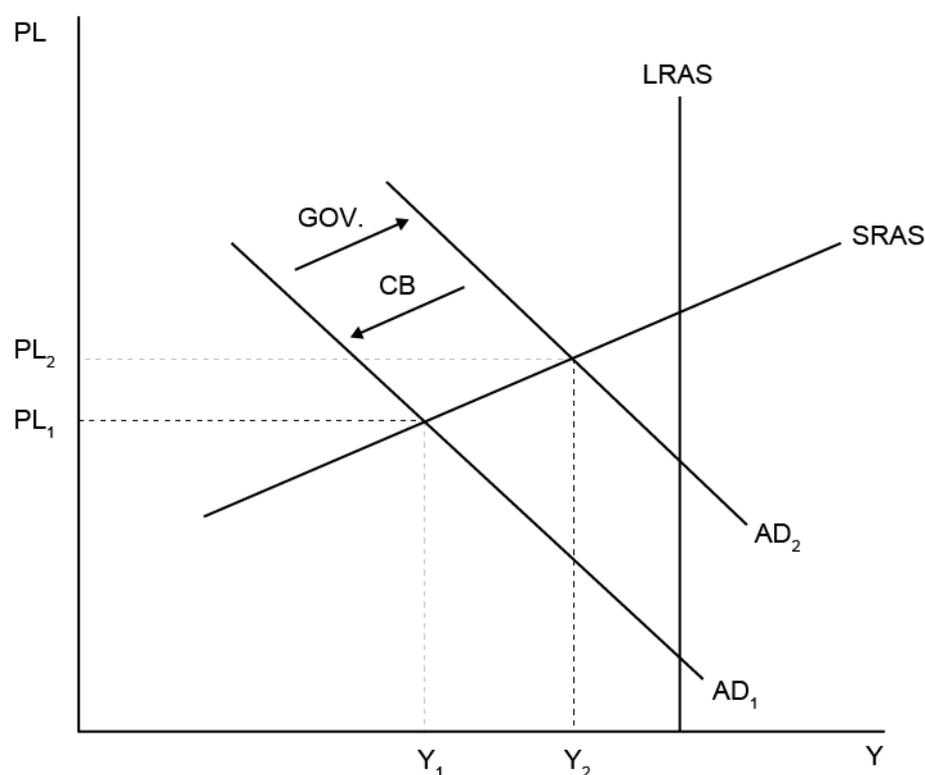
- ❑ **Time lags:** The effects of a monetary policy will often take time to occur. Therefore a central bank must have to predict what will happen in the future, and implement policies accordingly. Sometimes however there will be too much uncertainty for these policies to be correct.
- ❑ **Lack of co-ordination between monetary and fiscal policies:** In simple terms, monetary policies are implemented by the central bank, and fiscal policies are implemented by the government. If the two organisations do not co-ordinate their objectives, then the effect will be corruptive.



Example:

The central bank is concerned that the level of inflation is getting too high, and so decides to tighten the money supply.

However, the government believes that unemployment is too high, and so decides to invest in an infrastructure project (an increase in government spending) to boost output in the economy.



As we can see, the government pushed AD out from AD_1 to AD_2 , only for the Central Bank to cause it to shift back from AD_2 to AD_1 .

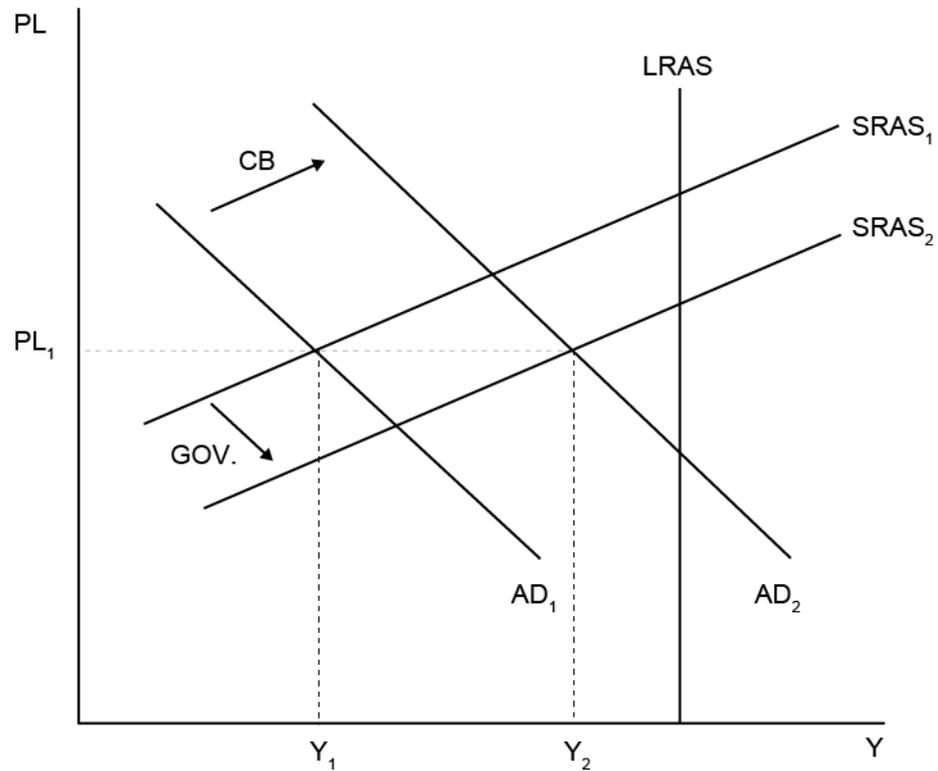
The efforts of both have been wasted, due to a lack of co-ordination.



Example (continued)

Had better co-ordination been managed, then the government could have issued a policy to shift out SRAS (for example forcing wages to stay low, keeping down the cost of inputs) and the central bank could have lowered interest rates, thereby increasing aggregate demand in the economy.

Doing so would have resulted in the following:



2 OTHER BANKS

Section overview

- Introduction
- Types of bank

2.1 Introduction

Banks act as financial intermediaries



Definition: Financial Intermediaries

A financial intermediary is a financial institution through which savers can indirectly provide funds to borrowers.

Other examples of financial intermediaries include mutual funds and pension funds.

An earlier section explained the way in which banks make money, through facilitating credit in the economy. This, however, is just one form of banking, and other types do exist.



Definition: Bank

A financial institute licensed by the government to receive deposits, which then invests these funds in a number of securities.

The range of where banks receive deposits from, and what they invest in, is the cause of diversity within financial intermediaries the banking sector.

2.2 Types of bank

There are two main types of bank: commercial banks and investment banks.

Commercial bank

These banks receive money from the public through deposits, and other means, and in return finance the business sector and individuals.



Definition: Commercial bank

A bank targeted at the mass-market in which individual customers can purchase bank services: mortgages, checking accounts, personal loans, and other bank services.

Banks often issue this money, and are not able to recall it immediately, such are the terms of use. This can lead them into potential bankruptcy problems.

These banks can be run by both the public and private sector.

The bank that we were introduced to when being introduced to credit creation is a traditional commercial bank.

Within this, the scope of commercial banks, there are a number of different types of bank, which are all slightly different.

Retail bank

Often used synonymously with commercial bank, this is used to distinguish from investment banks, and deals with the deposits and loans from large businesses and corporations.

A retail bank is often a branch of a commercial bank.



Definition: Retail bank

A bank targeted at the mass-market in which individual customers can purchase: mortgages, checking accounts, personal loans, and other bank services.

Specialized bank

These are banks which service a specific sector in the economy. They will often have specialized needs that might not be adequately met by other forms of banks.



Definition: Specialized bank

A bank targeted to a specific section of the economy in which firms and customers can have access to specialized forms of banking services.

The clearest example of this is agricultural banks. For example, the Agricultural Development Bank of Pakistan (ADBP) provides long, medium and short term loans to agriculturalists, and aids them with purchases of land and other business inputs.

Cooperative bank/ building society/ credit union

These are usually a not-for-profit organisation where members pool their resources and receive favourable credit terms. Membership is restricted to some shared alliance (employees of the same company, residents in a certain neighbourhood etc.).

There are a number of different variations on this business model, and depending on the region, will be called any of the above.



Definition: Cooperative bank

This is a type of financial institution that provides banking and other financial services to its members.

Investment bank

An investment bank works by assisting a range of institutions with raising capital by underwriting their securities and other assets. They also advise on many issues a business might face.



Definition: Investment bank

A financial intermediary that undertakes a number of financial services for clients.

The investment bank can also aid companies with acquiring funds, and facilitate a number of transactions through utilising the financial markets.

An investment bank will not accept deposits; this is most often dealt with by a bank's commercial division.

Credit

Contents

1 Credit

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO4 Understand the nature of banking systems

LO4.1.1 *Credit formation by banks:* Explain the process of creation of credit money by the banks

LO4.1.2 *Credit formation by banks:* Discuss the limitations on the creation of credit.

1 CREDIT

Section overview

- General introduction
- Definition
- Types of credit
- How a bank makes money
- Credit creation
- Limitations of credit creation

1.1 General introduction

We now move away from the macroeconomic policies and instruments used by governments, and towards the role and behaviour of financial intermediaries who act in the economy.

These agents are known more commonly as banks, and the first issue that we will assess in the makeup of the banking system is that of credit.

1.2 Definition

The key concept to understand in any discussion of the banking system is credit.



Definition: Credit

A contractual agreement whereby a borrower receives something of value in the present, in exchange for payment in the future, generally with interest.

In modern society, almost all agents engage with some form of credit. Whilst this could be a casual agreement between willing parties, a much more formal process has emerged with the establishment of modern day banks.

1.3 Types of credit

There are different types of credit that exist within an economy. Here, we shall assess the following three:

Trade credit

This exists between a customer and a seller, usually in the commercial sector. A purchaser can order a good, receive the good, and then pay for it after a certain period of time.

The credit terms will often mean that the amount has to be paid after 30, 60 or 90 days.

Bank credit

This type of credit exists when an individual or firm goes to a bank, receives an amount of money upfront, and then pays back the amount over a period of time. Bank credit can have varying terms of how much needs to be paid back, and by what time.

Consumer credit

A consumer credit agreement often occurs between a retailer and a consumer. In exchange for store credit (i.e. currency to spend at the establishment) a consumer can pay the amount back over a certain period of time.

One thing that is consistent over all of these different types of credit is that the time period that the money is paid back over is positively correlated with total amount that needs to be paid.

Thus, the longer it takes for someone to pay back their credit, the more money they will have to pay back in total.

This brings in the concept of *maturity*.



Definition: Maturity

Period of time for which a financial instrument remains outstanding.

In this case, how much time is left before the credit amount must be repaid.

Advantages of credit

The credit money has the following advantages:

Spending & consumption:

The quantity and stock of money directly affects the spending and consumption volume of the economy. When the amounts of credit moneys are high this means people have less of perfectly liquid money, so they are able to consume and spend less. On the other hand, if more people are holding their wealth in perfectly liquid form, there will be tendency to spend it and this will increase the consumption expenditure of economy.

Inflationary trends:

Quantity of credit money and their conversion directly affects trends of economy. If during boom period, people convert their credit money in perfectly liquid money, then this will increase the spending and will lead to inflation in the economy.

Economic policies:

Credit money is also an important determinant of economic policies. If there are inflationary trends in the economy, government increases the interest rate. This directs people to convert their cash in credit money to gain interest. This will reduce the cash holdings and will help to decrease inflation. On the other hand, if government wants to generate rapid economic activity it reduces the interest rate. This induces people to convert their bank money into cash and enjoy current consumption.

Liquidity preference:

Credit money is also an important factor of liquidity preference theory of Keynes. According to this theory the quantity of bank money in the economy has an important bearing on the rate of interest and the equilibrium quantity of money supply. The degree of willingness of the people to hold wealth in the form of bank money and other interest earning assets affect the level of interest rates prevailing in the economy.

Use as security:

Credit money is also used as security to obtain loans and credits from banks and other financial institutions. Banks also grant loans against investment in different deposit schemes. Bank money are generally shown under the current asset in the balance sheet. Thus it also effects the current ratio of the business.

Inter bank transaction:

Credit money also serves a means of economic transaction between two or more financial institutions. Credit money has made every the settlement of Accounts easy of all the financial institutions.

Satisfaction and optimal use of resources:

Credit money is important as it helps in determining the standard of satisfaction and optimal allocation of resources. The profitability, productivity and efficiency are measured in money terms. These measures help in determining the profitable volume of sales and usage of resources.

Working of banks & financial institutions:

Credit money is the basis for the functions and operations of banks and financial institutions. It is also equally important for money lenders, brokerage houses, acceptance houses and for all those who generate there livelihood just because there is money in the world.

International trade:

Credit money has also greatly expanded the international trade. The difference between costs of production among various parts of world can be calculated as we have got money to value scarce as well as abundant resources. This difference in costs leads to the gains of international trade.

Industrial revolution:

Credit money can be thought of as an important factor that brought about the industrial revolution during the last century. It made possible the valuation of different resources so that they can be used in the most profitable way. It also helped in the valuation of certain professional services such as lawyers, auditors etc. The feasibility reports can be prepared with reasonable certainty because we can calculate present and future values of assets and expenses in monetary terms. The profound research and development carried on in today's world also owes great to the money.

Government:

Credit money is perhaps the basic need of governments besides lot of others. Governments need credit money to perform all such functions as maintenance of law and order, defence expenditure, provision of justice, etc. Governments also need money to make huge transfer payments such as pensions, gratuity, allowances etc.

Disadvantages

Following are the disadvantages of credit money.

The Inflation Problems

Credit creation process is the basic function of commercial banks. This might increase money supply in the country which may cause inflation.

Creation of monopolies

Commercial banks generally advances loans to large scale enterprises, industrialists and business due to their strong financial position. This may lead to establish monopolies of large scale industrialists and enterprises.

Economic Instability

One of the main causes of business fluctuations and economic instability that a boom and recession. Excess credit creation becomes a cause of inflation and over investment which may result in recession.

Unproductive loans

Easily available credit money turns into unproductive loans which become wasteful use of credit money.

1.4 How a bank makes money

Before looking specifically at how credit is formed, it is useful to understand the basic operations of a bank.

A person who wishes to keep their money safe will deposit it with a bank, and then be able to retrieve it any given time. To incentivise people to do so, a bank will offer these people a rate of interest, which will mean the value of their savings increases.

Within society, a number of agents also need access to credit, to fund purchases of homes by taking a mortgage, but also business investment. For this, they go to a bank. The bank will give them the required money that they need upfront, and then the agent will repay, plus interest, over a length of time.

This is known as **financial intermediation**.

By having the rate of interest on lending higher than that offered to savers, the bank is able to earn money through a “net interest margin”.

However, it is possible for banks to lend out more money than they have in deposits. In doing so it is possible for them to make money from their operations.

Typical bank balance sheet

To explain this better, we shall work through an example of a balance sheet of a bank.



Example:

| ASSETS | | LIABILITIES | |
|----------------------------|--------------|---------------------------|--------------|
| Reserves | 60 | Checking accounts | 360 |
| Loans | 1,000 | Savings and time deposits | 1,000 |
| Investments and securities | 400 | Other liabilities | 600 |
| Other assets | 500 | | |
| Total | 1,960 | Total | 1,960 |

The key items of interest here are the Reserves, and Checking accounts.

Checking accounts are payable on demand, and can therefore be withdrawn immediately.

Reserves are mainly a legal requirement to ensure a buffer against any unexpected withdrawals.

From this, we shall work out how a modern day operates its system of issuing credit. First though, we shall consider the historical context from which they were formed.

Goldsmiths as banks

The first banks, of sorts, were goldsmiths. They would store gold for customers. The customer could then produce a receipt and retrieve their gold, for a small fee.

It soon became apparent that the customer didn't need the exact piece of gold that they had deposited. Goldsmiths would no longer tag each individual piece, but instead would have them kept together, and when a receipt was presented, they would issue gold to that amount.

This is how a goldsmith would differ from, say a depository warehouse. Leaving a valuable item, such as a ring, would mean that upon receipt, the customer expects to receive that identical ring back. Gold, on the other hand, could remain 'anonymous'.

Viewing goldsmiths as banks then, this is what a typical balance sheet would look like:



Example:

| ASSETS | | LIABILITIES | |
|---------------|---------------|-----------------|---------------|
| Cash reserves | 50,000 | Demand deposits | 50,000 |
| Total | 50,000 | Total | 50,000 |

This shows how the goldsmith bank held 100% of deposits. If ever someone came with their receipt, the bank would issue them their gold.

An advanced goldsmith bank

A goldsmith may soon recognise that despite deposits being payable on demand, it is very rare that all deposits will be asked for at the same moment.

On a particular day, some deposits will be added, some withdrawn, but on the whole, it won't be necessary to have all of the gold stored in case it is all asked for at once.

The goldsmith as a banker could try to increase the value of the gold deposits held by purchasing assets provide an income, therefore earning interest on the value of the gold.

Depositors were still OK, because when they periodically withdraw gold from the bank, there are enough people not withdrawing to ensure that there will be enough.

The goldsmith bank can now maximise profits, in doing so securing lower fees to the depositors.

This has been made possible because the total amount of deposits exceeds the amount of gold reserves.

Legal reserve requirements

With the logic that more profit can be earned by issuing credit beyond the deposits of the bank, profit-maximising banks would likely issue credit up to the point where they can fulfil the daily transactions of its customer deposits.

However, should, for some unexpected reason, customers attempt to withdraw their money at the same time, this will mean that banks will not be able to pay them. This is obviously extremely problematic for consumer welfare.

Therefore, there are legal requirements for how much money a bank must keep in reserve, should this occur. This legal requirement curtails banks from freely

issuing credit to the detriment of regular customers. It keeps banks safe and liquid.

A new bank (Bank A) enters the market

We will now work through an example of how a bank operates through fractional-reserve banking, and what the implications are for the rest of the economy.

The bank begins with a deposit of Rs.100,000.



Example: Bank A

| ASSETS | | LIABILITIES | |
|---------------|----------------|-----------------|----------------|
| Cash reserves | 100,000 | Demand deposits | 100,000 |
| Total | 100,000 | Total | 100,000 |

Bank A has a simple balance sheet at this moment, all of the deposit is held as reserves, and can be called upon at any time.

Bank A has to keep 10% of its assets in reserve, as a legal requirement. This therefore means that it has an additional Rs.90,000. As Bank A is a profit-maximising modern bank, it will look to use this sum to issue credit.

Therefore Bank A issues Rs.90,000 as loans to other people in the economy.

This means that the balance sheet now looks like so:



Example: Bank A

| ASSETS | | LIABILITIES | |
|-----------------------|----------------|-----------------|----------------|
| Cash reserves | 10,000 | Demand deposits | 100,000 |
| Loans and investments | 90,000 | | |
| Total | 100,000 | Total | 100,000 |

Bank A, being a profit-maximiser, will only keep the legal minimum requirements that it has to.

However, this is not the full story. This action of loaning out Rs.90,000 has actually created money in the economy.

This is because the people who have received the Rs.90,000 will now either deposit it in another bank, or use it to pay for goods and services, and that person will deposit it in a bank.

Bank B is introduced

Aggregating all the deposits received by banks, we have a second-generation bank, that we shall call Bank B.

Bank B will receive the Rs.90,000 and treat it as an asset. It does not care that the money is itself issued from another bank, but what it does care about is using the excess reserves in a profitable manner. Remember that the legal capital requirement is still 10%.

Its balance sheet therefore looks like so:



Example: Bank B

| ASSETS | | LIABILITIES | |
|--------|--|-------------|--|
|--------|--|-------------|--|

| | | | |
|-----------------------|---------------|-----------------|---------------|
| Cash reserves | 9,000 | Demand deposits | 90,000 |
| Loans and investments | 81,000 | | |
| Total | 90,000 | Total | 90,000 |

Bank B also loans out nine tenths of the assets that it holds.

The Rs.81,000 that is loaned out by Bank B will then be dispersed in the same way, and will result in Bank C (the aggregation of 3rd generation banks) having Rs.81,000 in their assets.

It too will reserve 10% (i.e. Rs.8,100) and lend out 90% (i.e. Rs.72,900). The chain therefore continues until the money is passed around many intermediary banks.

Total new money in the system

Once the created money is transferred between all financial intermediaries, there is equilibrium of how much will be created.

The equations will become the following relationship:



Example: Bank B

| POSITION OF BANK | NEW DEPOSITS | NEW LOANS AND INVESTMENTS | NEW RESERVES |
|--|---------------------|---------------------------|-------------------|
| Bank A | Rs.100,000 | Rs.90,000 | Rs.10,000 |
| Bank B | 90,000 | 81,000 | 9,000 |
| Bank C | 81,000 | 72,900 | 8,100 |
| Bank D | 72,900 | 65,610 | 7,290 |
| Bank E | 65,610 | 59,049 | 6,561 |
| Bank F | 59,049 | 53,144 | 5,905 |
| Bank G | 53,144 | 47,830 | 5,314 |
| Bank H | 47,830 | 43,047 | 4,783 |
| Bank I | 43,047 | 38,742 | 4,305 |
| Bank J | 38,742 | 34,868 | 3,874 |
| <i>Sum of first 10 generations of banks</i> | Rs.651,322 | Rs.586,190 | Rs.65,132 |
| <i>Sum of remaining generations of banks</i> | 348,678 | 313,810 | 34,868 |
| Total for banking system as a whole | Rs.1,000,000 | Rs.900,000 | Rs.100,000 |

Through the long chain of banks issuing new loans, and other banks keeping them as assets, the value of money that ends up being in the system is 10 times the amount of new reserves.

The banks together are able to generate a multiple expansion of reserves. Equilibrium is reached when each additional Rs.1 of reserve, supports Rs.10 of demand deposits.

At each generation, the banks have “created” money, in the sense that they have issued loans, and their final bank deposits are 10 times their reserves.

1.5 Credit creation

Through this extended example, we have demonstrated not only how banks make profit, but also how they create money in the wider economy.

A key determinant in how much is created is the reserve ratio that each bank had to hold.



Definition: Reserve ratio (RR)

The portion of depositors' funds that a bank must keep for immediate delivery to its owner.

It is possible to calculate the total amount of credit that can be generated by a bank using the following formula:



Definition: Money multiplier

The multiple of credit that can be created by an initial deposit

$$\text{Money multiplier} = \frac{1}{RR}$$

In our example, the multiplier is $\frac{1}{0.1} = 10$ meaning for every Rs.100 that is deposited with a bank, the final outcome for the economy is that Rs.1,000 has been issued.

If the reserve ratio were to change to 20%, then the money multiplier becomes $\frac{1}{0.2} = 5$. The higher the reserve ratio, the less money is created in the economy.

Money multiplier considerations

Though this relationship is fairly intuitive, under certain circumstances, it will not perform exactly as predicted.

The reasons for this are:

- ❑ **Cash leakages:** People holding cash outside of the banking system will reduce how much is passed on to the next-generation bank. For example, if someone has a loan for Rs.75,000, but keeps Rs.15,000 as a cash emergency, then only Rs.60,000 will go to the next stage. This therefore reduces the multiplier.
- ❑ **Excess reserves:** Some banks will choose to hold additional reserves for strategic reasons. The fact that they hold onto more of their reserves, means that they pass on less to the next bank, and therefore the effect of the multiplier will decrease.

1.6 Limitations of credit creation

There are, however, a number of limitations as to how much credit can be created.

- ❑ **Total amount of cash:** Firstly, the amount of credit is dependent on the initial size of the money supply. The larger this is, the more credit can be created.
- ❑ **Size of reserve ratio:** The lower the ratio requirements are, the more credit can be created. In many countries, there is a minimum level (usually 20%) that banks must adhere to, so that there isn't too much credit within the economy.
- ❑ **Liquidity Preferences:** How much cash people want to hold. If, say, there is high inflation, then people may not wish to hold their money in banks where the real value is set to diminish.
- ❑ **Central Bank policies:** The central bank may utilise a number of instruments to control how much credit is created by banks.
- ❑ **Availability of quality securities:** Banks will not issue credit to everyone – they will only issue if they can receive a high value asset in return from the borrower. If this does not exist, then credit will not be created as readily.

Balance of payments and trade

Contents

- 1 Balance of payments
- 2 Determination of the exchange rate
- 3 Government policy to influence exchange rates
- 4 Devaluation

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO3 Understand how the balance of payments of a country is worked out.

LO6.1.1 *Balance of trade and payment:* Discuss the concept of exchange rate, its determination and government's policy to influence it.

LO6.1.2 *Balance of trade and payment:* Understand the nature of items that are accounted for in the concept of balance of trade and payment

LO6.1.3 *Balance of trade and payment:* Understand the different parts of balance of payment

1 BALANCE OF PAYMENTS

Section overview

- Introduction
- The current account
- The capital and financing account
- Net errors and omissions
- Balance of payments example
- Balance of payments vs. Balance of trade
- Balance of payments explanation
- Current account deficit
- Corrective measures to current account deficit

1.1 Introduction

From looking at the revenues that government generate through taxes, we now turn our focus on the payments and trade of goods made between countries.

The balance of payments (BOP) measures the financial transactions made between consumers, businesses and the government in one country with others.

In short, it is calculated by adding up the value of all the goods that are exported (i.e. sold to other countries) and imported (i.e. bought from other countries).

It is made up by a combination, in a country, of:

- the current account
- the capital account
- official financing account

1.2 The current account

The current account is made up of different components which aggregate to give a final balance. We shall now look in more detail as to what parts make it up.

Trade in goods

Items that include the import and export of finished goods, semi-finished goods, and component parts for assembly.

Trade in services

These services include tourism, financial services and consultancy.

Investment income

Overseas activity that leads to a flow of money back to the country. For example, interest received from direct investment, the activities of subsidiaries, and dividends earned from owning shares in foreign firms.

Transfers

Items moved between countries such as overseas aid.

1.3 The capital and financing account

These accounts record the flow of capital and finances between the domestic country and the rest of the world. These types of flows include:

- ❑ **Real foreign direct investment:** a domestic firm setting up a factory in another country, and earning money from that.
- ❑ **Portfolio investment:** a domestic investor buying shares in a business that is already established. Such investors have no control over these companies.
- ❑ **Financial derivatives:** financial instruments where the underlying value is based on another asset.
- ❑ **Reserve assets:** a Central Bank will use foreign financial assets to cover deficits and imbalances.

1.4 Net errors and omissions

In theory, the two accounts should balance completely; however in practice, this doesn't always happen. Therefore the net errors and omissions compensate for the discrepancy between the two accounts.

If there is a deficit, it is balanced by:

- ❑ Selling gold, or other financial reserves
- ❑ Borrowing from other Central Banks

If there is a surplus, it is balanced by:

- ❑ Buying gold, or other financial reserves
- ❑ Paying off debts

1.5 Balance of payments (BoP) example

Each item of the BoP equation can either be a surplus, a deficit, or equal. The sum of all of these items gives a final number for the balance of payments.

Below is an example of a BoP breakdown



Example:

| BoP Item | Net balance (Rs. billion) | Comment |
|--|------------------------------|--|
| CURRENT ACCOUNT | | |
| (A) Balance of trade in goods | -24 | A trade deficit |
| (B) Balance of trade in services | +15 | A trade surplus |
| (C) Net investment income | -14 | Net outflow of income due to profits of international corporations |
| (D) Net overseas transfers | +6 | Net inflow of transfers |
| A+B+C+D = Current account balance | -17 | OVERALL, A CURRENT ACCOUNT DEFICIT |
| CAPITAL ACCOUNT | | |
| Net balance of foreign direct investment flows | +4 | Positive net flow of FDI |

| BoP Item | Net balance (Rs. billion) | Comment |
|--|---------------------------|--|
| Net balance of portfolio investment flows | +5 | Positive net flow into equity markets |
| Net balance of short term banking flows | -3 | Net outflow of currency from country's banking system |
| Balancing item | +2 | Reflecting errors in data calculations |
| Changes to reserves of gold/foreign currency | +9 | Reserves have been reduced by 9 to counter the deficit |
| OVERALL BALANCE OF PAYMENTS | 0 | |

Here we see how a current account deficit has been balanced by a positive financial account. In part, this has been helped by the selling of reserves, such as gold and foreign currency. This is obviously not a sustainable practice.

1.6 Balance of payments vs. Balance of trade

We have seen so far that there is a difference in the types of good that are included in the broad balance of payments equation.

To clarify, a large portion of the balance of payments calculation, is the measure of balance of trade.

- ❑ **Balance of trade:** is concerned with the trade of visible goods (i.e. material goods)
- ❑ **Balance of payments:** is more thorough as it includes not just visible goods, but also invisible.



Definition: Visible goods

These can be recorded through customs duties and their value can be measured. Visible goods will include anything tangible, including cars, wine and shoes.



Definition: Invisible goods

These goods are often intangible, and include things like financial services, insurance and capital flows.

They are harder to comprehend, but still represent the flow of money in and out of an economy.

1.7 Balance of payments explanation

The importance of the balance of payments is that it indicates whether a country has enough savings, or other service transactions, to pay for the complete consumption of their imports.

It is an indicator also of whether a country can produce enough output, to sustain its growth.

Balance of payments deficit

If a country has a balance of payments deficit, this is probably owing to them importing more goods and services than it exports. It will therefore need to borrow from another country to pay for the imports.

This can be a useful strategy for fuelling economic growth; however it is not sustainable in the long term.

In order to redress the imbalance, a country may have to sell off assets and other natural resources, in order to pay for its consumption. This too cannot last forever.

Balance of payments surplus

A country in this position is likely to export much of their production. Additionally, the individuals and government within the country are likely to be high savers, in order to provide enough capital to finance production, and lend to other countries.

This scenario works for short term economic growth; however for longer term prosperity, individuals need to increase domestic consumption, by switching from saving.

By creating domestic demand, the country will be less reliant on export-led growth, and will be able to better sustain itself.

Terms of trade

This is defined as the ratio of export prices to import prices. It is the amount of import goods an economy can purchase per unit of export goods.

The terms of trade are said to improve when export prices rise faster than import prices and to worsen when import prices rise faster than export prices.

Improving terms of trade do not necessarily result in an increase in balance of payment surplus (or a fall in the balance of payments deficit). This is because the terms of trade refer to prices whereas the balance of payments takes both prices and quantities into account. An improvement in the terms of trade caused by an increase in the price of exports may bring about a proportionately greater fall in the demand for exports leading to a worsening of the balance of payments situation.

Opposite comments to those above could be made in respect of a worsening of terms of trade.

1.8 Current account deficit

A much discussed economic situation that countries often find themselves in is a current account deficit. Here we shall look in some detail at the scenario.

What is a current account deficit?

Running a deficit means that there is a net outflow of demand versus the income that comes into a country. This can be thought of as a country “not paying their way”.

The current account isn't required to balance, because the capital account can run a surplus. As we have seen though, running a surplus is sometimes dependent on selling reserve assets, and other unsustainable means.

Causes of a current account deficit

There can be many factors across the economy that mean a current account deficit is likely to occur. For example:

- ❑ **High income elasticity of demand for imports:** with strong consumer spending, the volume of imports will increase swiftly.
- ❑ **Long term decline in manufacturing potential:** with a fall in the productive potential of an economy, it is less likely that goods can be produced and exported.
- ❑ **Changes in commodity prices:** if a country imports a high portion of raw material, if these prices swing drastically, then this will increase the current account deficit.

1.9 Corrective measures to current account deficit

In response to the problems that are caused by a country persistently having a current account deficit, there are a number of measures that a government can take in order to correct this.

These can take the form of monetary and non-monetary measures.

Monetary measures

- ❑ **Exchange rate depreciation:** This is where the rate of exchange of, say Rs. for US\$ increases. The concept of exchange rates is explained in greater detail in the following section.



Example:

If the price of a car costs Rs.40,000, and the exchange rate between US\$ and Rs. was 1:4, then the car would cost \$10,000 to somebody buying in the USA.

Every time a car is sold in US\$, it increases exports, thus balancing the current account deficit.

By depreciating the exchange rate to say 1:5, then the car would now be worth \$8,000.

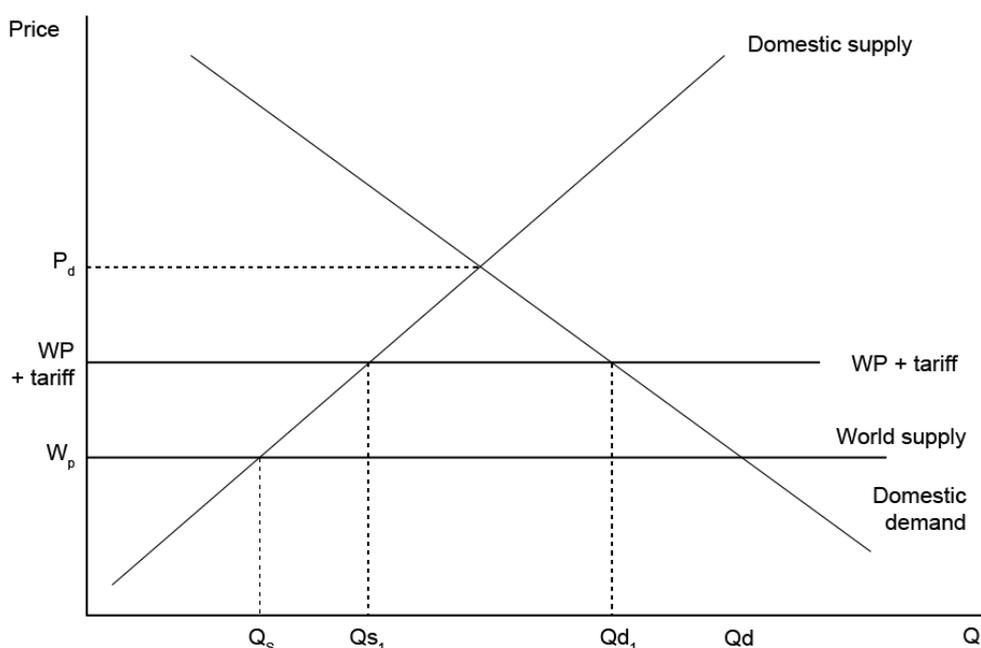
This will increase demand for cars that Pakistan exports, as well as increasing the price of any goods that it may import. Therefore correcting a current account deficit.

See also sections 2-4 below for a more detailed explanation of monetary measures.

- ❑ **Deflation:** By bringing down the price level domestically, this can increase the attractiveness of goods on the international market, thereby increasing exports.
- ❑ **Exchange control:** In an extreme version, a monetary authority may command that exporters relinquish foreign exchange reserves to the central bank. This has the effect of restricting the level of imports that are possible.

Non-monetary measures

- ❑ **Tariffs:** These are duties placed upon imports. This directly increases the **price** of imports, making them less attractive to the domestic market. This also gives domestic suppliers more protection to increase the supply of their own goods.

**Illustration:**

Here we see that domestically, the domestic price (where domestic supply equals domestic demand) is higher than the world price (W_p).

The level of imports is determined by the supply and demand for goods at different price levels.

At W_p , $Q_d - Q_s$ must be imported.

With the addition of a tariff, the world price increases, and as such a smaller amount is needed to be imported ($Q_{d1} - Q_{s1}$).

This therefore improves the current account deficit.

- ❑ **Quotas:** A government may fix a permanent amount of a good that may be imported into a country. Restricting the quantity decreases the level of imports, thereby improving the current account deficit.
- ❑ **Export promotion:** A government can help exporters sell their goods and services on the international market through organising exhibitions and trade fairs, as well as striking diplomatic deals.
- ❑ **Import substitution:** A country can reduce the level of imports that it buys, by becoming more self-reliant and producing these goods and services domestically. This can be done through providing specialist training, subsidies and tax assistance.

2 DETERMINATION OF THE EXCHANGE RATE

Section overview

- The foreign exchange market
- Exchange rates and relative prices
- High exchange rates
- Diagram of foreign exchange market
- Removal of disequilibrium

2.1 The foreign exchange market

Each country has its own unit of currency that is accepted by its consumers and firms. For residents of Pakistan, this is the rupee. When people go to a store in Pakistan the prices are denominated in rupees, and so the shopkeeper accepts this type of currency.

Should someone have Rs.50, it is likely that he could exchange this for a loaf of bread.

Imagine that this person is transported to the United Kingdom and goes to a store and tries to purchase a loaf of bread with Rs.50.

The shopkeeper would probably say that he does not accept rupees and so he cannot sell the traveller a loaf of bread.

This is because in the UK, rupees are not an accepted form of currency. In some exceptional circumstances somebody may accept them, but in general they cannot be used.

Nevertheless, let's imagine that somebody in Pakistan wants to go to the UK for a holiday and all of the money that he has is in rupees. What is the traveller to do?

He must exchange an amount of rupees for pounds (£) so that when he arrives he will be able to spend money in the UK.

The quantity of pounds that the person would get for their rupees is known as the exchange rate, and is the topic of this section.



Definition: Exchange rate

The exchange rate is the price of one currency expressed in terms of another currency.

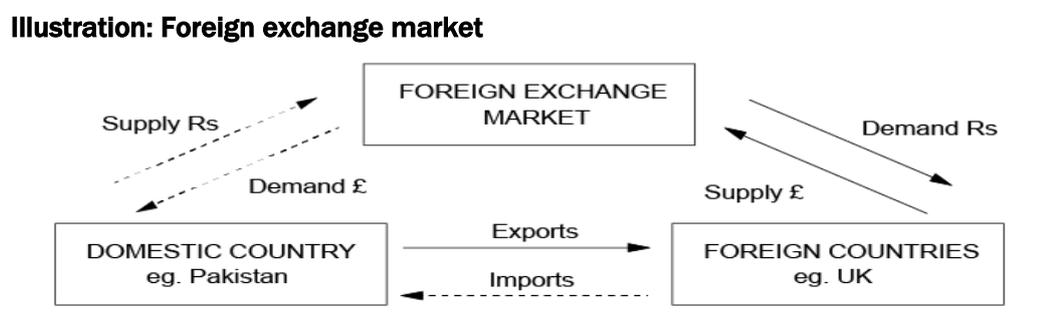
Our example thus far has been only on a very simple basis (i.e. buying a loaf of bread using different currencies). There is much more complexity with the rate of exchange between currencies.

In short, in order to exchange a quantity of rupees with a quantity of pounds, one must interact with a Foreign Exchange Market. This brings together buyers of rupees with sellers of rupees, and buyers of pounds with sellers of pounds (and for all other currencies).

Therefore in order to take your wealth in one unit of currency and convert it into a currency that can be used in a second, it is necessary to engage in the foreign exchange market.

This means that whenever a country wishes to trade with another, it must convert part of its wealth into a currency that is acceptable in the other. Thus as more international trade occurs, more money flows through the foreign exchange market.

We will see how a different exchange rate will affect the Balance of Payments, and what affect this will have on the countries involved.



Points to note:

- ❑ The level of demand for PKR is a direct function of foreign demand for Pakistani exports.
- ❑ The level of supply of PKR is a direct function of Pakistani demand for imports. The country will sell PKR balances in order to obtain the foreign currency needed to buy them.
- ❑ There is demand for some currencies as an international medium of exchange.

2.2 Exchange rates and relative prices

An exchange rate can be viewed as a comparison of the relative prices in two countries. The amount of one currency that is accepted for another inherently means that it will affect the price of exports and imports.

The effect of this is best illustrated with an example.



Example:

Scenario 1: Strong Pakistani rupee (i.e. a high exchange rate from a Pakistani perspective)

Suppose the exchange rate is Rs. 150 to £1.

- (a) How much would a Rs. 350,000 export cost in the UK?

Answer: $350,000 / 150 = \text{£}2,333.3$

- (b) How much would a £4,500 import cost in Pakistan?

Answer: $4,500 \times 150 = \text{Rs. } 675,000$

Scenario 2: Weak Pakistani rupee (i.e. a low exchange rate from a Pakistani perspective).

If the exchange rate moved to Rs. 175 to £1 the relative prices would change as follows:

- (a) How much would a Rs. 350,000 export cost in the UK?

Answer: $350,000 / 175 = \text{£}2,000$

- (b) How much would a £4,500 import cost in Pakistan?

Answer: $4,500 \times 175 = \text{Rs. } 787,500$

2.3 High exchange rates

A high exchange rate (also described as a strong exchange rate) means that a currency is worth more of the foreign currency compared to a time when it is worth less of the same foreign currency. The opposite of 'high exchange rate' is a weak or low exchange rate.

In the previous example the first scenario reflected a high Pakistani exchange rate (a 'strong' rupee):

- ❑ It 'only' cost Rs.150 to buy £1;
- ❑ Each Rs. was worth $1/150 = \text{£}0.0067$

This compares to scenario 2 which reflected a low Pakistani exchange rate (a 'weak' rupee):

- ❑ It cost Rs.175 to buy £1
- ❑ Each Rs. was worth $1/175 = \text{£}0.0057$

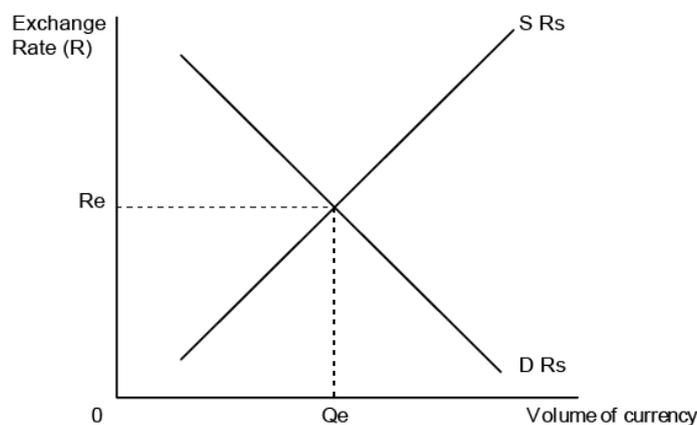
The net impact is that higher exchange rates:

- ❑ **make imports cheaper** – so in the previous example the import only costs Rs.675,000 with a strong rupee (scenario 1), whereas the same import cost Rs.787,500 with a weak rupee (scenario 2)
- ❑ **make exports more expensive** – similarly in the previous example the export would cost the UK consumer £2,333 facing a strong rupee (scenario 1), whereas the same export only costs the UK consumer £2,000 against a weak rupee (scenario 2).

2.4 Diagram of foreign exchange market



Illustration:



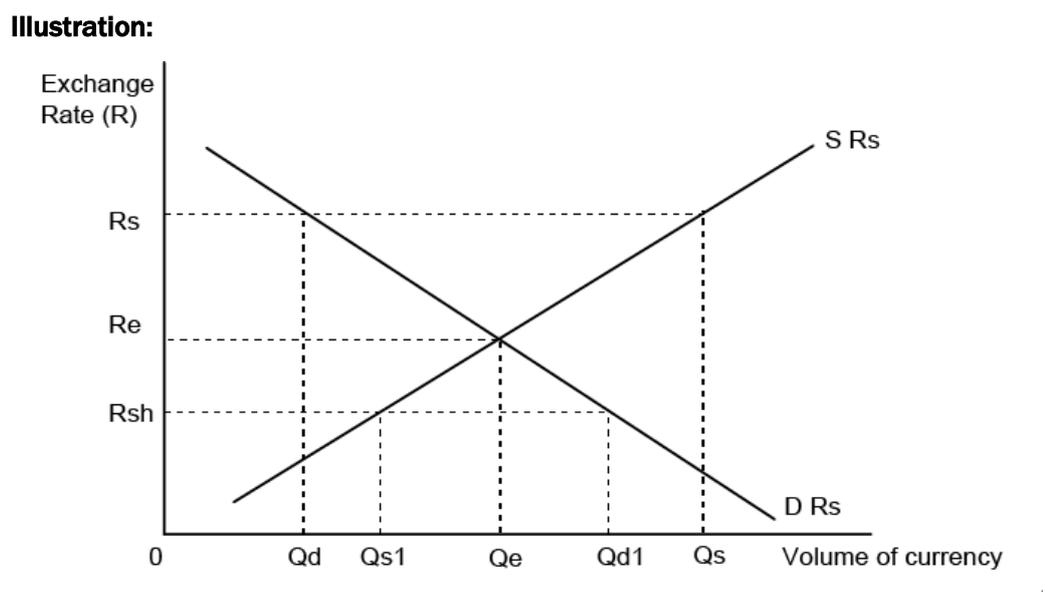
Explanation of the demand curve for Pakistani rupees

- ❑ As the exchange rate falls so the demand for Pakistani exports will extend due to their greater competitiveness. Consequently the demand for the rupees needed to pay for them will extend also.

Explanation of the supply curve for the currency

- ❑ As the exchange rate falls so imports look less attractive. Consequently Pakistani demand for exports will contract. As a consequence of needing less foreign currency the supply of rupees to the exchange will contract also.

2.5 Removal of disequilibrium



Foreign currency surplus

- A surplus $Q_s - Q_d$ reflects a balance of payments deficit at rate R_s .
 - When the exchange rate falls:
 - demand for imports will contract (contraction in supply of rupees)
 - demand for exports will extend (extension in of demand for rupees).
 - The process of a fall in the value of a currency will continue until a balance of payments equilibrium is reached.

Foreign currency deficit

- The shortage of $Q_{d1} - Q_{s1}$ at rate R_{sh} reflects a balance of payments surplus.
 - When the exchange rate rises:
 - demand for exports contracts (contraction in demand for rupees).
 - demand for imports extends (extension in supply of rupees).
 - The process continues until equilibrium is reached.

3 GOVERNMENT POLICY TO INFLUENCE EXCHANGE RATES

Section overview

- Government policy to influence exchange rates
- Main policy instruments
- Example: stopping the exchange rate from falling
- Fixed & floating exchange rates

3.1 Government policy to influence exchange rates

The government may wish to influence exchange rates for a number of reasons:

- ❑ To stabilise the currency against the pressures of short-term speculation.
- ❑ To provide greater stability in order to encourage domestic firms to export more.
- ❑ To stimulate demand for exports or to reduce imports.

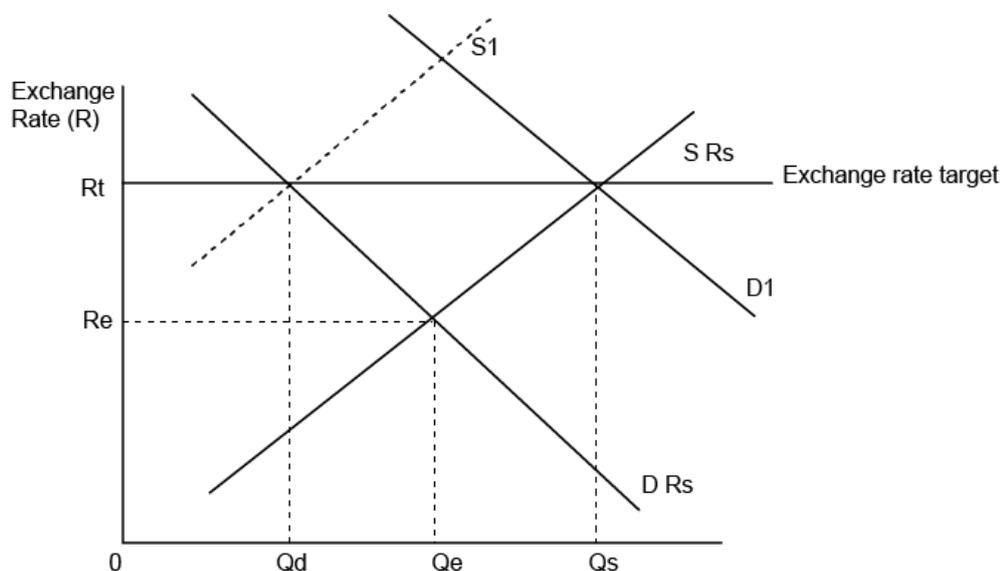
3.2 Main policy instruments

- ❑ The domestic interest rate.
- ❑ Raising the interest rate attracts speculative funds from abroad and increases demand for rupees.
- ❑ Intervention purchasing or selling of currency by a central bank.
- ❑ A central bank offers to buy or sell domestic currency at a set price. This means the rate will not fall or rise above this rate.
- ❑ Structural adjustments to the behaviour of the economy.
- ❑ Policy action to remove the sources of the deficits or surpluses which are causing the rate to depreciate or appreciate.

3.3 Example: stopping the exchange rate from falling



Illustration:



Government wish the rate to be at R_t . Policy options are:

- ❑ Increase the domestic interest rate and hence shift the demand curve for rupees to D_1 .
- ❑ Purchase the surplus rupees of Q_s-Q_d using foreign exchange reserves.

Deflate the economy to reduce the demand for imports. This will shift the supply curve of rupees back to S_1 .

3.4 Fixed & floating exchange rates



Definition: Fixed rate

The rate is set at a fixed parity against one or more foreign currencies and the government agrees to buy or sell at this rate to stop fluctuations.



Definition: Floating rate

The rate is set by the unhindered forces of demand and supply for the currency on the foreign exchange markets.

Advantages of fixed exchange rates

- ❑ Avoids damaging speculation against the currency.
- ❑ Promotes free-trade as importers and exporters are released from exchange rate risk.
- ❑ Forces governments to follow responsible economic policies at home because excess aggregate demand and inflation would make it very difficult to support the currency in the long term.

Advantages of floating exchange rates

- ❑ Avoids the need for government intervention in the foreign exchange markets and the costly use of foreign exchange reserves.
- ❑ May act automatically to correct balance of payments disequilibrium.
- ❑ Frees the policy instruments of government to concentrate on internal issues such as unemployment and inflation.

4 DEVALUATION

Section overview

- Devaluation
- J curve (and inverse J-curve)
- The Marshall-Lerner conditions

4.1 Devaluation

Devaluation describes a policy of deliberately weakening the domestic currency against others; usually by reducing its parity value within a fixed rate system.

The objective is to reduce balance of payments deficits by:

- making imports more expensive;
- making exports cheaper.

The effectiveness of the policy depends on:

- The price elasticity of demand for imports.** If the demand is inelastic then a rise in the price of imports will not significantly reduce the volume demanded. It will however increase total expenditure on imports thus deepening the deficit.
- The price elasticity of demand for exports.** If demand for exports is price inelastic then a fall in their price will not significantly increase volume demanded. It will however reduce total expenditure and thus deepen the deficit.

Demand for imports may be price inelastic due to:

- firmly entrenched preferences for overseas goods;
- lack of flexibility of domestic firms to replace imports;
- dependence on imported raw materials and food.

Demand for exports rendered inelastic by:

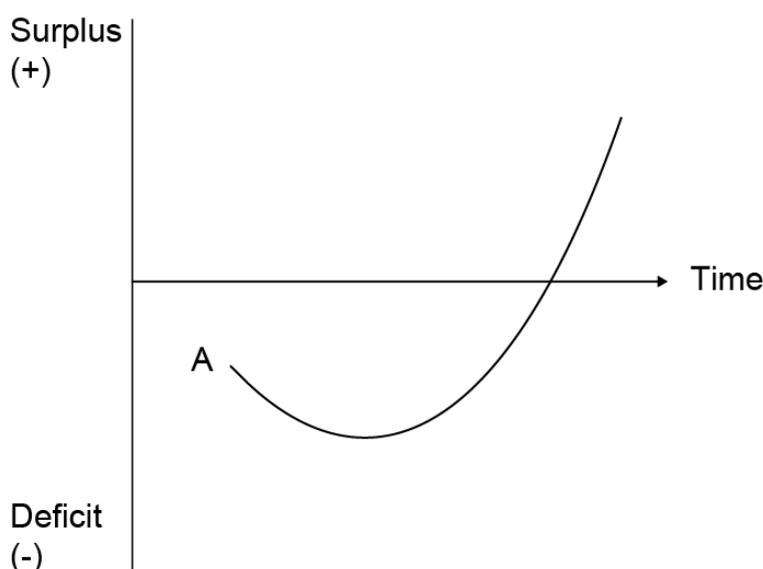
- poor perceived quality of exports;
- lack of flexibility of domestic firms to take advantage of export demand.

4.2 J-curve (and inverse J-curve)

The J-curve is an interesting continuation of one of the main combative strategies to a current account deficit: exchange rate depreciation.

To recap, the logic behind depreciating the exchange rate is that exports will become relatively cheaper, whereas imports will become relatively more expensive. Hence, it will redress the imbalance in the balance of payments.

However, the J-curve shows how in the short run, the deficit may get worse before improving.

**Illustration:**

This shows how, starting from Point A, the deficit increases before swinging up and going into a surplus as time goes on.

Why is this the case?

Assuming that economy starts at Point A, the government decides to devalue the currency.

The reason the deficit first gets bigger is to do with a time lag. Producers and consumers will take time to adjust to the change in currencies. Producers, for example, will have orders with firms in other countries at agreed prices, and will not be able to respond to the price change.

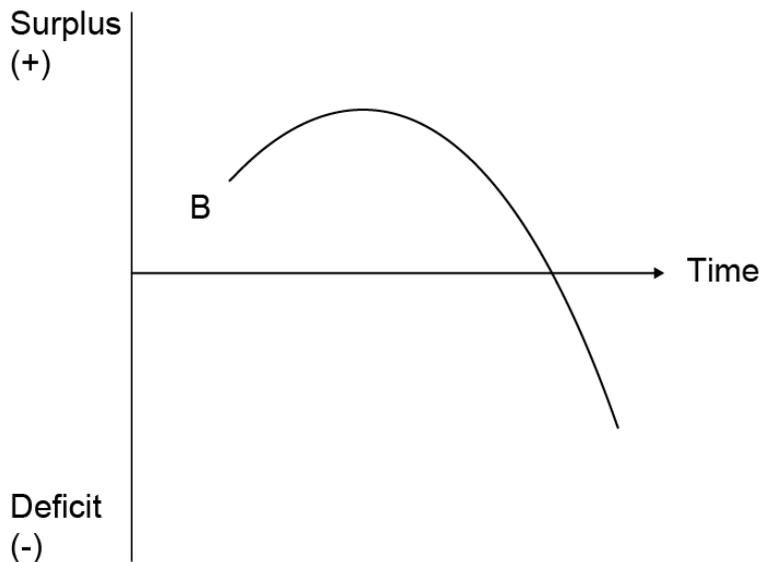
Export revenues may therefore not rise immediately. However import revenues may increase sharply due to high inelastic demand for foreign goods. This would make the deficit greater.

After time, firms will be able to adjust to the favourable currency conditions, and export revenues should be seen to rise.

It should be said though, that a devalued currency will lead to higher import prices, and therefore have a contributory effect to inflation. As this is usually a government's macroeconomic priority, many will be wary of undertaking a policy that could so directly increase inflation.

The inverse J-curve

The opposite can also be true of countries where they are attempting to rebalance a current account surplus.

**Illustration:**

This shows how, starting from Point B, the surplus increases before swinging down and going into a deficit as time goes on.

Certain economies may want to appreciate their currency so as to temper demand, and make their exports relatively more expensive.

In this case, export revenues will not change, however the revenue paid for foreign imports will fall. Consequently the current account surplus will increase in the short run.

Financial markets

Contents

- 1 Financial markets

INTRODUCTION

Learning outcomes

The overall objective of the syllabus is to enable candidates to equip themselves with the fundamental concepts of economics and finance needed as foundation for higher studies of finance.

LO5 Understand the basic function of financial markets.

LO5.1.1 *Money market:* Describe the main features and objectives of money markets.

LO5.2.1 *Capital markets:* Describe the main features and objectives of capital and capital markets.

LO5.3.1 *Derivative market:* Describe the main features and objectives of derivatives and derivative markets.

1 FINANCIAL MARKETS

Section overview

- Introduction
- Money markets
- Capital markets
- Derivative markets

1.1 Introduction

Financial markets exist to bring together lenders (investors) with borrowers (governments and companies).

It is often the case that the borrower is looking to raise money in order to undertake some level of investment. An investment bank will often act as an intermediary in the process.

The term financial markets encapsulates the trading of different financial instruments, on various different terms, all in order to find a solution that works for both parties.

1.2 Money markets

Money markets act as any other market would – bringing together buyers and sellers of a specific tradable good. Rather than being shoes, or books, the instruments that are being sold are referred to as: short-term credit.



Definition: Short-term credit

A financial instrument that has a maturity date of, usually, less than 3 months.

These are issued by companies or governments who need to increase their liquidity in the short term. Buyers of this are investors looking to make a return on their money.



Definition: Money market

The financial market which is used to raise short-term credit.

Components of the money market

The money market is a subsection of the wider fixed income market. It is used by large institutions to finance short term cash needs. Examples of these are governments, mutual funds, and other organisations with high financial backing.

The sums of money that are used on the money market are of such a high amount, that individual investors cannot usually access it. They must do so through a mutual fund (see later section).

Instruments of the money market

There are numerous financial instruments that can be traded on money markets.

The most marketable instrument is a Treasury Bill (or T-bill) which, as we have seen from the above section, has a number of qualities.

Other money market instruments are *Certificate of Deposits (CDs)*. This is a time deposit with a commercial bank, whereby after a fixed time, a certain level of money will be returned to the holder. This has a slightly higher yield because the default risk is higher with a bank, than with the U.S. government.

A further instrument that is traded on the money market is *Commercial Paper* which is also debt issued by a corporation, with the promise to repay the holder a certain amount by a certain date. This is an unsecured short-term loan issued by the company, and is usually in denominations of \$100,000, somewhat restricting access to small investors.

An understanding of how the money market works can be gained through an example.



Example:

A government is looking to raise cash to cover an upcoming financial cost. It issues a short-term bond that matures in one-month. Once it sells that bond, it receives the money immediately, and one month later, it fulfils the obligation. The bond can be traded between other agents, almost always at a discounted price, and the final owner will receive the value of that bond when it matures (i.e. after a month). The government then pays this amount and the owner receives their money.

The rate of interest on money markets is dictated, or at least based on, the base rate of the central bank.

1.3 Capital markets

The main distinction between money and capital markets is the good that is traded. Whereas in money markets it is short-term, in capital markets it is for longer term investments. These are instruments that have a *maturity length of over a year*.



Definition: Capital market

The financial market which is largely used to raise long-term finance and capital.

Components of the capital market

The capital markets are some of the most closely tracked financial indicators in the economy. The stock market and bond markets are considered proxies for the wider economy, and the participants who act in the markets are closely scrutinised.

The main types of organisation that operate in the markets are as follows:

- Corporations
- Commercial banks
- Stock exchanges
- Investors
- Nonbank institutions (insurance companies/ mortgage banks)

Corporations mainly use capital markets to fund long term projects that they wish to undertake. They use a commercial bank to deal with the mechanics of taking their offering to the market, which usually happens on a stock exchange. It is

then investors who, using commercial banks again, will purchase the instruments that are being sold.

Instruments of the capital market

On the capital markets, there are a number of different instruments that can be bought or sold. These broadly fit into two categories: debt and equity. Debt is a corporation issuing an agreement to repay a certain sum at a later date, and equity is selling rights of ownership in the company.

There a number of the financial instruments listed above that are traded.

In terms of debt, these include, but are not exclusive to: sovereign bonds, municipal bonds, debentures, corporate bonds.



Example: Sovereign bonds

A government is looking to fund a large, long-term infrastructure project and is looking to raise funds through the capital markets.

It issues sovereign bonds, which are then purchased by investors.

This means that the government gets the funds that it requires upfront, and is able to finance the project. Investors then are able to claim back their nominal amount at the maturity date.

The bonds belong to the investor, and they can keep them, or trade them on the secondary market.

On the equity side, these instruments are common stock, preference shares, or derivatives. They are traded on a stock exchange.

Stock exchange (or stock market)

There are thousands of financial instruments that have been issued; a stock exchange is where buyers and sellers interact.

Each corporation is “listed” on different exchanges, meaning that it will publish the live prices that are being paid for the stocks.



Example: Stock exchange

Suppose an engineer in Islamabad is looking to spend some money on home improvements. To do this, he will sell 100 shares that he owns in Corporation A.

In the early days of trading, he would have to try and find somebody willing to buy them, which could prove problematic.

This led to the development of brokers – people who act as a centre point for buyers and sellers to come together.

The broker would therefore take the information that the engineer was looking to sell his shares, and then contact other brokers, to try and find someone who is looking to buy 100 shares.

Once a buyer is found, the brokers will contact the stock exchange where the stocks are listed, and inform them that a deal has taken place. The brokers then take a commission on the trade and all of the brokerages are informed of the details of the deal.

Types of shares

There are two different types of shares that are traded on stock exchanges, and they differ in their characteristics. The two are:

- **Common stock:** An instrument issued by companies that can be obtained via the primary or secondary market. Investment in the business means part-ownership of the company, and also rights and privileges – such as voting power, and the ability to hold a position.

An investor in debt is entitled to interest payments, the equity holder may or may not be paid dividend, depending on the company's policy.

There is a high risk factor involved, as the price of the stock can fluctuate greatly. Holders of the instrument rank at the bottom of the scale if the company were to go into liquidation.

- **Preference shares:** An instrument issued by companies that rank higher than common stock in terms of scale of preference. They possess the same characteristics as equity in that its value is based upon the share price fluctuating.

However it also acts similar to debt instrument, in that dividends are fixed, and the holder does not hold any voting rights.



Example:

A large corporation is looking to fund a major factory investment project and is looking to raise funds through the capital markets.

It issues shares, which are then purchased by investors.

In exchange for paying for part-ownership of the company, the investor may receive dividends and other benefits for funding the project.

The shares belong to the investor, and are able to be traded on the stock market.

The rates of return are formed on a much more individual basis, and there is more emphasis on the forces of supply and demand, rather than pegging to an official rate of interest.

Mutual funds

This is an investment vehicle where many investors pool their resources together to be invested in a variety of financial instruments that we have laid out above. They are operated by professional money managers who have specialist knowledge of the money, and capital markets.

The investment objectives of each mutual fund are explained in the investment prospectus, and investors choose ones that best fits their profile.

The main advantage of a mutual fund is that it gives individual investors access to the market. A mutual fund portfolio can be constructed to be diversified, and across a range of securities. For an investor with a small amount of capital, this would be near impossible to replicate.

However, by becoming a shareholder in a mutual fund, the investor can participate in the gains or losses of the fund. Each share in a mutual fund can often be sold or purchased at the *Net Asset Value (NAV)* of the fund.

1.4 Derivative markets

The derivatives market is where a variety of derivative instruments are traded.



Definition: Derivatives

An instrument whose price is dependent on one or more underlying asset(s). It is merely a contract between two parties. Changes in the underlying asset(s) can cause great fluctuations in the price of the derivative.

Like money and capital markets, they are traded with investment banks usually acting as the intermediaries between those looking to raise finance, and those looking to invest.

There are two main ways that derivatives can be traded: “over the counter (OTC)” and on an exchange.

OTC derivatives

The conditions for establishing and trading an OTC derivative are much less strict than exchange traded derivatives (ETDs).

The issue and trade of each instrument is on an individual basis, meaning a financial intermediary (usually investment bank) will ‘make a market’ between buyers and sellers.

This gives greater flexibility with regard to the terms of the deal.

However the level of risk is much higher as counter parties can be affected if the trade loses a lot of money.

ETDs

A derivative must meet certain strict criteria to be traded on an exchange.

There are variables (maturity length, credit rating etc) that can be controlled to allow a derivative to be traded on an exchange.

ETDs also reduce the risk involved with a transaction by ensuring that whenever a party goes “long” (i.e. will see reward if the underlying price increases) there is another party that is “short”.

The fact that these two positions are equalled off (“net zero”) means the overall risk is reduced if the underlying price moves drastically. Performing the trade through an official exchange also reduces the level of counterparty risk, as trades are done through a clearing house.

- Head Office-Karachi:** Chartered Accountants Avenue, Clifton, Karachi-75600
Phone: (92-21) 99251636-39, UAN: 111-000-422, Fax: (92-21) 99251626, e-mail: info@icap.org.pk
- Regional Office-Lahore:** 155-156, West Wood Colony, Thokar Niaz Baig, Raiwind Road, Lahore
Phone: (92-42) 37515910-12, UAN: 111-000-422, e-mail: lahore@icap.org.pk
- Faisalabad Office:** 36-Z, Commerical Center, Near Mujahid, Hospital Madina Town, Faisalabad
Phone: (92-41) 8531028, Fax: (92-41) 8503227, e-mail: faisalabad@icap.org.pk
- Multan Office:** 3rd Floor, Parklane Tower, Officers' Colony, Near Eid Gaah Chowk, Khanewal Road, Multan.
Phone: (92-61) 6510511-6510611, Fax: (92-61) 6510411, e-mail: multan@icap.org.pk
- Islamabad Office:** Sector G-10/4, Mauve Area, Islamabad
UAN: 111-000-422, Fax: (92-51) 9106095, e-mail: islamabad@icap.org.pk
- Peshawar Office:** House No. 30, Old Jamrud Road, University Town, Peshawar
Phone: (92-91) 5851648, Fax: (92-91) 5851649, e-mail: peshawar@icap.org.pk
- Gujranwala Office:** 2nd Floor, Gujranwala Business Center, Opp. Chamber of Commerce, Main G.T. Road, Gujranwala.
Phone: (92-55) 3252710, e-mail: gujranwala@icap.org.pk
- Sukkur Office:** Admin Block Sukkur IBA, Airport Road, Sukkur
Phone: (92-71) 5806109, e-mail: sukkur@icap.org.pk
- Quetta Office:** Civic Business Center, Hali Road, Quetta Cantt
Phone: (92-81) 2865533, e-mail: quetta@icap.org.pk
- Mirpur AJK Office:** Basic Health Unit (BHU) Building Sector D, New City Mirpur, Azad Jammu and Kashmir
e-mail: mirpur@icap.org.pk

2015

INTRODUCTION TO ECONOMICS AND FINANCE

STUDY TEXT



111-000-422



www.icap.org.pk



ICAP.CA