Economics

Only study guide for ECS1500

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This document contains important information about your module

ACKNOWLEDGMENTS

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Contents

Introduction and welcome

It is with pleasure that we welcome you to Economics 1500. We hope that this module in Economics will convince you that the field and study of Economics can be an interesting and rewarding experience!

The module is offered in a semester and carries 12 credits towards your qualification. We will use the myUnisa module website and this study guide to direct you through the curriculum.

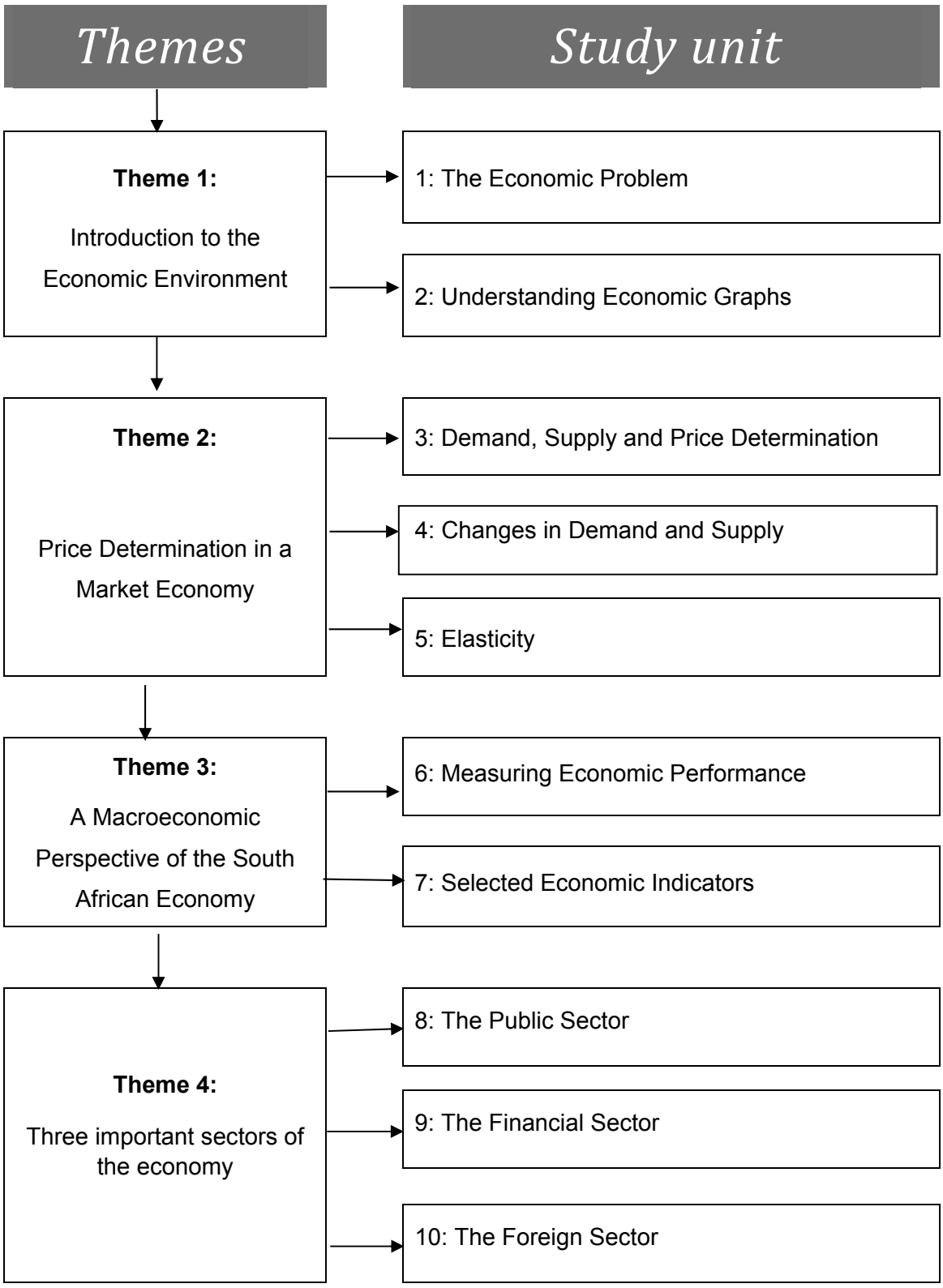
The ***purpose*** of Economics 1500 is to prepare you for your further studies in the field of economics and management sciences. This module will allow you to reflect on the skills you already have and the resources you require to manage your own learning development. You will acquire a broader vision of the South African economy and understand how its markets function. Moreover, you will be able to identify your own position and role, and that of the workplace, within this broader economic environment.

Outcomes for Economics 1500

*The main outcomes for **Economics 1500** are:*

- To have a basic understanding of the economic environment.
- To have a fundamental knowledge of how market economies and price determination function.
- To have a basic macroeconomic perspective of the South African economy.
- To understand the role of the individual and the workplace in the overall economic performance of the country.

Layout of the Module



Specific learning themes for ECS1500

Specific theme 1: Introduction to the economic environment

Once you have studied learning unit 1 you should be able to:

- *Explain what the basic economic problem is;*
- *Explain what the subject Economics covers;*
- *Compare a market economy with other economic systems;*
- *Understand the functions performed by markets and prices; and*
- *Use a model to describe how a simple market economy functions.*

Once you have studied learning unit 2 you should be able to:

- *Understand all the graphs in the learning units;*
- *Plot the data of two related economic variables in two-dimensional space;*
- *Distinguish between linear and non-linear curves;*
- *Distinguish between positive and negative sloping curves; and*
- *Use graphs to illustrate important economic concepts.*

Specific theme 2: Price determination in a market economy

Once you have studied learning unit 3 you should be able to:

- *Identify the factors which determine the demand for and supply of a product;*
- *Formulate the laws of demand and supply and the economic rationale behind each;*
- *Derive the individual demand and supply curves with the aid of appropriate demand and supply schedules; and*
- *Distinguish between a movement along a curve and a shift of a curve.*

Once you have studied learning unit 4 you should be able to:

- *Illustrate how changes in demand and supply influence market equilibrium;*
- *Understand the* ceteris paribus *condition; and*
- *Analyse the effect of simultaneous changes in demand and supply on market equilibrium.*

Once you have studied learning unit 5 you should be able to:

- *Explain the meaning and significance of price elasticity of demand;*
- *Distinguish between the five categories of price elasticity of demand;*
- *Explain the determinants of price elasticity of demand (in other words, explain why price elasticity varies among different products);*
- *Calculate price elasticity of demand using the arc method;*
- *Define and calculate income elasticity of demand;*
- *Define and calculate cross elasticity of demand; and*
- *Define and calculate price elasticity of supply.*

Specific theme 3: A macroeconomic perspective of the South African economy

Once you have studied learning unit 6 you should be able to:

- *Appreciate the importance of national accounting;*
- *Distinguish between microeconomics and macroeconomics;*
- *Discuss the main macroeconomic objectives;*
- *Define and explain the calculation of the gross domestic product (GDP) in South Africa;*
- *Distinguish between real and nominal values and their importance in the calculation of economic growth;*
- *Explain the meaning of double counting; and*
- *List the major shortcomings of the GDP.*

Once you have studied learning unit 7 you should be able to:

- *Explain how the consumer price index (CPI) and the producer price index (PPI) are calculated;*
- *Discuss the measurement of unemployment in South Africa;*
- *Discuss income distribution in South Africa and explain how the Lorenz curve and the Gini coefficient are derived in South Africa;*
- *Understand the importance of business cycles in the South African economy; and*
- *Distinguish between the different measures of economic growth in South Africa.*

Specific theme 4: Three important sectors of the economy

Once you have studied learning unit 8 you should be able to:

- *Describe the role of the public sector in a market economy;*
- *List the main components of the public sector;*
- *Explain why market failures have to be corrected through government action;*
- *Discuss the main functions of government;*
- *Give an overview of the South African government's revenue and expenditure programmes (the Budget);*
- *Identify the characteristics of a good tax system; and*
- *Appreciate the importance of lags in the execution of fiscal policy.*

Once you have studied learning unit 9 you should be able to:

- *Discuss the main functions of money;*
- *Define the different measures of the money supply in South Africa;*
- *Differentiate between the concepts of stock and flow;*
- *Define the concept of financial intermediation;*
- *Discuss the functions of the South African Reserve Bank;*
- *Distinguish between the different participants, institutions, securities and markets in the financial system; and*
- *Know why interest rates play an important role in the economy.*

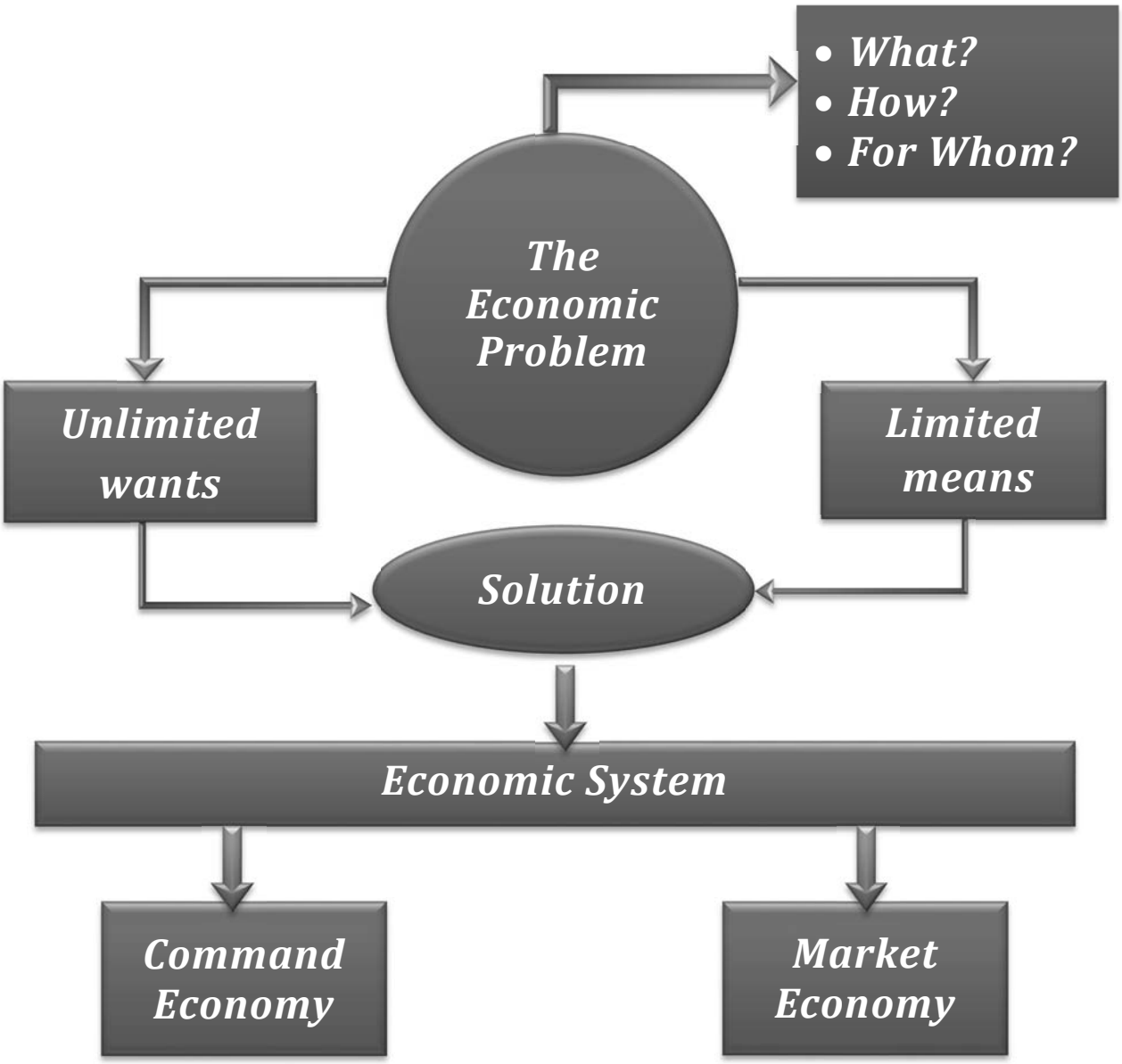
Once you have studied learning unit 10 you should be able to:

- *Explain the rationale behind international trade (why countries trade with each other);*
- *Give a comprehensive overview of South Africa's foreign trade relations;*
- *Explain the importance of exchange rates and differentiate between the various methods of quotation;*
- *Show how demand and supply determine exchange rates on the foreign exchange market; and*
- *Discuss the components of South Africa's balance of payments and their importance for the economy.*

The Economic Problem

Learning Unit 1

Mind map of the Economic Problem



Contents

Key concepts

Once you have studied this learning unit you will understand and be able to discuss the following key concepts:

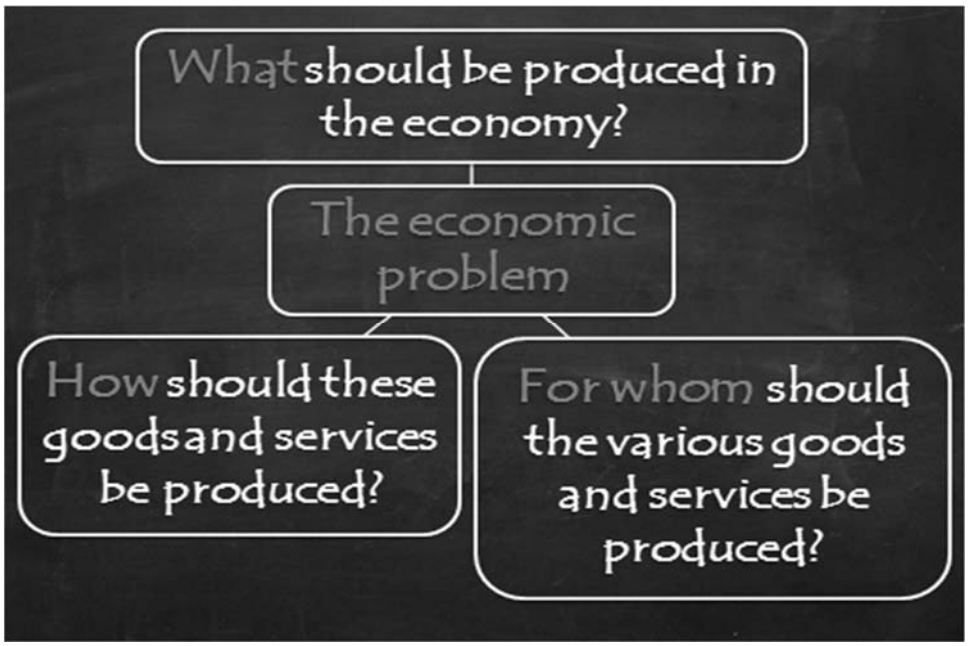
- the basic economic problem
- command economy
- market economy
- factors of production
- circular-flow model
- economic systems
- opportunity cost
- aggregation

1.1 Introduction

In Economics we basically study various solutions to *the economic problem*. The economic problem refers to the tension that exists between all the needs and wants we have as a society versus the means and resources we have available to satisfy these wants and needs.

To find answers to the economic problem, we study various facets and structure of the economy. Most people probably have a general idea what the "economy" is. When the Minister of Finance delivers his annual budget in parliament, the state of the economy is discussed by everyone, especially those who pays taxes! The newspapers, radio and television regularly provide information on the stock market, the gold price, the exchange rate, inflation, imports and exports, labour strikes, unemployment and many other aspects of economics, and some of these concepts will be a great deal clearer to you by the end of this course.

The solution to the basic economic problem is found in the answers to the following questions:



If you think carefully about it, these questions really express the essential problems that face communities all over the world. If we can provide the correct answers to these questions, most of the problems we face when economic decisions have to be made will be solved. Let us look at a few practical examples relating to the provision of housing in South Africa.

What to produce?

We are all aware of the pressing shortage of housing in South Africa today. But do we really know whether we should build houses or rather concentrate on providing food for everyone? Is the production of food not perhaps more important than providing houses for the needy? Do we know how much more food can be produced if we build fewer houses?

How to produce?

If we decide to build houses, should we rather build less houses using unskilled labour (of which there is an excess supply in South Africa), or should we build more houses by means of sophisticated building techniques requiring large capital outlays (which are scarce in South Africa)?

For whom to produce?

Once the houses have been built, who should qualify to live in them? Should the largest or the poorest families be given preferential treatment, or should only those who can afford to pay the instalments on a loan be considered?

It is immediately clear that there are no easy answers to these questions. Why are they difficult to answer? They are difficult to answer because inherent in all of them is the element of **scarcity**. Scarcity means that too few goods and services can be produced to cope with the amount that people would like to have or consume. More formally, we can state that scarcity exists when the resources are insufficient to satisfy the wants of a person or the needs of the community at large. This is the economic problem and the focus of our studies in Economics.

How to deal with the problem of scarcity is precisely what the study of economics is all about.

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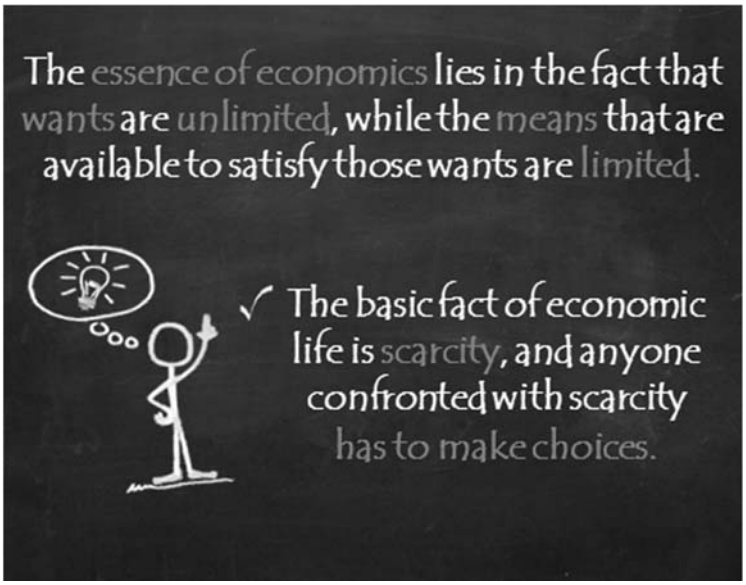
*In **economics** we study how people use their limited resources to gain the greatest possible satisfaction of their unlimited needs.*

This ***definition*** is another way of saying that in economics we seek answers to the three basic questions referred to above, namely ***what, how*** and ***for whom to produce?*** In this sense economics may also be described as the science of choice.

1.1.1 Unlimited wants vs. limited means



We live in a world of scarcity, because the quantity of goods and services that people would like to consume will always exceed the quantity that can be produced. Scarcity applies to everyone and every society in the world. Since scarcity is a relative concept, there will always be wants which are not fully satisfied, even among the most affluent societies. This is because people's wants are continually expanding and changing. Once their basic human needs (e.g. for food, water, clothing and shelter) have been satisfied, there will be a growing desire for more luxury articles like cars, fridges, stoves and many of the goods regarded as essential in highly developed countries.

We must be careful to distinguish between wants and needs. ***Wants*** are human desires for goods and services, which are continuously evolving and expanding (unlimited). ***Needs*** are necessities for survival, like food, water and shelter.

Even if people are given limitless spending power, scarcity will still exist, because time is limited. Not even the wealthiest person in the world is free of the problem of scarcity because no one has the time to enjoy all the travelling, holidaying and art that he or she would like to have. Time is a prime example of a limited resource.

Although wants are unlimited, the means or resources to satisfy those wants are limited. There are three types of resources:

- ***Natural resources,*** such as mineral wealth, fertile soil and fishing resources
- ***Human resources,*** in the form of brain power and muscle power, that is, labour resources
- ***Manufactured resources,*** like machines, equipment and tools

Because these economic resources are available in limited quantities, the quantity of goods and services that can be produced with them is also limited. Economic resources may be labelled as the ***inputs*** that are used in the production process. In economics these different resources or inputs are called factors of production and can be classified into four main categories. The four ***factors of production*** are:

(i) ***Labour,*** which refers to all intellectual, physical or other human productive effort. Labour therefore refers not only to manual labour, but also to the services of those who follow a profession (e.g. doctors, lawyers and teachers).

(ii) ***Capital,*** which refers to the means of production (equipment, tools, buildings, etc). This includes the entire range of durable equipment from hammers, saws and other simple tools, to machines and computers. If the economist refers to capital he or she means "real" capital equipment, and not money. Money is not a resource that can be used in production. (Money does, however, fulfil other important functions which are discussed later.)

(iii) ***Land*** or natural resources, which are the gifts of nature and include factors such as climate, mineral resources and the quality of soil.

(iv) ***The entrepreneur,*** which refers to the person or entity that has the vision/idea/expertise to combine natural resources, labour and capital in the production process. Without the vision of the entrepreneur, the other resources would remain largely unrealised potential. The entrepreneur is also the innovator who comes to the fore with new goods or new production techniques. That is why the entrepreneur is at the same time the bearer of risk – the entrepreneur's time, effort, reputation and own funds, and those of others, are at stake should the innovation or business venture fail.

Capable, energetic and imaginative entrepreneurs are perhaps the most crucial of the four productive resources.

1.1.2 Choice and opportunity cost

As mentioned earlier, people have unlimited wants which they strive to fulfil. The individual is continually confronted with ***choices*** – the problem of choice arising from unlimited wants which have to be satisfied with limited means.

At any time an individual must decide which wants must be satisfied immediately and which can be postponed or cannot be satisfied at all. One will have to be satisfied with ***less*** of one thing if one wants ***more*** of another. If, for example, you decide to buy a car, your holiday (or something else) falls victim to this decision. If a ticket to a rugby or soccer game costs the equivalent of ten loaves of bread, then the ***cost*** of attending the game is equivalent to the ten loaves of bread that have to be ***sacrificed.***

It is not only the individual who is forced to make choices due to scarcity – every business firm has to decide between various alternatives. It has to decide how many labourers or other ***inputs*** have to be employed in order to produce goods and services (i.e. the ***output*** of the firm).

The South African government also has to decide how to spend money, for example on ***reconstruction and development projects.*** It strives to provide houses, electricity, running water, public health services and infrastructure to all South Africans. But, because resources are limited, it will have to decide what must be done first and what will have to be postponed until later.

Factors of production are scarce, and when they are used for the production of a certain good, it means that these factors cannot be used for the production of another good or other goods. A decision to produce more of one good also means that less of another good can be produced. The goods which are "sacrificed" – in other words, not produced – can also be seen as the cost of those goods which are produced. This is known as ***opportunity cost.*** In other words, we can measure the cost of the alternative we have chosen, in terms of the best alternative we have sacrificed.

Opportunity cost *measures the cost of obtaining (producing) a certain quantity of a good in terms of the quantity of another good (or other goods) that could have been obtained (produced) in its place.*

Opportunity cost is one of the most important concepts in economics, because it captures the essence of the problems of scarcity and choice. If Daniel spends R30 on a movie ticket, an accountant and most other people would calculate the total cost of the movie as R30. An economist, however, would also measure the cost of the movie in terms of the next best thing that Daniel could have done. If the next best thing was to buy a hamburger and chips, the satisfaction that Daniel would have experienced from eating that meal should be added to the

cost of going to the movies. If the next best thing that he could have done was to study for his Economics exam, the benefit that is lost by not studying should be added to the cost of going to the movies.

1.1.3 Important decision-makers in the economy

We have seen that when a community is faced with the problem of scarcity it has to make choices. The three most important decision-makers in an economy are the following:

i. ***Households*** are individuals, groups or families that act as a single decision-making unit and are also known as consumers. The most obvious example of a household is the family living together in a home. It could, however, also be a single person or a group of friends sharing their income and a living space. The important element of a household is that it operates as a single decision-making unit.
Households take decisions on what to buy, from whom, when and at what price. It also takes decisions on where and how to earn their income and at what price.

ii. ***Firms*** are organisations responsible for the production and distribution of economic goods and are also known as producers. Firms can be sole proprietorships, partnerships, close corporations or companies. Their main function is the processing of production factors into goods and services which can satisfy wants and needs.
Firms take decisions on what, how and when to produce and at what price.

iii. ***Governments*** can take many different forms but are essentially responsible for legislation, regulation and the provision of public goods (such as policing, water, roads, etc).
The most significant functions that governments perform are the following:

- They make *laws* according to which households and firms must behave.
- They *tax* households and firms in order to provide essential services such as defence and law and order.
- They *act as households or firms* to bring about nationally desired economic objectives.

Interactions between these decision-makers take place in various markets, which will be described in more detail in section 1.3.1.

The decisions taken by households, firms and the government will in many cases be in conflict with each other. Households (consumers) would like to ***pay as little*** as possible for goods and services, while firms would like to ***receive as much*** as possible for the goods and services they sell. Governments provide essential community services but must impose unpopular taxes on the other groups to provide these services. The question we must now ask ourselves is how communities have organised themselves in order to deal with these conflicting objectives.

1.2 Different economic systems

Given the above discussion of the elements of the economic problem and three main decision makers, we can make a further distinction between the production problem and the distribution problem.

i. ***The production problem:*** the scarcity of resources makes it impossible to produce all the goods people want. First, every community has to decide ***what*** goods to produce and what not to produce. It therefore has to decide how the scarce resources are going to be allocated. Once the community has determined what goods are going to be produced, it must, in the second place, decide on the ***quantities*** to be produced. Third, it must decide ***how*** production must take place, because various techniques are possible. Is more labour or more capital going to be used in the production process? In other words, is the process going to be more labour intensive, or more capital intensive? Fourth, it must decide ***who*** is going to produce what – the fact that people have different interests, abilities, and so forth, should be considered. Fifth, the community must decide ***where*** and ***when*** production should take place. The whole production problem must therefore be approached systematically.

ii. ***The distribution problem*****:** once the production problem has been solved, the problem of how the total production of goods and services is going to be distributed among the members and organisations in the community still remains. In other words, the distribution problem must also be solved in a systematic way. Should the goods be distributed equally, or should they be assigned on the basis of a person's or an organisation's contribution to total production? What part should go to the state? And so on.

It is important that both production and distribution take place in an orderly fashion. Communities must provide an economic order to answer the questions and problems arising

from production and distribution. There are as many types of economic orders as there are communities, but for the sake of convenience they can be divided into two types, namely the command economy and the market economy.

1.2.1 The command economy

In the command economy all decisions about ***what, how*** and ***for whom*** goods and services are produced are taken by a central authority or ruling body. To be able to function, the authority in a command economy has to have the necessary power to act with force if necessary. It therefore follows that the politics and economics of a command economy are to a large extent intertwined.

In a complex command economy the answers to the economic problems of production and distribution are provided by a central plan comprising the typical decisions that have to be taken in such situations.

A decision has to be taken on how, where and for what purpose every labourer, every piece of land and all capital goods are to be applied. Other examples are the distribution of raw materials, how many houses to build, what consumer goods to produce, how these goods are to be divided among consumers, what proportions of the economic resources should be used to produce capital goods and consumer goods, and so on.

Obviously these decisions cannot all be made by one person, or even one committee. In fact, economic decisions are based on the advice of numerous subordinate committees appointed on a regional or activity basis. This does not mean that such decisions are always implemented very efficiently in a centrally controlled community, since there is considerable scope for wrong decisions and malpractice owing to the complexity of the economic system.
In reality, no country was or is ***completely*** centrally planned. Even the former Soviet Union had to use markets in certain sectors, meaning that the USSR should rather have been described as a ***mixed-command economy***. A mixed-command economy is a planned economy that makes limited use of markets.

1.2.2 The market economy

In the market economy the decisions about the ***what, how*** and ***for whom*** goods and services are produced are determined by markets and prices. This is called *the market mechanism*. Such an economy is motivated by the self-interest of individuals and is regulated by competition between the different economic role players.

The market mechanism depends on each role player acting in accordance with what is to his or her own advantage, that is, being motivated by self-interest. The buyer who seeks to buy cheaply, the seller who tries to sell at the highest price, the businessman who attempts to maximise profit and the employee who looks for the highest wage are all motivated by self-interest. This conduct does not, however, lead to chaos or anarchy because ***self-interest*** is made subservient to the common interest through the market mechanism and competition. Because competitive markets are composed of many buyers and sellers, no single person is in a position to exploit anyone. Furthermore, competition will see to it that no firm makes excessive profits.

There is no country in the world today that could be described as a pure market economy in which the market mechanism governs all economic actions. Imperfections inherent in the market mechanism necessitate government action to ensure greater efficiency. The way in which governments intervene in the market economy is dealt with in Learning Unit 8.

To sum up, we can say that in the real world all market economies involve some degree of government intervention, and it would be more correct to refer to them as ***mixed-market economies.*** This implies that the market in conjunction with the government decides on what, how and for whom to produce.

What about South Africa?

So how is the South African economy composed in terms of government and the market? Government involvement in the economy has always been quite substantial in South Africa. A number of enterprises were or are still directly or indirectly controlled by the government – think of Eskom, Postbank, Telkom, the SABC, state hospitals, forestry activities, and many more. The government also fixes certain prices, as in the case of petrol, or controls them indirectly, as in the case of certain food items (e.g. wheat and maize).

Because the economic system in South Africa may be described as largely market-oriented, we will concentrate on the functioning of the market economy in the rest of this learning unit.

1.3 The miracle of the market economy

Have you ever wondered how things function in our economic system? Let us take the City of Johannesburg as an example:

Apart from the millions that live there, thousands travel to and from this metropolitan hive of activity every day. All these people must be able to buy food, obtain transport, find accommodation and have access to hundreds of services on a daily basis in order to survive. How is it possible that the residents of greater Johannesburg can sleep peacefully without fearing some breakdown in the economic services on which their lives depend? Who makes such a massive but efficient organisation possible? Who is the master organiser behind all this?

The answer to all these questions is in fact that ***no single authority or organisation*** is responsible for the smooth functioning of the economic system. The millions of actions by consumers, producers and businesses are directed and coordinated by a system of markets and the prices that are established in them. The coordination occurs invisibly in the sense that nobody is consciously aware of the coordinating process. By pursuing their own interests every player in the economic process ensures the wellbeing of the community at large. Samuelson & Nordhaus (2005:26) sums up this process in the following way:

*A **market economy** is an elaborate mechanism for the unconscious coordination of people, activities and businesses through a system of prices and markets. It is a communication device for pooling the knowledge and actions of millions of diverse individuals. Without central intelligence or computation, it solves a problem that the largest super-computer could not solve today, involving millions of unknown variables and relations. Nobody designed the market; yet it functions remarkably well.*

The two crucial words in this quotation are ***markets*** and ***prices***. What magical qualities do these two concepts possess to perform such a seemingly impossible task? Let us look at their specific roles more closely.

1.3.1 Markets

There is a market for every good, service or factor of production which can be traded. A ***market*** is any situation where potential buyers and sellers come into contact with one another in order to establish the price and quantity of a good or service that will be bought and sold. Most people think of a market as a visible, physical object, such as a specific building, for example, the fresh produce market in Pretoria. However, a market need not necessarily be a specific

place or building – it may also be invisible or abstract, as in the case of the labour market. Furthermore, a market does not have to be local, because all potential buyers and sellers throughout the world can communicate by post, telephone, fax or the internet, as in the case of foreign exchange markets, as well as the markets for gold, diamonds and certain raw materials. In these cases we can speak of ***world markets***.

Although no specific locality is associated with these markets, they ***bring together buyers and sellers so that the price and quantity of the good or service can be established.*** Keep in mind that the market consists of thousands of buyers and sellers; thousands of households and thousands of firms.

1.3.2 Prices

Although markets form a vital part of the solution to the economic problem, it is really the prices that are established on these markets that provide the essential signals or impulses to which the various economic participants react voluntarily (and in their own interest) to bring about a seemingly organised economic order.

Prices represent the value of products in monetary terms. The specific price of a commodity established on a market reflects the terms under which the buyer and the seller are willing to exchange the product. Any movement in the price of a product reflects changes in the underlying demand and supply conditions and indicates to prospective producers how viable it is to produce the product. A decrease in price is normally associated with either a lack of demand or too much produced (excess supply). This warns producers against expanding their production. At the same time consumers might want to benefit from the lower price level by going on a spending spree. An increase in price would suggest exactly the opposite. It is quite easy to visualise how these signals will bring about voluntary responses from the different market participants (producers and consumers) so that greater balance between demanders and suppliers of goods and services in the system is achieved.

When there is balance between the demand for and the supply of a specific product, we refer to this as a situation of ***market equilibrium***. Equilibrium thus implies a balance between buyers and sellers at a certain price level. When a market is in equilibrium there are no market forces at work to change the existing price level, because the quantity demanded is exactly equal to the quantity supplied at that price. Any other price will cause either an oversupply on the market (if the price is higher) or a severe shortage of the product (if the price is lower).

It is important to realise that buyers and sellers do not compete with each other, but instead ***negotiate*** on a price. Competition takes place among buyers as a group, and among sellers as another group. In learning units 3 and 4 we give a more formal explanation of the interaction between demand and supply, which will further explain the concept of market equilibrium.

1.4 A model of the market economy

1.4.1 Developing a model

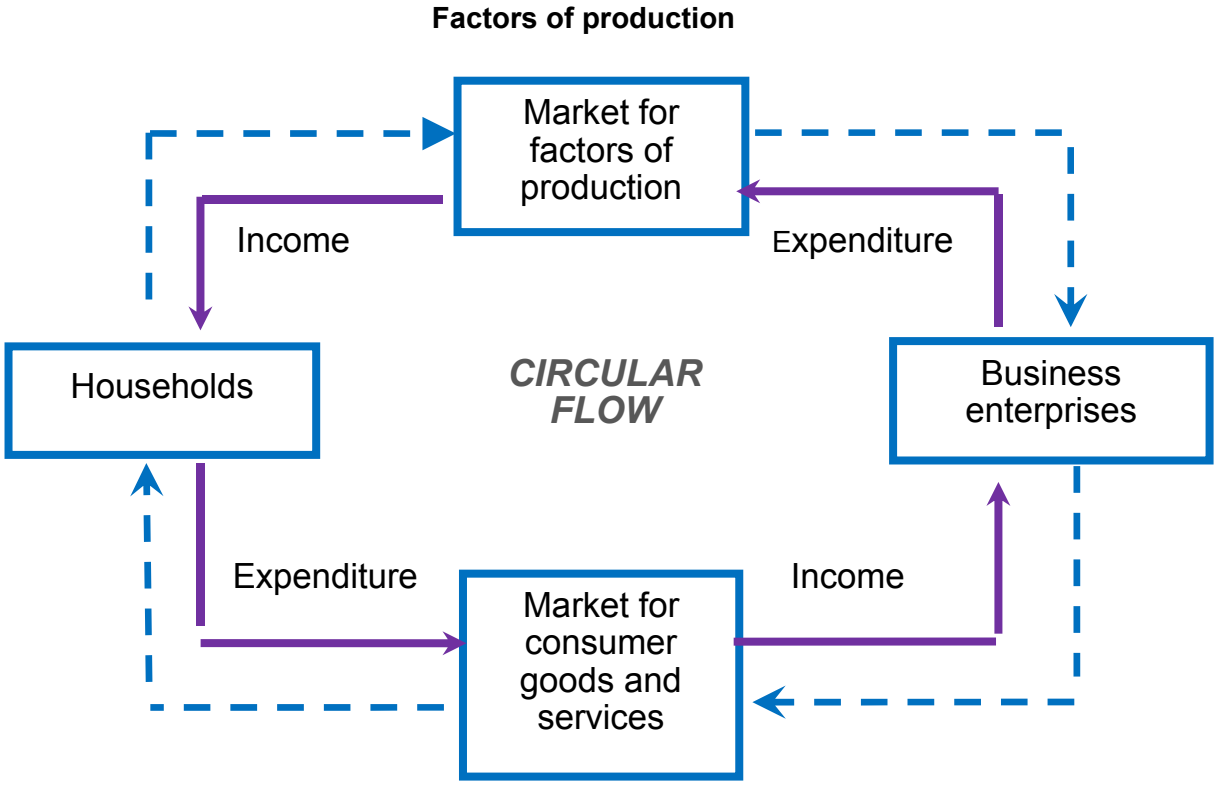
To improve our understanding of a market, we need to construct a ***model.*** An economic model is a simplified representation of the real world, and includes only those factors necessary to study the essence of the specific problem. Naturally, in any simplification, certain aspects of reality are ignored. You could think of a model as a map, which shows you only the essential details to indicate the correct way to get to a destination.

The model of the market economy which we develop here is known as the ***economic circuit*** or the ***circular-flow model.*** In order to keep the model as simple as possible we have to make certain assumptions. The first simplifying assumption is to ignore the government sector and to concentrate only on the other two decision-makers mentioned earlier, namely ***households*** and ***firms.*** Second, we consider only two markets in our economy, namely the ***market for consumer goods and services*** and ***the market for factors of production***.

Do you remember that we already mentioned that each market consists of thousands of consumers and thousands of producers? Therefore, to enable us to discuss the circular-flow model, we are combining separate or individual markets into a whole, which we then treat as a single entity. In economics, this process of combining smaller parts into a bigger whole is called ***aggregation.*** The separate markets for all goods and services (literally thousands of small individual markets) are aggregated into one single market for consumer goods and services. Likewise, the different factors of production (labour, capital, land, etc.) are all combined into a single market for factors of production. Although our model cannot provide any information on these individual markets, it does provide us with an overall view of the economic system as a whole.

A graphical representation (or a model) of such an economy is given in figure 1.1 where we focus only on the features that are most relevant for our present purpose.

Figure 1.1 Circular-flow model of the economy



The simple market economy operates in the following way:

Households, are the owners of the factors of production, and offer their labour, natural resources and capital to the firms, via the market for factors of production. In return they receive income (wages and salaries, interest, rent, etc.), via the market for factors of production, from the firms. Hence there is a flow of services from the households to the firms (the dotted line), and a reverse flow of money from the firms to the households (solid line).

The ***firms*** process the factors of production into consumer goods and take these final products to the market for consumer goods. The households, in turn, come to the market for consumer goods with their earnings (from the sale of their factors of production) to buy goods for the satisfaction of their wants (dotted line). In return there is a money flow from the households to the firms (solid line), thereby completing the circular flow of goods and money in the economic process.

In figure 1.1 we therefore find a money flow (solid line in the inner circle running anticlockwise) and a commodity flow (dotted line in the outer circle running clockwise) moving through the economy. Note that the expenditure (or costs) of one market participant simultaneously

represents the income of the other market participants.

The circular-flow model can also be used to explain some of the basic ***economic* magnitudes.**
First, if we add together the prices of all *goods and services* which flow through the market for consumer goods in one year, we can calculate the total value of all goods and services produced, which is the ***total production of the economy (P).***
Second, if we add the value of the money stream going through the market for consumer goods in one year, then we can calculate the ***total expenditure of the economy (E).***
Third, if we add the value of the money stream going through the market for production factors, we can calculate the ***total income earned in the economy (I).*** This is also the sum of the remuneration paid to all the factors of production in one year – that is, the sum of all wages, interest, rent and profit.
Because we are working with a closed circle, the value of the streams must be equal. It, therefore, follows that total production (P) is equal to the total expenditure (E) and equal to total income (I):

$$P = E = I.$$

These three flows and their interdependence form the basis of our studies in this module.

1.4.2 Limitations of the model

Keep in mind that the model represented in figure 1.1 is a ***simplified*** version of the real world. As stated earlier, various markets and role players have not been included in the circular flow model. For instance:

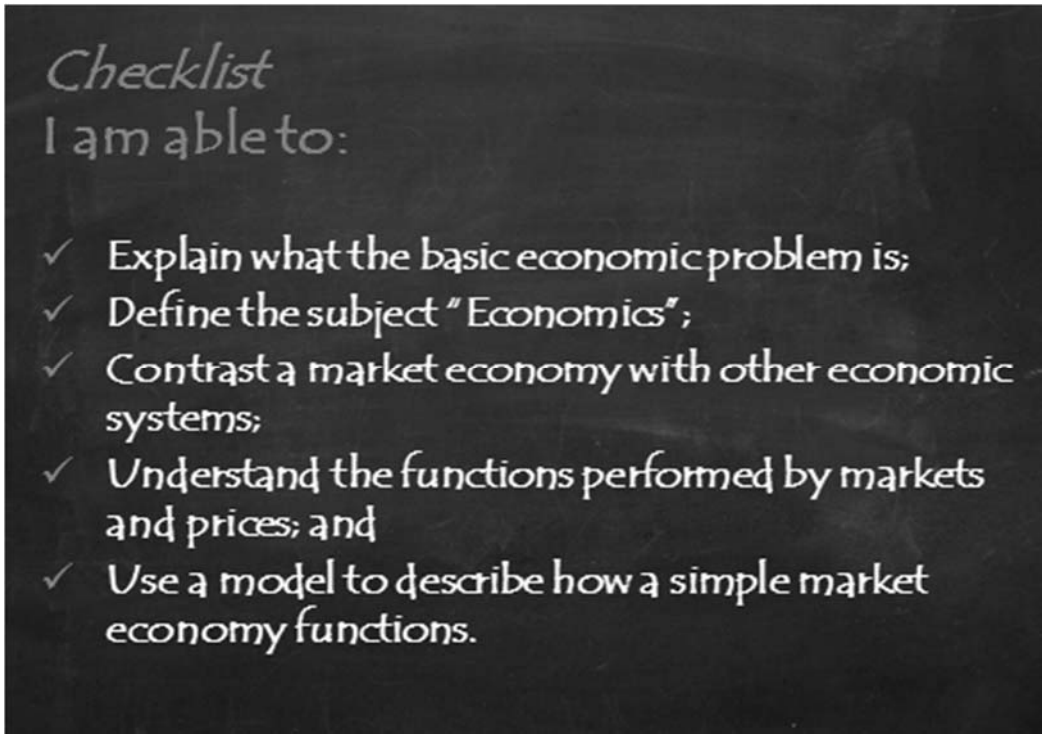
i. No provision is made in our simplified model for the role of government. We know that ***government*** also influences markets by buying consumer goods and factors of production. Government also influences economic life directly by providing certain services, such as defence, police, health and education. To finance these services, it taxes both firms and individual households. These actions are not revealed in our model. More about the role of government will follow in learning unit 8.

ii. The ***foreign sector*** (i.e. the rest of the world) is another important participant not included in our simplified model. Its influence is revealed mainly through a country's imports and exports.

Imports of goods and services may be regarded as an additional supply of goods on the various markets, in return for which a reverse flow of money will go to the foreign sector.

Exports of goods and services would mean a flow of goods to foreign economies, with a corresponding inflow of money into the domestic economy. These factors will be dealt with in more detail in learning unit 10.

iii. Yet another sector which does not feature in our simplified model is the ***financial sector.*** In addition to the two physical (or real) markets for consumer goods and factors of production which appear in figure 1.1 we could also make provision for the financial market, where financial intermediaries such as banks, stock exchanges and insurance companies compete for the savings of the community. The influence of the financial sector will be discussed in learning unit 9.



Learning activity: Learning Unit 1

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F):***

		T	F
1.	The opportunity cost of a choice is the value of the best foregone opportunity.		
2.	If Sipho resigns from his salary-earning job to open his own business, the salary he previously earned must be included in the opportunity cost of the business.		
3.	Economics studies human behaviour, and is therefore classified as a social science.		
4.	Economics studies human behaviour, and is therefore classified as a natural science.		
5.	The purpose of an economic system is to answer the three central economic questions (What? How? and For whom?)		
6.	Economic systems are based on any or a combination of three coordinating mechanisms: tradition, command and the market.		
7.	The distinction between a market economy and a command economy lies in the type of coordinating mechanism used to answer the economic questions.		
8.	For a market to exist there must be physical contact between the prospective buyers and the prospective sellers of the good or service in question.		
9.	Households are responsible for the spending on consumer goods.		
10.	Firms are mainly involved in consumption, while households are mainly involved in production.		

Review questions

1. Briefly explain the basic economic problem in your own words.
2. Briefly explain the difference between a command system and a market system.
3. Explain in which type of system (market or command) you are likely to find the following situations:

    3.1 The government department of planning sets targets for infrastructure development for the next five years.
    3.2 Due to the fall in the wheat harvest in 2015, the price of bread will increase considerably.
    3.3 The government does not vary from the legislated price of bread, despite the fall in the wheat harvest.
    3.4 Investors can buy shares in both domestic and international companies.

4. Describe each of the factors of production listed below:
    4.1 Land
    4.2 Capital
    4.3 Labour
    4.4 Entrepreneurship

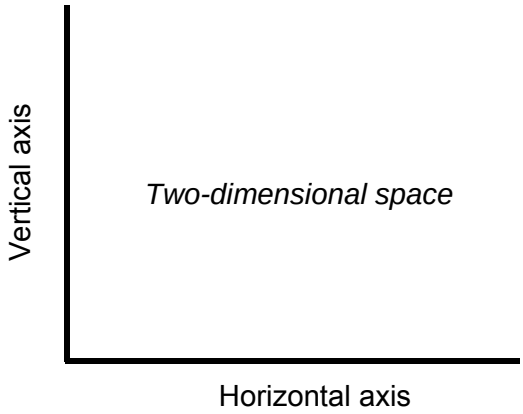
5. Classify each of the following in terms of a factor of production:

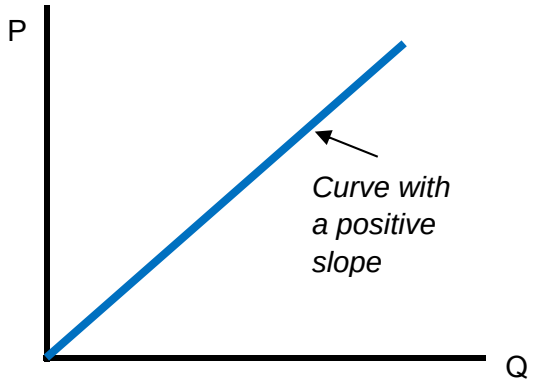
    5.1 A bio-scientist working on a vaccine for Ebola
    5.2 A South African R200 banknote
    5.3 The technology that transforms coal into electricity
    5.4 The physical labour of a builder
    5.5 The milk used to make cheese
    5.6 A person buying clothing at a factory store and selling it again
    5.7 A professional soccer player

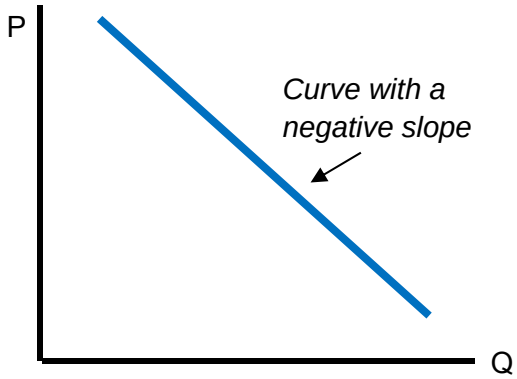
Understanding Economic Graphs

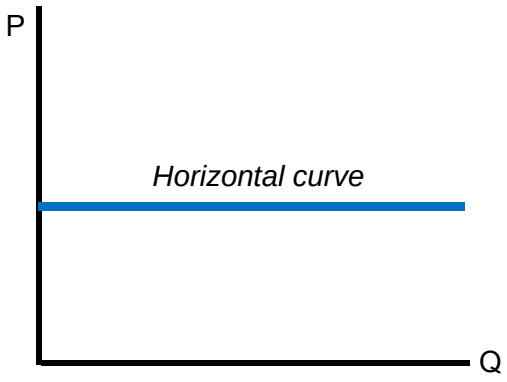
Learning Unit 2

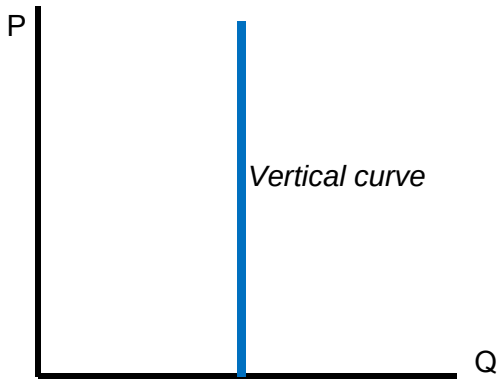
Mind map of Understanding Economic Graphs











Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- axes
- two-dimensional space
- slope of a curve
- direct (positive) relationship
- inverse (negative) relationship
- linear relationship
- non-linear relationship
- unrelated variables

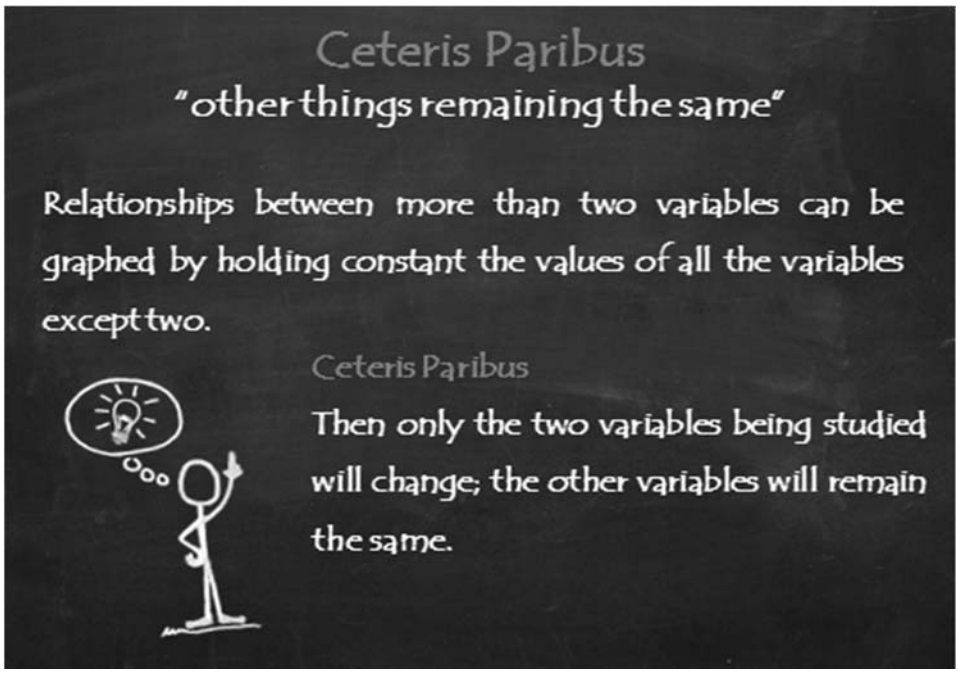
2.1 Introduction

If you look through the rest of this learning material you will immediately notice that we often make use of graphs or diagrams to explain and visualise the economic model or event we are dealing with. This unit will help you grow your competence in interpreting the relevant "pictures" and understand the economic meaning behind them. Although graphs are normally associated with mathematics, you do not require any mathematical background to understand this learning unit.

In economics we usually show the relationship between two or more variables on a graph. A variable is any unit or factor that can change, for example the price or the demand for a product or the supply of a service or any other economic element. A considerable portion of your studies in Economics will be concerned with establishing how a change in one economic variable will influence another variable, or other variables.

Due to the large number of variables in any economy it is, however, necessary to isolate two variables at a time and "pretend" that other variables will not change (will stay constant) while we look at the two variables we are interested in. For example, if we want to examine the relationship between the price of red pens and the supply of red pens, we need to ignore the possible effect of taxes, inflation, etc. on the decision to produce the pens. We therefore look at supply of a product and its price in isolation and pretend that the rest of the variables remain constant. We refer to this as the *ceteris paribus*[1] principle.

[1] Pronunciation: [ke:teri:s pa:ribus] roughly KAY-teh-rees PAH-ree-boos



Typical examples of the relationships we study in economics are:

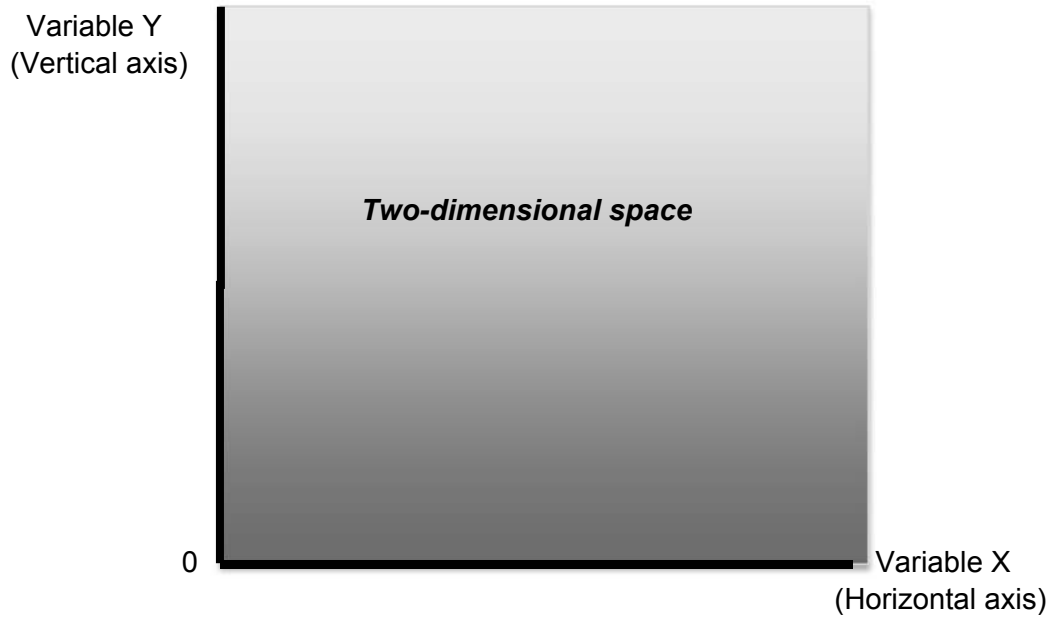
- How does a change in the ***price*** of a product influence the ***quantity demanded*** of that product?
- If the ***supply*** of product A increases, how will this influence the ***price*** of A?
- What effect will a decrease in ***income*** have on the ***spending*** of an individual?
- How will a decrease in ***government spending*** influence total ***employment*** in a country?

In the rest of the learning unit we will examine how the relationship between two variables may be presented in the form of a graph.

2.2 The axes of a graph

Because we normally have two variables which we want to relate to each other, our graphs must be drawn in a two-dimensional space. For this we need two lines (also called axes) on which to measure the values of each variable. In figure 2.1 both axes start from the same point of origin (0), and are drawn horizontally and vertically respectively. On the horizontal axis the values of X are measured, and on the vertical axis the values of Y are measured. The shaded area provides us with the space in which to indicate the relationship between these two variables.

FIGURE 2.1 A two-dimensional space



To show how we use the two-dimensional space created by these two axes, a time-series graph will now be drawn. A time-series graph is very common in economics. It measures time (e.g. days, weeks or years) on the horizontal axis and any other variable (or variables) which we want to relate to time on the vertical axis. Table 2.1 denotes the production figures for South Africa. The figures show an increasing trend.

By plotting the information contained in the table on a two-dimensional graph we are able to gain a much better idea of the production pattern. In figure 2.2 production (Gross Domestic Product) is measured on the vertical axis and the different years are marked out on the horizontal axis. Each year's value is plotted on the graph by measuring the value of production on the vertical axis in line with the corresponding years on the horizontal axis. For example, production for 2005 (R2 359 billion) is obtained by measuring a vertical distance of R2 359 billion from the horizontal axis. This is done for each year's production. For example, a value of R2 708,6 billion corresponds with the year 2008, R2 899 billion with 2012 and R3 008,6 billion with 2014 and so forth.

Table 2.1 Production (GDP) in South Africa, 2005 - 2015

Year	Production (GDP) Rand (billions)
2005	2 359 099
2006	2 491 295
2007	2 624 840
2008	2 708 600
2009	2 666 939
2010	2 748 008
2011	2 836 286
2012	2 899 248
2013	2 963 389
2014	3 008 576
2015	3 068 798

Source: International Monetary Fund (2015)

Figure 2.2 Production (GDP) of South Africa, 2005 - 2015

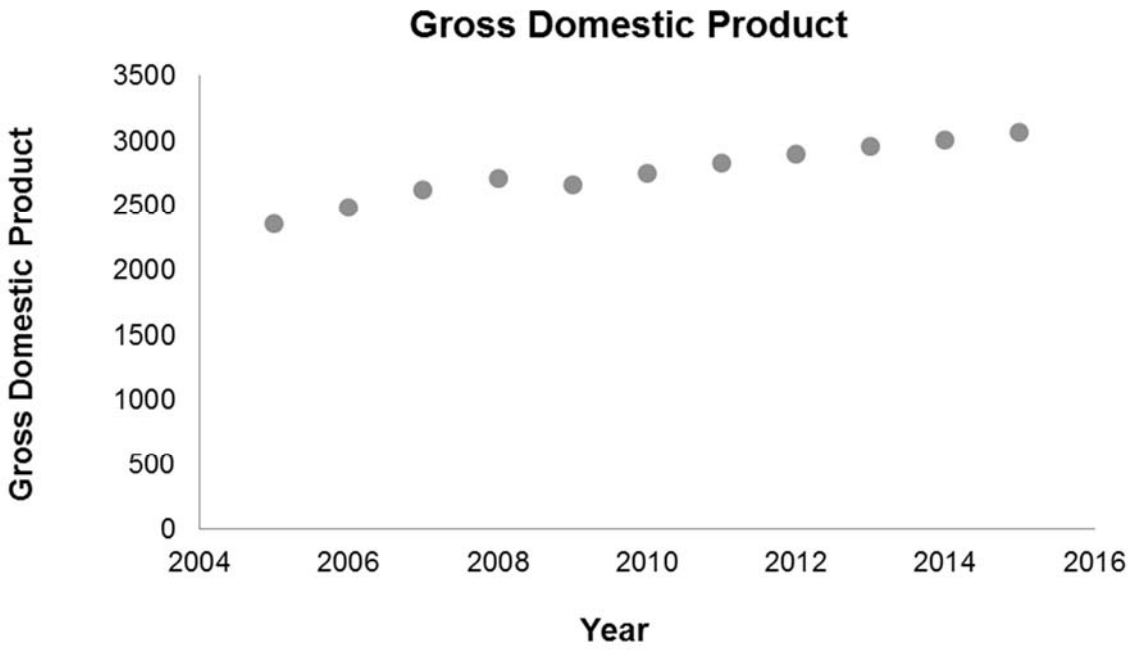


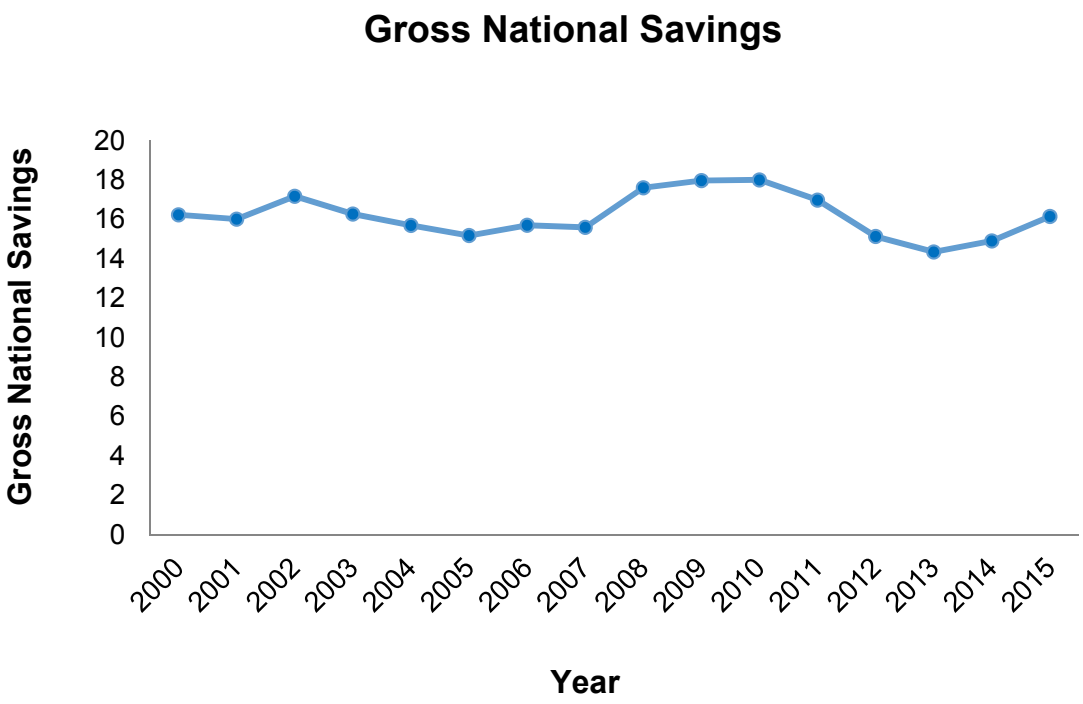
Table 2.2 National savings of South Africa (as % of GDP)

Year	National savings (% of GDP)
2005	15,186
2006	15,706
2007	15,602
2008	17,613
2009	17,977
2010	18,012
2011	16,985
2012	15,137
2013	14,355
2014	14,913
2015	16,158

Source: International Monetary Fund (2015)

By plotting the information contained in table 2.2 on a two-dimensional graph we are able to gain an idea of the national savings pattern for South Africa between 2005 and 2015. In figure 2.3 national savings as a percentage of GDP is measured on the vertical axis and the different years are marked out on the horizontal axis. After each year's values are plotted, a graph or line is obtained by connecting all the dots. The continuous line represents national savings for the 11-year period. From figure 2.3 we can immediately see that national savings in South Africa increased from 2008 to 2010 before decreasing from 2011 to 2015. This graph is called a time-series graph because time is measured on one of the axes.

Figure 2.3 National savings of South Africa (% of GDP)



2.3 Other types of graphs

Time-series graphs are not the only type of graph we use in economics. Using graphs allows us to present the relationship between two economic variables in a meaningful manner. From this type of graph it is relatively easy to establish whether a general pattern, or trend, exists between two variables.

Typical patterns that are found in economics are the following:

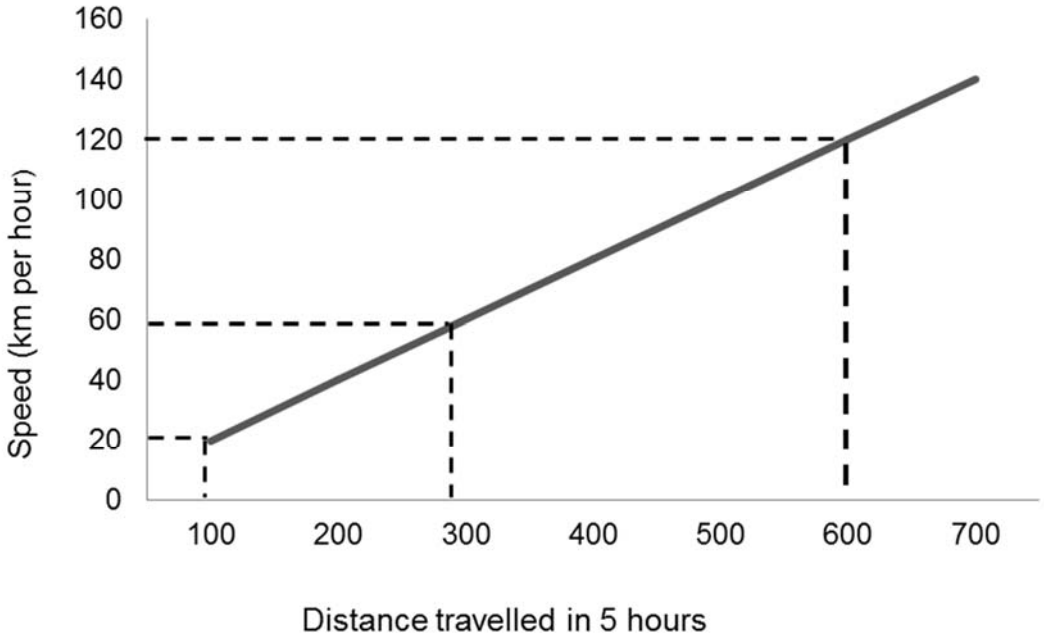
- variables that move up or down together
- variables that move in opposite directions, that is, when one goes up the other goes down
- variables that are not related to each other in any way

We will now explain these relationships in greater detail by using practical examples.

2.3.1 Variables with a positive relationship

If two variables move together in the same direction, we say that there is a ***positive*** or a ***direct relationship*** between them. An example of a positive relationship is that between speed and distance travelled. The higher your ***speed***, the greater the ***distance*** you can travel in 5 hours. This is illustrated in figure 2.4, where a straight line is drawn to show the relationship between speed and distance travelled in 8 hours.

Figure 2.4 Example of a linear positive (direct) relationship

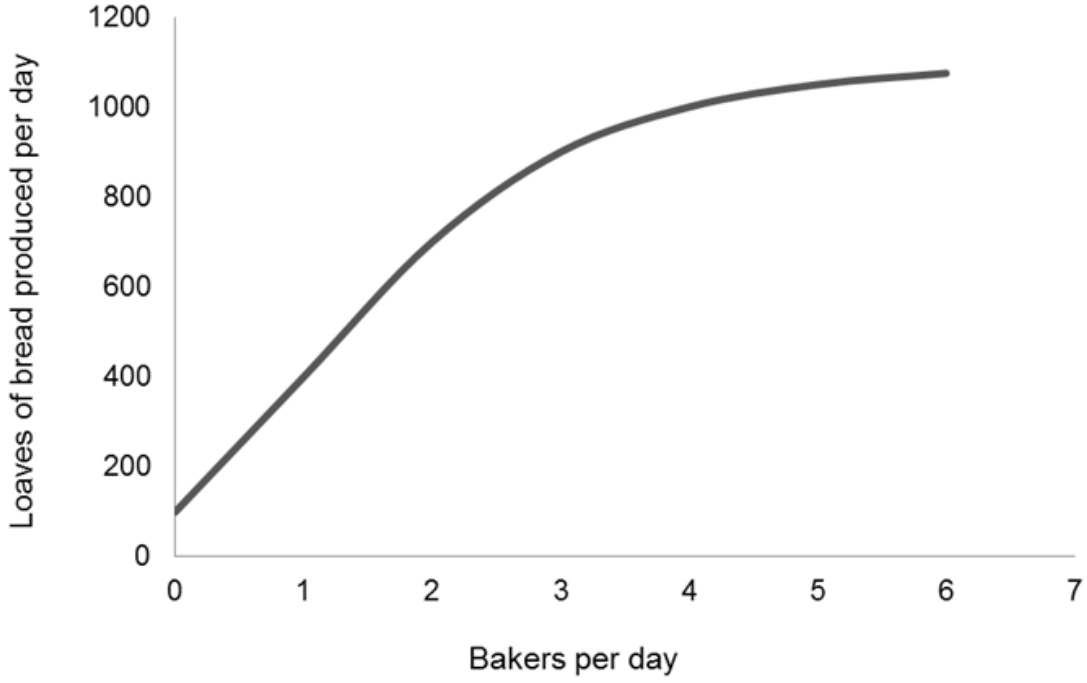


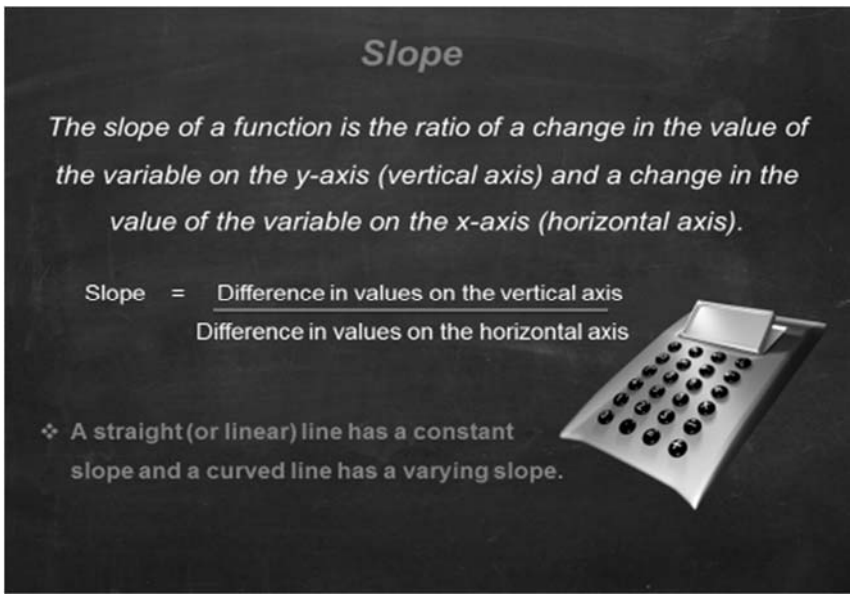
Because the relationship is a straight line, we call this a linear relationship. Furthermore, because the line rises from left to right, the slope or gradient of the line is positive. In economics any line in a graph is called a curve, irrespective of whether it is a straight line or not.

Another example of a positive relationship is that between the number of ***bakers per day*** and the ***number of loaves of bread that are baked.*** Note that the line in figure 2.5 is not a straight line, but a curved line. Although the relationship is still positive, it is a ***non-linear*** relationship. It is reasonable to assume that bakers per day will not influence production in a linear fashion, but that the curve will begin to flatten somewhat as more loaves of bread are produced per day. This means that when all the best bakers have been hired the additional bakers that will

be hired will produce fewer loaves of bread extra, thus production still increases when additional bakers are hired, but by less. In other words, the ***slope*** of the curve becomes less steep as more loaves of bread are produced. Too many bakers can even reduce production. The ***slope*** or ***gradient*** of the curve in figure 2.5 is positive, because the relationship between the two variables is positive.

Figure 2.5 Example of a non-linear positive (direct) relationship





Let's calculate the value of the slope of the line in Figure 2.4 using this formula. The diagram shows that when the speed increases from 60 to 120 (shown on the vertical axis), the distance travelled in 5 hours increases from 300 to 600 (shown on the horizontal axis):

$$Slope\ of\ line = \frac{Difference\ in\ values\ on\ the\ vertical\ axis}{Difference\ in\ values\ on\ the\ horizontal\ axis}$$

$$Slope\ of\ line = \frac{120 - 60}{600 - 300} = \frac{60}{300} = 0{,}2$$

The slope of this line is equal to 0,2. The positive value indicates that the value on the horizontal axis changes in the same direction as the value on the vertical axis, i.e. when the speed at which travelling takes place increases, the distance covered in 5 hours also increases.

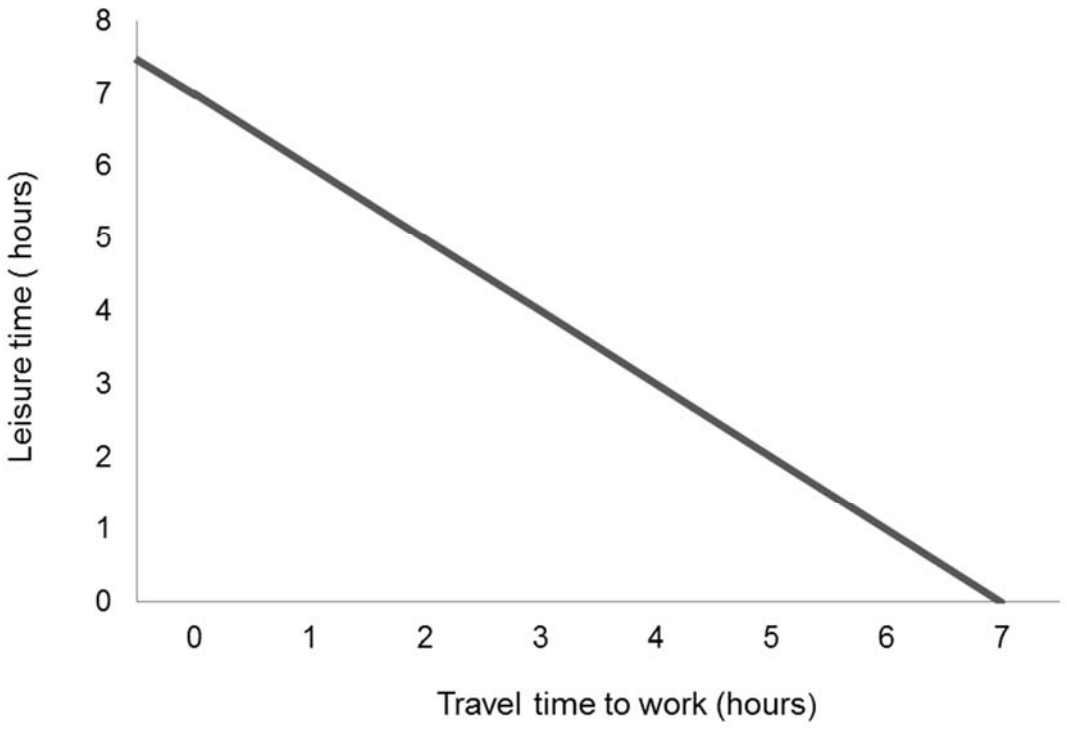
You can calculate the slope of this line when the speed increases from 20 to 60.

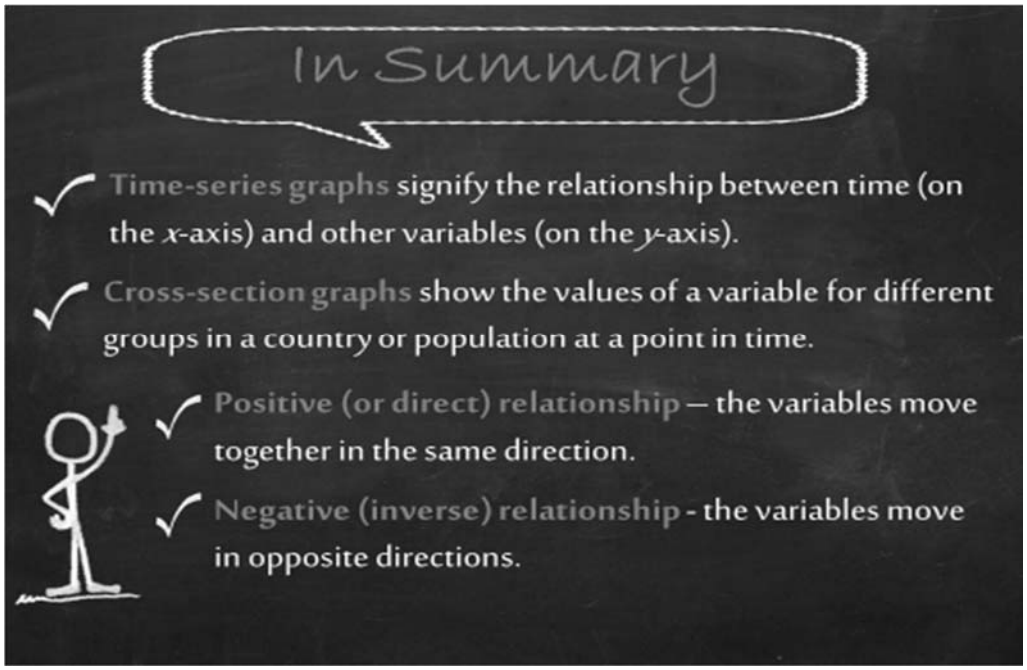
Is your answer 0,2? That is because this is a straight line and the value of the slope will be the same everywhere on this line. However, this will not apply to the curve in Figure 2.5. As this curve is not a straight line the value of the slope will change. The value will, however, be positive everywhere on the curve because the curve slopes upwards.

2.3.2 Variables with a negative relationship

A relationship between two variables that move in opposite directions is called a ***negative*** or an ***inverse relationship.*** An example of a negative relationship is that between the time one spends travelling to work and back, and the leisure time at one's disposal: the more time spent on the road, the less leisure time at one's disposal. Here we can again assume a linear relationship between travelling time and leisure time, as is shown in figure 2.6. Also note that the slope of the curve is now negative (like going down a hill) because of the negative (inverse) relationship between the two variables. Although we haven't given you an example of a graph showing a non-linear inverse relationship, there are many examples of this kind of relationships in the real world.

Figure 2.6 Example of a linear negative (inverse) relationship

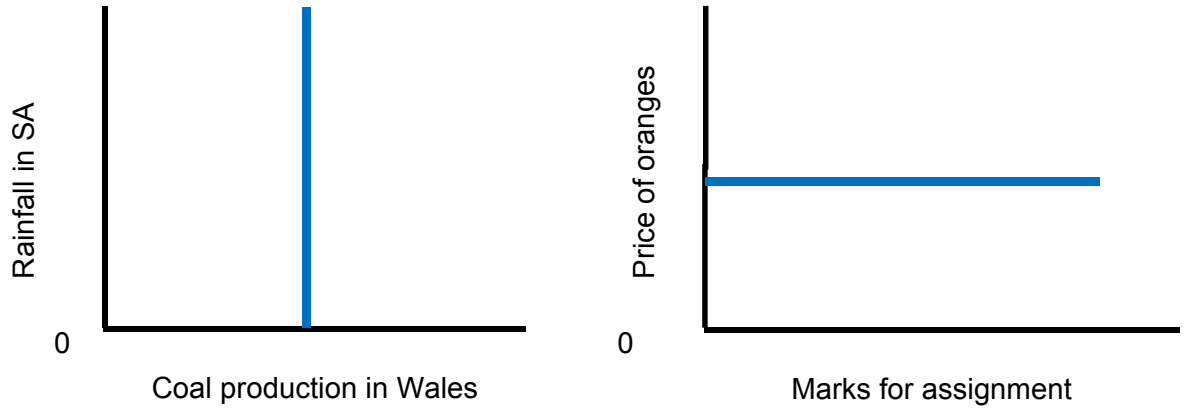


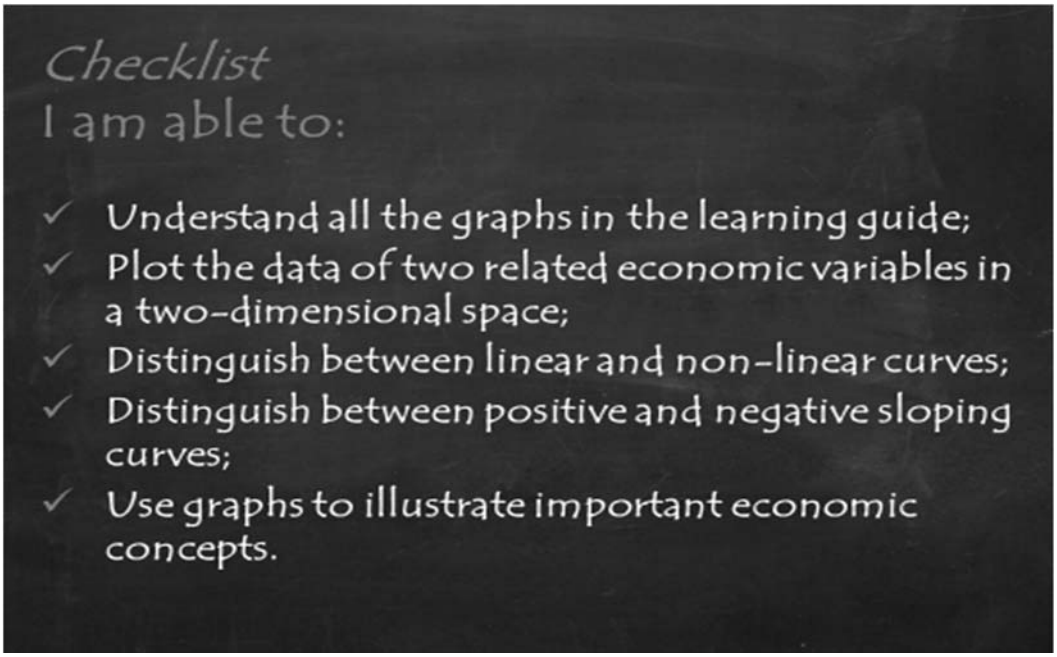


2.3.3 *Variables that are unrelated*

There are many things that are totally unrelated to each other. The price of oranges will have no influence on the marks we obtain for a Unisa assignment. Nor will the rainfall in South Africa have any influence on coal production in Wales. Examples of unrelated variables are given in figure 2.7. Note that the non-relationship in these cases is denoted by either a horizontal or a vertical line. The slopes of these curves are either zero (in the case of a horizontal line) or infinitely large (in the case of a vertical curve). In both cases the value of one of the variables does not influence the other variable at all.

Figure 2.7 Horizontal and vertical curves





Learning activity: Learning Unit 2

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F):***

		T	F
1.	The origin is the point where a graph starts.		
2.	A graph showing a positive relationship between stock prices and the nation's production means that an increase in stock prices causes an increase in production.		
3.	If the graph of the relationship between two variables slopes upward to the right, the relationship between the variables is positive.		
4.	Graphing things that are unrelated on one diagram is **not** possible.		
5.	The slope of a straight line is calculated by dividing the change in the value of the variable measured on the horizontal axis by the change in the value of the variable measured on the vertical axis.		
6.	For a straight line, if a large change in y is associated with a small change in x, the line is steep.		
7.	The slope of a curved line is **not** constant.		
8.	*Ceteris paribus* means "everything else changes".		
9.	Demonstrating how an economic variable changes from one year to the next is best illustrated by a time-series graph.		
10.	If variables x and y move up and down together, they are positively related.		

Review questions

1. If the total amount of goods produced in South Africa has generally increased, on a time-series graph illustrating the total amount produced, you would expect to find
   1.1 an upward trend
   1.2 a linear relationship

2. If the relationship between two variables, x and y, is a vertical line, then x and y are

   2.1 positively correlated

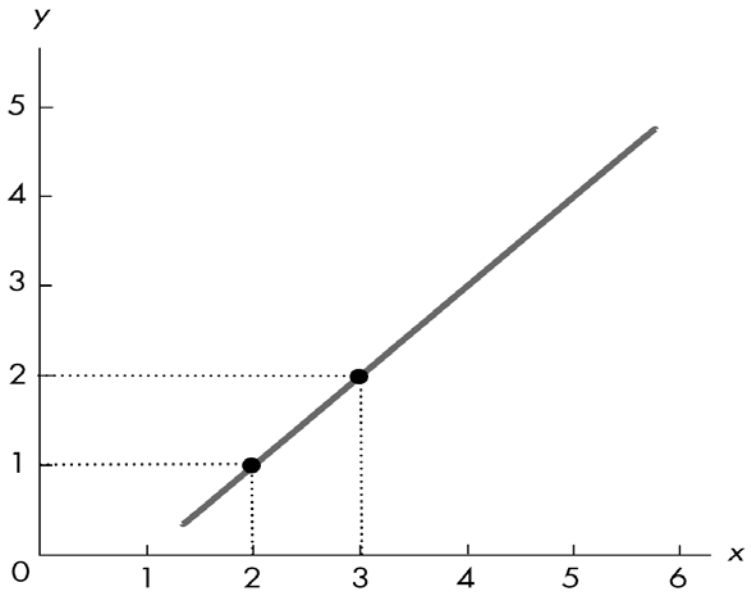
   2.2 not related.

3. A linear relationship

   3.1 always has a constant slope

   3.2 always slopes up to the right

4. Use the figure below to answer the following questions:



   4.1 What is the slope of the line between x = 2 and x = 3?

   4.2 How does the slope of the line between x = 4 and x = 5 compare with the slope between x = 2 and x = 3?

5. Use the data in the table below to answer the following questions:

x	**y**
1	2
2	4
3	6
4	8
5	7
6	6

5.1 Draw a graph to show the relationship between x and y.

5.2 Over what range of values for x is this relationship positive? Over what range is it negative?

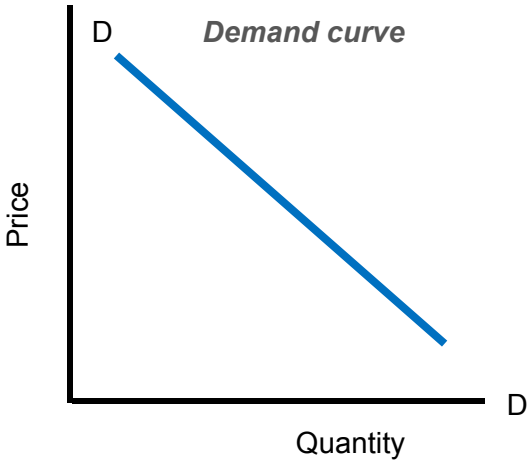
5.3 Calculate the slope between x = 1 and x = 2.

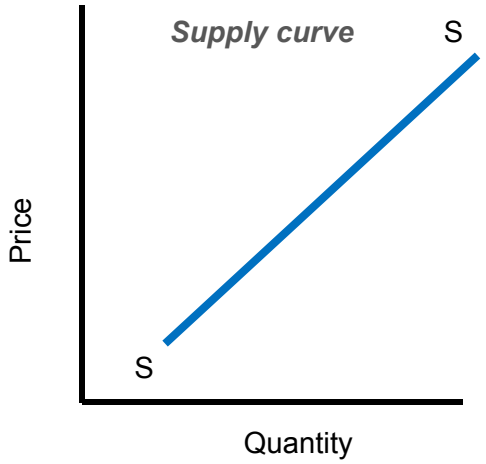
5.4 Calculate the slope between x = 5 and x = 6.

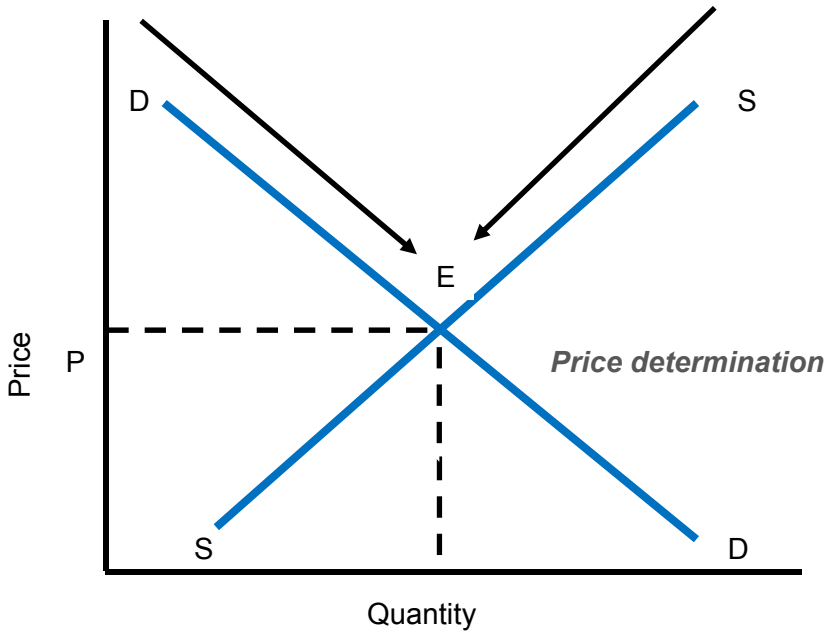
Demand, Supply and Price Determination

Learning Unit 3

Mind map of Demand, Supply and Price Determination







Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- law of demand
- demand curve
- law of supply
- supply curve
- excess demand and supply
- demand and supply schedules
- movements along curves
- shift of a curve

3.1 Introduction

In the usual and ordinary course of things, the demand for all commodities precedes their supply.

David Ricardo (1772–1823)

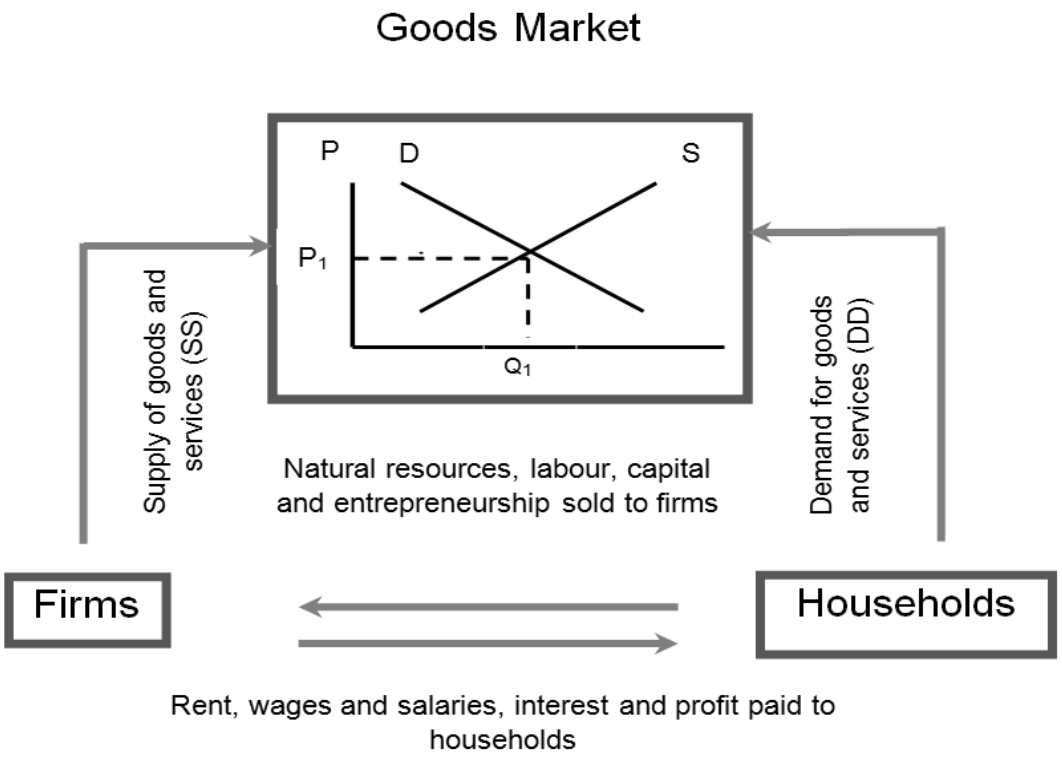
In learning unit 1 you were introduced to the economic problem. We explained that all economic actions arise from ***scarcity*** and that our ***wants*** exceed the productive resources at our disposal to satisfy them. In order to solve this basic economic problem, important decisions about ***what*** to produce, ***how*** to produce and ***for whom*** to produce have to be taken.

In a market economy these decisions are resolved mainly by the market mechanism whereby prices are established. These prices reflect the terms under which buyers and sellers are willing to exchange goods and services. The success or failure of any market economy therefore depends on how efficiently these price signals are conveyed to producers and consumers of products.

The purpose of this learning unit is to explain how prices are established in a market economy through the interaction of demand and supply.

Figure 3.1 illustrates how households sell their factors of production to firms. Firms use these factors to produce goods and services that are sold in the goods market to households, who use their income to buy the goods and services. In the goods markets firms thus determine the supply (SS), while households determine the demand (DD). The interaction of supply and demand determines the price (P_1) and quantity (Q_1) of each good or service.

FIGURE 3.1 The interaction between households and firms



Source: Mohr *et al* (2008:49), author's own illustration

3.2 Demand

Let us begin our study of demand and supply by building a model of demand. The demand for a good or service must be clearly distinguished from wants. We saw in learning Unit 1 that wants are unlimited desires or wishes people have for goods and services. In contrast to this, the quantity of a certain good that people demand is the quantity they actually plan and are able to buy during a certain period. Therefore the quantity we demand reflects a decision about which wants are going to be satisfied. Unlike wants, the demand for a good or service has to be backed up by buying power. Without buying power (income), there can be no demand.

What determines the quantity demanded?

Each one of us is a consumer of goods and services. Each day we require certain goods and services to stay alive. The quantity of any particular good we plan to buy depends on many diverse factors, including

- the price of the product/good
- the prices of related goods
  - complements
  - substitutes
- the income of the consumer
- the taste (or preferences) of the consumer
- the size of the household

Of all these factors, the most important is probably the price of the particular good or service. Although all the other factors, such as our income and the prices of related goods, play a very important role in our demand for a specific product they can never overshadow the price of the good itself. In the light of this we have to ask what the relationship is between the quantity demanded and the price of a good.

The answer to this important question is provided by the ***law of demand***.

*The **law of demand** states that the higher the price of a good or service (all other things remaining the same), the lower the quantity demanded, and the lower the price of a good or service (all other things remaining the same), the greater the quantity demanded.*

Obviously this law will apply only if all the other factors we have listed (income, preferences, weather, etc.) remain unchanged. The well-known Latin expression for "everything else remaining the same" is ***ceteris paribus***. It is not possible to study the effect of a price change on the quantity demanded if these other factors are changing at the same time. Thus, the law of demand states that there is a definite relationship between the market price of a product and the quantity demanded of that product, if the *ceteris paribus* condition holds. This relationship between price and quantity demanded is called the ***demand schedule*** and can be represented by means of a ***demand curve.***

In table 3.1 a hypothetical example of a demand schedule for potatoes is given. At a specific price, for instance R5 a bag, a certain quantity of potatoes will be demanded by consumers in the market – in this case 9 000 bags per month. At a lower price, for instance R4 per bag, the quantity demanded increases to 10 000 bags. From table 3.1 we can determine the quantity demanded at any particular price by comparing column (2) with column (1).

Table 3.1 The demand schedule shows the relationship between quantity demanded and price

	Price (P) (rand per bag) (1)	Quantity demanded (Q) (bags per month) (2)
A	5	9 000
B	4	10 000
C	3	12 000
D	2	15 000
E	1	20 000

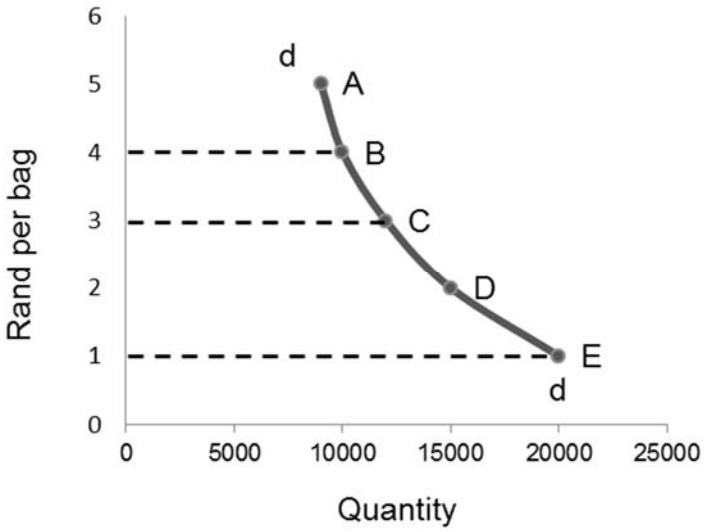
3.2.1 The demand curve

As we know from learning Unit 2, the information in table 3.1 can also be represented graphically. In figure 3.2 the different prices for potatoes, measured in rand per bag, are shown on the vertical axis. The horizontal axis measures the quantities of potatoes (number of bags) demanded per month. We make use of the information in table 3.1 to draw figure 3.2. Point A in figure 3.2 corresponds to a price (P) of R5 and a quantity (Q) of 9 000 bags of potatoes, as can be read off from the vertical and horizontal axes respectively. In order to draw point B we obtain the point which represents a price of R4 and a quantity of 10 000. Points C, D and E are obtained in the same manner. By connecting these points we obtain a line, shown as dd.

This representation of the demand schedule is called the ***demand curve.*** Note that an inverse relationship exists between price and quantity: Q *increases* when P *decreases*. An important property of the demand curve is that it slopes down from left to right, which reflects this inverse relationship. This representation illustrates the law of demand which, in fact, applies to all goods – potatoes, meat, pizzas, hamburgers – and also services, such as those offered by hairstylists, medical practitioners and architects.

Therefore, a change in the price will lead to a change in the quantity demanded and we will move on the demand curve, for example, from point B to C.

Figure 3.2 The demand curve



3.2.2 Reasons for the law of demand

This law is based on common sense and has been known since early times, albeit in a less formal way. In theory, however, there are two reasons for the existence of this law.

3.2.2.1 The substitution effect

It is important to realise that when the price of a good rises, other things remaining the same, its price rises relative to all other prices. Because there are substitutes for most goods (e.g. coffee for tea) consumers will try to buy less of the product and more of its substitutes.

3.2.2.2 The income effect

If the price of a product increases, the price of that product rises relative to the income of consumers. If income remains unchanged, any increase in the price of a product will make consumers poorer. They will therefore be forced to reduce the quantities demanded of at least some goods and services. In all probability consumers will reduce their demand for the product of which the price has increased.

Both the substitution effect and the income effect substantiate the law of demand.

3.2.3 A change in demand

So far we have established a negative relationship between the price of a good and the quantity demanded of that good. This relationship was represented in the demand schedule and the downward-sloping shape of the demand curve. In addition to the price of the product we have also listed various other factors which may influence the quantity demanded of the product.

We now have to expand our analysis by trying to determine how all these other factors, such as the income of consumers, consumer preferences or the prices of related goods, will influence the demand for a specific product.

Assume an increase in the income of households in South Africa. How will this influence the demand for potatoes in the country? When income increases (other things remaining the same), consumers normally buy more of most goods and services, and when income decreases, they normally buy less of most goods and services. We can therefore expect to see an increase in the demand for potatoes as well. Such an increase in the demand for potatoes can also result if a substitute product such as rice has become more expensive, or if the size of the South African population has increased significantly, or simply because people's preferences have changed in favour of potatoes.

The result of all these possible influences is that more potatoes will be bought at each price on a demand schedule.

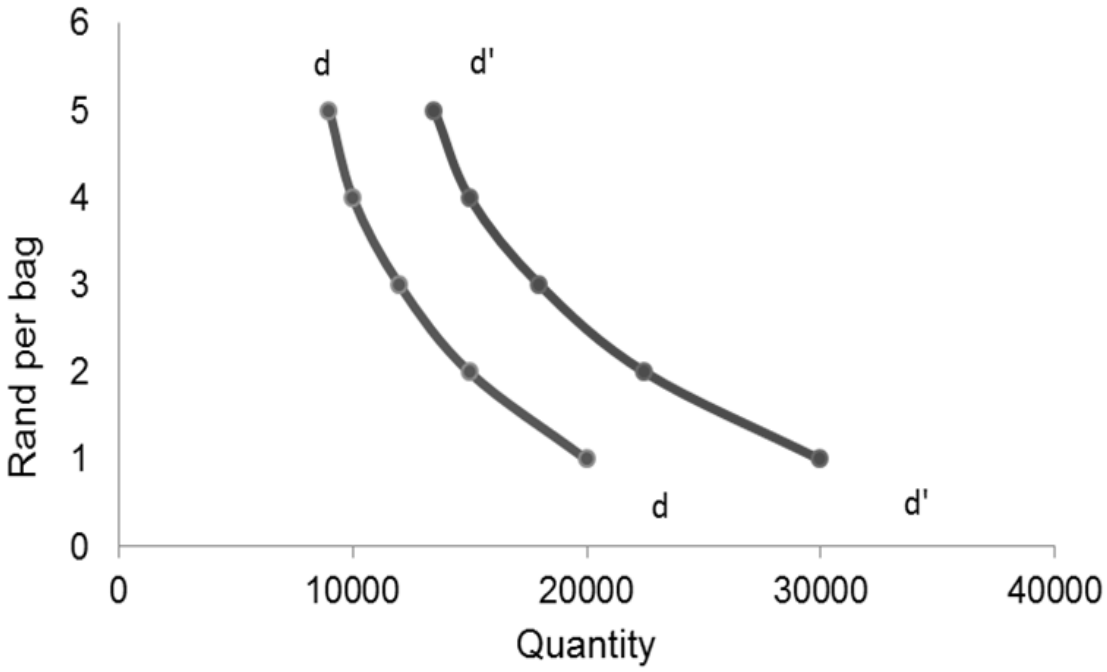
Table 3.2 The demand schedule shows the old and new relationship between quantity demanded and price

	Price (rand per bag)	Quantity demanded (bags per month)	New quantity demanded (bags per month)
A	5	9 000	13 500
B	4	10 000	15 000
C	3	12 000	18 000
D	2	15 000	22 500
E	1	20 000	30 000

When we plot this new information on the same graph as the original demand schedule, we see that the entire demand curve has shifted to the right. In reality we obtain a new demand curve.

This is shown in figure 3.3, where the previous demand curve of figure 3.2 is repeated and the new demand curve is shown as d'd'. It should be clear that according to the new demand curve, at each price, more potatoes will be bought. For example, at a price of R4 per bag the quantity demanded increases from 10 000 bags per month to 15 000 bags per month.

Figure 3.3 A shift of the demand curve



The situation illustrated in figure 3.3 is called an ***increase in demand*** or a ***shift to the right of a demand curve.*** In similar fashion any decrease in demand (a fall in the income of households) will result in a shift to the left of the demand curve. This implies that at each price level fewer potatoes will be demanded than before.

Therefore, a change in the demand due to income or any other reason except price, will lead to a movement of the curve itself.

What can we now conclude about the position and the shape (or slope) of the demand curve?

i. Any change in the price of the product will cause a movement along the demand curve to the new price level. If the price decreases, more of the product will be demanded (moving down along the demand curve). In figure 3.2 this is shown by a movement from point A to point B to point C and so on. An increase in price leads to a reduction in the quantity demanded as we move from point E to point D to point C on the dd curve in figure 3.2. A movement along the demand curve as a result of price changes is referred to as an increase/decrease in the ***quantity demanded***, but does not signify any change in demand as such because there was no shift of the demand curve itself.

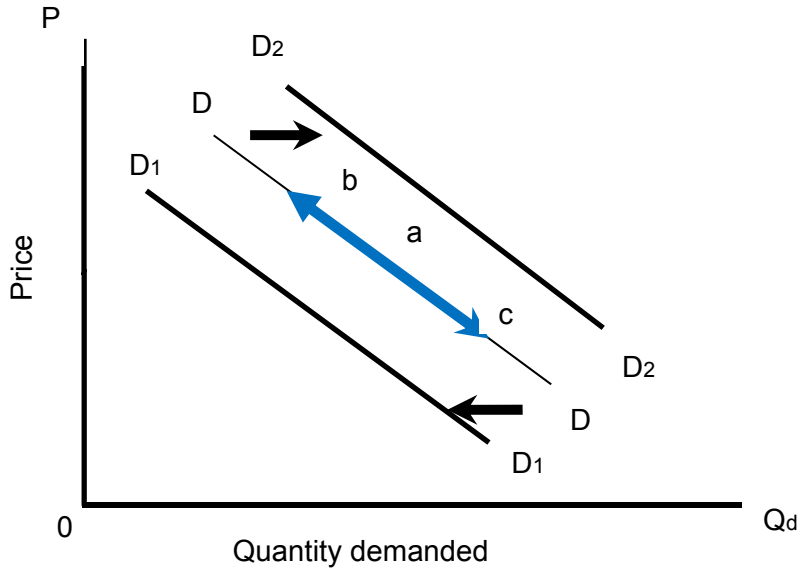
ii. A change in ***any*** of the other factors (income, price of substitutes, preferences, population, etc.) will lead to a shift of the demand curve itself. This is referred to as a ***change in the demand*** for the product. The shift of the demand curve can be to either the left or the right, depending on the circumstances. A shift to the right (figure 3.4) means an increase in demand, while a shift to the left implies a decrease in demand.

It is very important to understand the difference between a ***movement along*** the demand curve and a ***shift* of** the demand curve. The following "equations" should make the difference quite clear:

- ***A movement along the demand curve*** is equal to ***a change in the quantity demanded.***

- ***A shift of the demand curve*** is equal to ***a change in demand.***
  (The same conditions apply to the supply curve.)

Figure 3.4 A change in the quantity demanded versus a change in demand



From figure 3.4 we can see that a change in the price of the good will cause a movement along the demand curve and a change in the quantity demanded. Along demand curve DD a movement from a to b indicates a decrease in the quantity demanded, while a movement from a to c shows an increase in the quantity demanded. If one of the other factors which influence demand changes, there is a change in demand, which is represented by a shift of the demand curve. An increase in demand is represented by a rightward shift of the demand curve, such as the shift from DD to D_2D_2. A decrease in demand is represented by a leftward shift of the demand curve, such as the shift from DD to D_1D_1.

Table 3.3 provides a summary of the different variables that can affect demand and the quantity demanded:

Table 3.3 The market demand curve: a summary

Determinant	Change	Effect on market demand curve	Correct description of effect
Price of the good	**Increase**	Upward movement along the demand curve	A fall in the quantity demanded
	Decrease	Downward movement along the demand curve	An increase in the quantity demanded
Price of related goods			
Substitutes in consumption	**Increase**	Rightward shift of the demand curve	An increase in demand
	Decrease	Leftward shift of the demand curve	A fall in demand
Complements in consumption	**Increase**	Leftward shift of the demand curve	A fall in demand
	Decrease	Rightward shift of the demand curve	An increase in demand
Income (normal good)	**Increase**	Rightward shift of the demand curve	An increase in demand
	Decrease	Leftward shift of the demand curve	A fall in demand
Taste/preferences	**An increased desire to buy**	Rightward shift of the demand curve	An increase in demand
	A reduced desire to buy	Leftward shift of the demand curve	A fall in demand
Population	**Increase**	Rightward shift of the demand curve	An increase in demand
	Decrease	Leftward shift of the demand curve	A fall in demand
Expected future price of the good	**Price is expected to increase**	Rightward shift of the demand curve	An increase in demand
	Price is expected to fall	Leftward shift of the demand curve	A fall in demand

Source: Mohr *et al* (2008:120)

3.3 Supply

We can now shift our attention from demand to supply. The demand schedule indicated the relationship between prices and the quantities consumers wish to buy. How is the supply schedule defined?

The supply schedule (or supply curve) shows the relationship between the market price of a product and the quantities of those product producers are willing to supply on the market.

Table 3.4 The supply schedule shows the relationship between price and quantity supplied

	Price (rand per bag)	Quantity supplied (bags per month)
A	5	18 000
B	4	16 000
C	3	12 000
D	2	7 000
E	1	0

From the supply schedule in table 3.4 and the resultant supply curve in figure 3.3 we can derive the ***law of supply.***

*The **law of supply** states that the higher the price of a good, the greater the quantity supplied, or the lower the price the smaller the quantity supplied (all other things remaining the same).*

Figure 3.5 clearly shows that more bags of potatoes will be offered only at higher prices. If the price drops to R1 per bag, no potatoes will be produced. This is presumably because the production cost per bag is more than R1.

As was the case with demand, we again look just at the relationship between the price of the product and the quantity supplied.

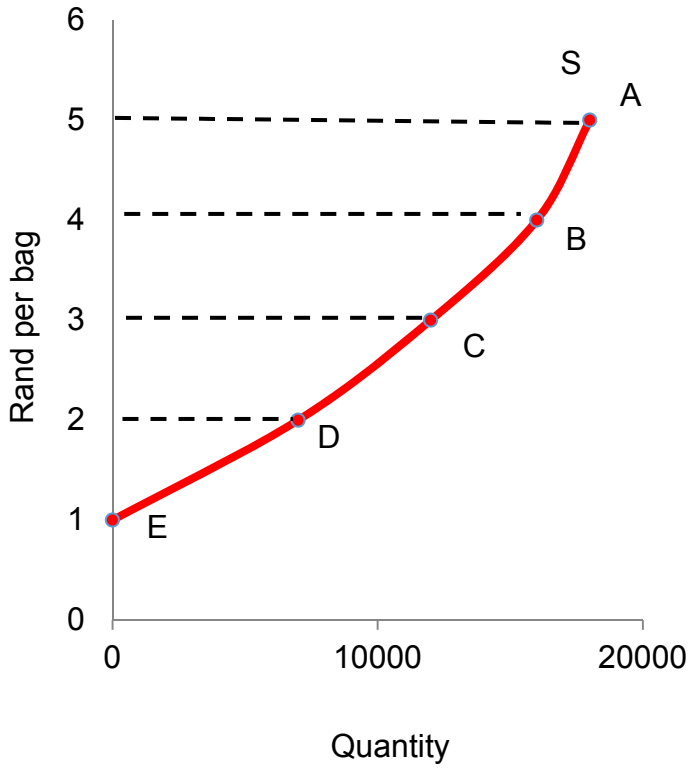
Clearly the amount producers plan to sell on the market will depend on a variety of factors, such as:

- the price of the product
- the price of alternative products
- the price (or cost) of factors of production
- expected future prices
- the state of technology
- weather conditions

Apart from the first factor (the price of the product), all the other factors are basically concerned with the cost of production. The supply of a product depends on the cost of production.

As with the demand curve, any change in the price of the product will result in a movement ***along*** the supply curve to a new price level. There will be a change in the quantity supplied, but no change in the supply of the product as such.

Figure 3.5 The supply curve



Any change in the cost structure of the firm (i.e. cost of factors of production or technological improvements) will be reflected in a shift ***of*** the supply curve.

i. If the price of potatoes were to increase, farmers would utilise more and more of their available land at these higher prices for the cultivation of potatoes. They would also be able to afford more fertilisers, tractors and so forth. Some of them would even use new land, which previously had been used for other purposes, for the cultivation of potatoes. All this will lead to a movement along the supply curve in figure 3.5 and an increase in the ***quantity supplied.***

ii. However, if technological advances in agriculture lead to cheaper production costs in the potato industry, farmers are in a position to supply more bags of potatoes at each price level. This leads to a shift in the supply curve to the right, which is illustrated with the aid of table 3.5 and figure 3.6. As a result of the reduction in costs the supply curve shifts to the right from SS to S'S'.

iii.

Table 3.5 The supply schedule shows the old and new relationship between price and quantity supplied

	Price (rand per bag)	Old quantity supplied (bags per month)	New quantity supplied (bags per month)
A	5	18 000	27 000
B	4	16 000	24 000
C	3	12 000	20 000
D	2	7 000	16 000
E	1	0	8 000

Any situation which causes production costs to rise (i.e. higher input prices) will cause an upward shift (to the left) of the supply curve. This implies that less will be supplied at each price level than before.

Figure 3.6 A shift in the supply curve

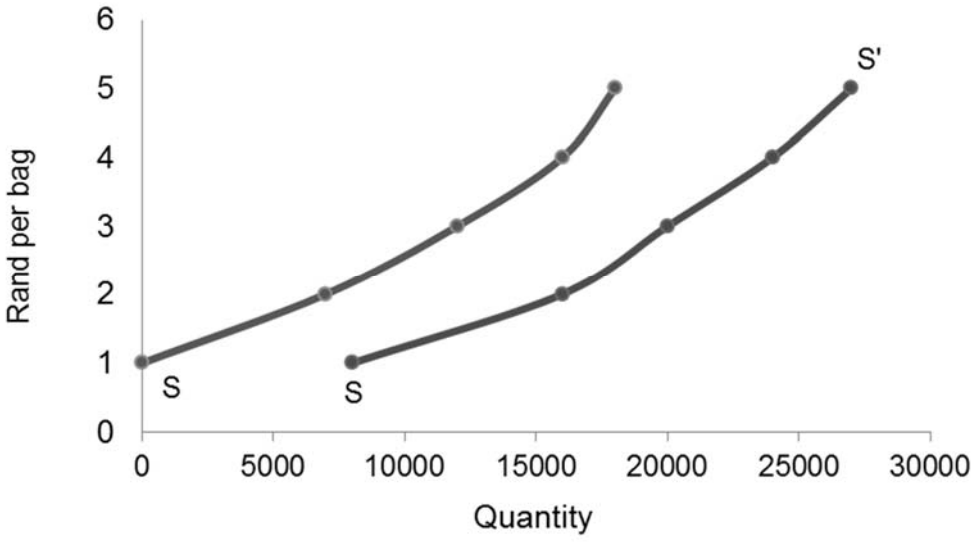


Table 3.6 summarises which changes will result in a shift of the supply curve and which will cause a movement along the supply curve.

Table 3.6 The market supply curve: a summary

Determinant	Change	Effect on market supply curve	Correct description of effect
Price of the good	**Increase**	Upward movement along the supply curve	An increase in the quantity supplied
	Decrease	Downward movement along the supply curve	A decrease in the quantity supplied
Price of alternative goods (substitutes in production)	**Increase**	Leftward shift of the supply curve	A decrease in supply
	Decrease	Rightward shift of the supply curve	An increase in supply
Prices of joint products (complements in production)	**Increase**	Rightward shift of the supply curve	An increase in supply
	Decrease	Leftward shift of the supply curve	A decrease in supply
Prices of inputs	**Increase**	Leftward shift of the supply curve	A decrease in supply
	Decrease	Rightward shift of the supply curve	An increase in supply
Expected future prices	**Price is expected to increase**	Rightward shift of the supply curve	An increase in supply
	Price is expected to fall	Leftward shift of the supply curve	A decrease in supply
Technology	**Cost-reducing improvement in technology**	Rightward shift of the supply curve	An increase in supply
	Cost-increasing changes in technology	Leftward shift of the supply curve	A decrease in supply
Number of firms (sellers)	**More firms enter market**	Rightward shift of the supply curve	An increase in supply
	Firms leave market	Leftward shift of the supply curve	A decrease in supply

Source: Mohr *et al* (2008:126)

3.4 Price determination

There are two fools in every market; one asks too little, and one asks too much.

Russian Proverb

We now know what demand and supply curves look like, but when examining figure 3.2 or figure 3.5 we still do not know precisely at what price the potatoes will be traded on the market. We have only analysed various hypothetical prices to see how consumers (as demanders) and producers (as suppliers) will react to them – but at exactly what prices transactions will be concluded has yet to be determined.

There are other things we do not know either. For instance, when the demand increases, as is indicated in figure 3.3, will the price of potatoes increase or decrease? Or when the supply increases, as is shown in figure 3.6, what will happen to the price of potatoes?

The answer to all these questions lies in the fact that we have to combine our analysis of demand and supply to see how price is determined in a free-market situation. The combining of demand and supply, which is perhaps the most important principle in Economics, appears in table 3.7. Thus far we have considered all prices as possible. We in fact said "If the price is such and such, the sales will be so and so". However, up to what level will prices actually move? How much will then be produced and consumed?

Table 3.7 The market equilibrium schedule

	Price per bag (1)	Quantity demanded (2)	Quantity supplied (3)	Pressure on price (4)
A	5	9 000	18 000	Decrease ↓
B	4	10 000	16 000	Decrease ↓
C	3	12 000	12 000	Neutral -
D	2	15 000	7 000	Increase ↑
E	1	2 000	0	Increase ↑

Can situation A in Table 3.5, where potatoes sell at a price of R5 per bag, prevail in the long run? The answer is a clear ***no.*** This is because at R5 the producers supply 18 000 bags on the market each month, as can be seen from column (3). The quantity demanded by

consumers will, however, be only 9 000 bags per month, as is indicated in column (2). As large stocks of potatoes pile up, competing suppliers will be inclined to reduce their prices. Thus, as column (4) shows, the price will tend to decrease – but will not fall to zero.

To explain the situation further, we now look at point D, where the price is only R2 per bag of potatoes. Can this price persist? Once again, the answer is no, since a comparison of columns (2) and (3) shows that at that price, demand will exceed production. There will be a shortage on the market, and disappointed buyers who really want potatoes will tend to bid the price up. If the price falls further to R1 per bag, we see that no potatoes will be produced. This upward pressure on prices is shown in column (4) by the rising arrow. We could go on to try other prices, but by now the answer should be obvious.

A state of balance between suppliers and consumers can be reached only at point C. In Economics we refer to such a point as the ***equilibrium.*** At this point none of the participants has any incentive to change their behaviour, because they are totally content with the situation.

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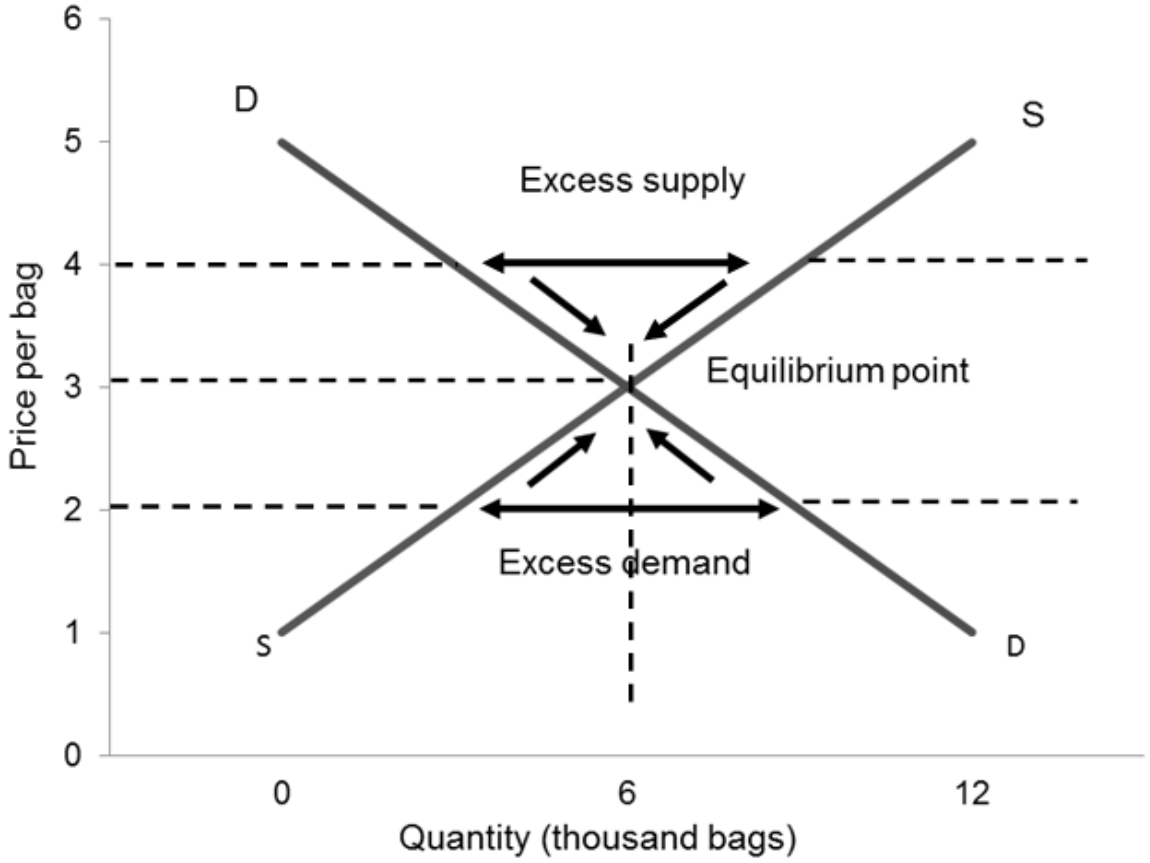
*The **equilibrium price** is the only price which can persist in the long run. It is the price at which the quantity voluntarily supplied and the quantity voluntarily demanded are equal.*
***Competitive equilibrium** must be at the point where the quantity demanded and quantity supplied are the same.*

Only at point C, at a price of R3, will the quantity demanded by the consumers, that is, 12 000 bags per month, be exactly equal to the quantity supplied by the producers. Here the price is at equilibrium, since there is no tendency for the price to fall or to rise. In all probability this equilibrium price will not be reached immediately and oscillation around the right level may occur until equilibrium is finally reached and the quantity demanded is equal to the quantity supplied.

The equilibrium situation is very neatly shown in graphical form in figure 3.7. The demand and supply curves, which both appear in the diagram, intersect at only one point (the curves are not drawn exactly according to scale in the figure). This point represents the equilibrium price and quantity. The diagram shows that at a higher price (more than R3), quantity supply exceeds quantity demand. The arrows point downwards to show the direction in which the price will move because of the competition between ***sellers.*** At a price lower than the equilibrium price of R3 the quantity demanded is greater than the quantity supplied, as shown in the diagram. The anxiousness of ***buyers*** to buy the product will put upward pressure on the

price, as the arrows indicate. Only at the point of intersection will the upward and downward forces be in balance.

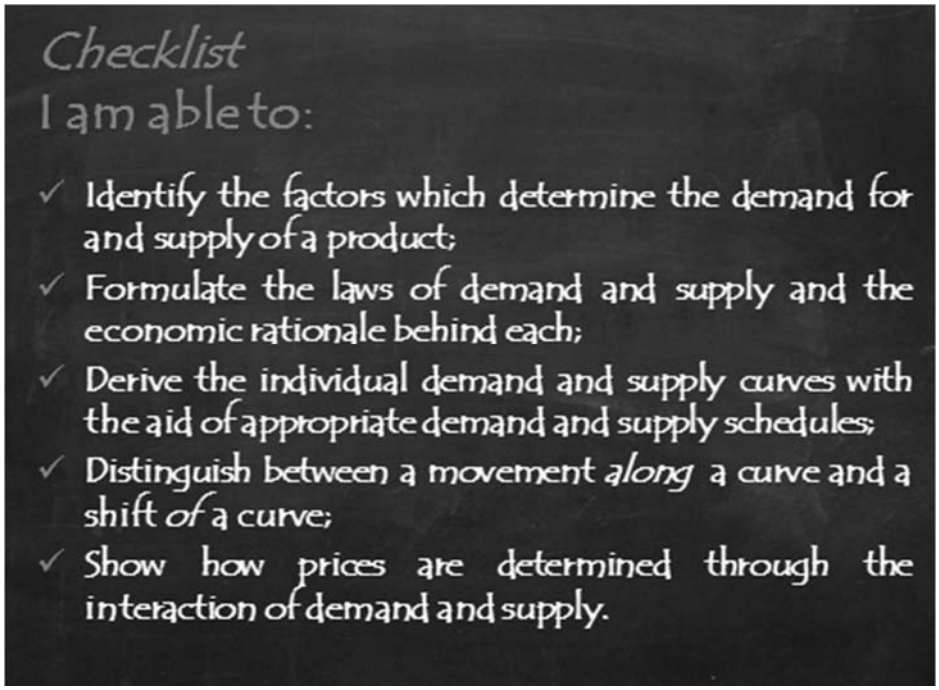
Figure 3.7 Market equilibrium where demand and supply curves intersect



To conclude this section, we must point out that we were dealing with movements ***along*** the supply and/or demand curve (see figure 3.5). We have kept all other things (consumer tastes, income, population size, etc.) the same, and allowed only P to change to see what effect it will have on Q. You will notice that a ***movement along*** a curve is completely different from a ***shift of a curve,*** which we encountered in figures 3.3 and 3.6.

Note

The demand and supply curves which we have used in our analysis are, strictly speaking, applicable to a perfectly competitive market where a reasonably standardised product such as potatoes is sold and where a great number of buyers and sellers play a role. The curves that were used are important tools which reflect the operation of such a market. Very few markets can be regarded as being perfectly competitive – as we will see in the learning unit dealing with the public sector, elements such as market imperfections and monopolistic powers can also play a role, which makes it necessary to adapt our model. Consequently, it is necessary to be aware of the fact that the world is a mixture of competition and market imperfections. Nonetheless, with the necessary assumptions and reservation, our model remains an indispensable tool to analyse the real world.



Learning activity: Learning Unit 3

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F):***

		T	F
1.	The determinants of demand include a range of factors, such as the price of the product, the prices of other products and the income of households.		
2.	If the demand curve for good B shifts if there is a change in the price of good A, good B can be either a complement of or a substitute for good A.		
3.	An upward movement along a given demand curve is referred to as a decrease in quantity demanded.		
4.	If A and B are complements, a fall in the price of A will lead to an increase in the demand for B, that is, the demand curve for B will shift to the right, *ceteris paribus*.		
5.	An increase in the income of households is one of the possible causes of a rightward shift of a demand curve.		
6.	Supply refers to the quantities of a good or service that producers plan to sell at different prices.		
7.	A supply curve is an illustration of the quantities supplied at different prices, on the assumption that all other factors that can influence the quantity supplied remain unchanged.		
8.	An increase in the price of any of the factors of production will result in an upward (leftward) shift of the supply curve.		
9.	In their supply decisions, producers take account of the prices of all the alternative products they can produce.		
10.	An increase in the price of potatoes will lead to an increase in the quantity of potatoes supplied, *ceteris paribus*.		
11.	A market can be in equilibrium only if demand is equal to supply.		
12.	A market can be in equilibrium only if the quantity demanded is equal to the quantity supplied.		

13. At any price above the equilibrium price, there will be an excess demand for the good in question.
14. Excess demand for a good will put downward pressure on the price of the good.
15. If the price of television sets is lower than the equilibrium price, there will be an excess demand for television sets.

Review questions

1. The law of demand applies only when the price of other products _____.
2. The relationship between quantity demanded and price is called a demand schedule, and can be represented by means of a _____.
3. An increase in income will result in a movement (along/of) the demand curve.
4. The supply curve slopes (upwards/downwards) from left to right.
5. A change in the price of a product will result in a (movement along/shift of) the demand curve.
6. A change in the cost structure of a firm will be reflected in a _____ of the supply curve.
7. Consider the market for coffee in Utopia. For each of the following statements, explain whether it could be illustrated by a movement along the demand curve or by a shift of the demand curve. If the latter, would the curve shift to the left or to the right?

    7.1. The price of tea, a substitute for coffee, increases.
    7.2. The price of coffee decreases because of a large increase in coffee bean harvesting.
    7.3. The average household income in Utopia increases.
    7.4. The price of coffee in the domestic market increases because farmers want to export as many coffee beans as possible.
    7.5. The media reports widely on the medical advantages of coffee.

8. Consider the demand for CDs in South Africa. For each of the following statements, explain whether it could be illustrated by a movement along the demand curve or by a shift of the demand curve. If the latter, would the curve shift to the left or to the right?

    8.1. Due to low-cost Chinese imports, the price of CD players decreases sharply.
    8.2. People decide to listen to CDs rather than poor-quality tapes.
    8.3. Tapes, a substitute for CDs, become cheaper.
    8.4. The price of CDs decreases due to improved production techniques.

9. Consider the supply of cotton in Louisiana. For each of the following statements, explain whether it could be illustrated by a movement along the supply curve or by a shift of the supply curve. If the latter, would the curve shift to the left or to the right?

   9.1. A severe drought hits the cotton-producing areas in the Southern regions of the United States.

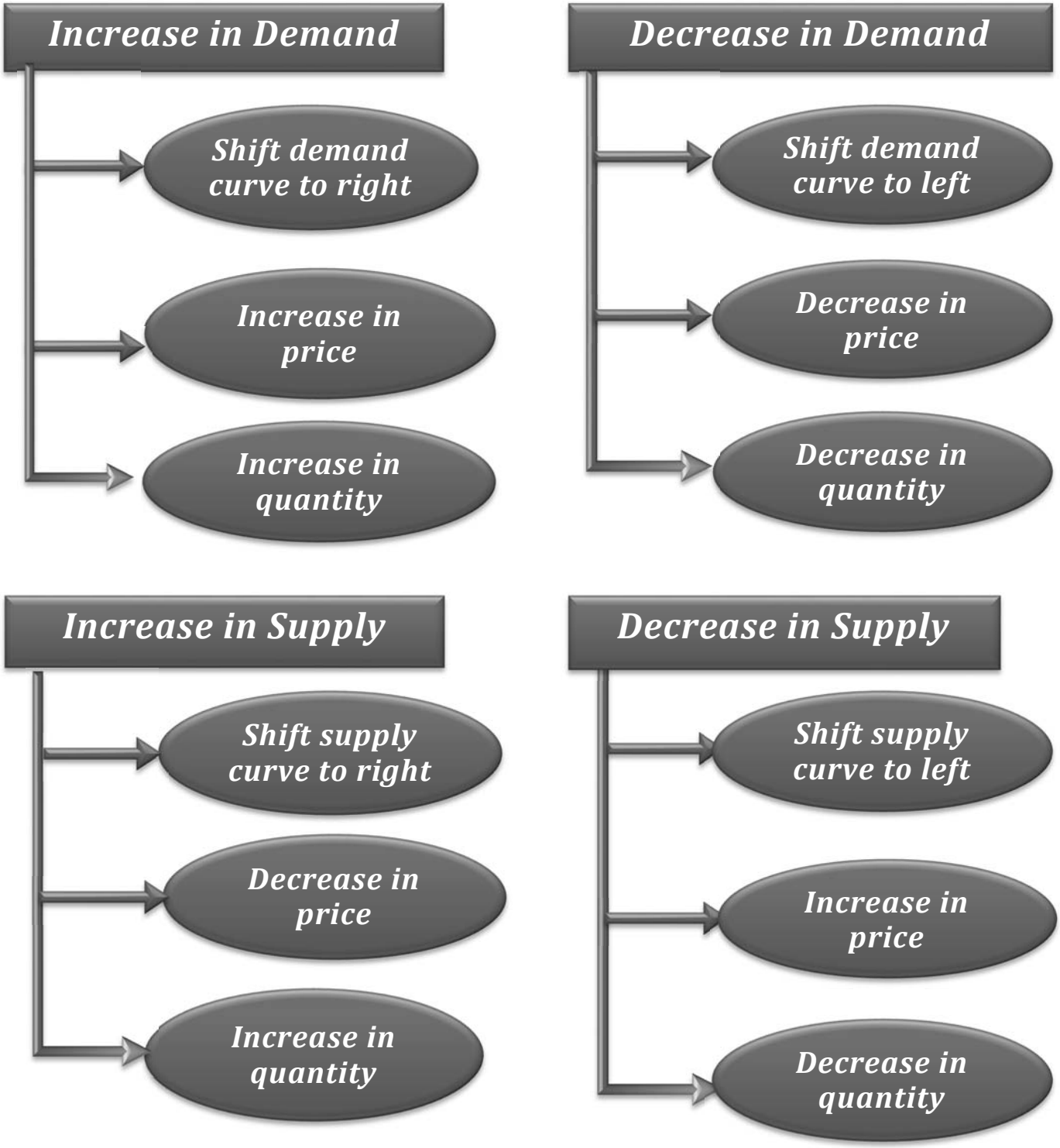
   9.2. Genetically modified seeds allow farmers to greatly increase the production of cotton.

   9.3. The government imposes minimum wage legislation on agricultural labour in Louisiana, which results in a 60% increase in the average wage of cotton farm workers.

Changes in Demand and Supply

Learning Unit 4

Mind map of Changes in Demand and Supply



Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- change in demand
- change in supply
- movement along a demand curve
- movement along a supply curve

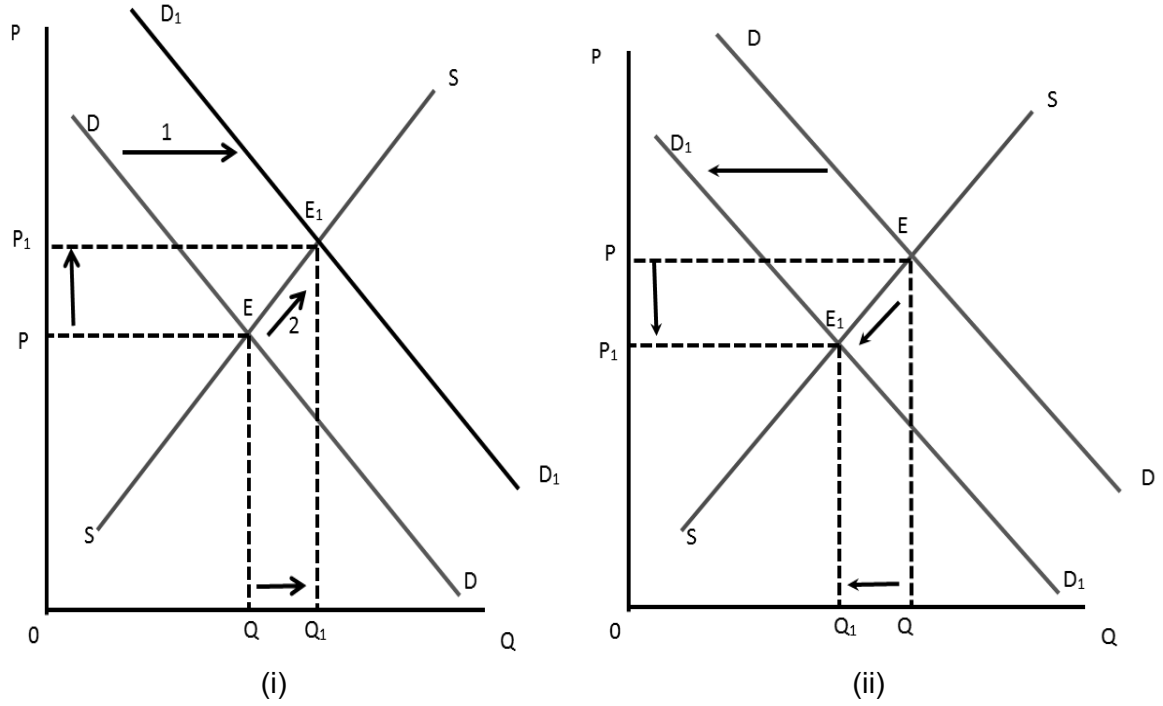
4.1 Introduction

We are now in a position to analyse the effects of changes in demand and supply on prices. In this learning unit the difference between movements along a curve and shifts of a curve becomes very important. From experience we know that a sudden reduction in the supply of a product (e.g. as a result of a severe drought affecting agricultural production) leads to an increase in food prices. Similarly, technological advances together with a drop in production costs lead to an increase in the availability of computer equipment and a consequent reduction in prices.

4.2 Changes in demand

We start with the effect of changes in demand on the price level. Figure 4.1(i) illustrates how an increase in demand (shift from DD to D_1 D_1 – arrow (1)) leads to an increase in price from P to P_1 on the vertical axis. At the same time there is a movement along the supply curve from E to E_1 (arrow (2). Also note that the equilibrium quantity sold on the market (measured on the horizontal axis) increased from Q to Q_1.

FIgure 4.1 The effect of a change in demand



In figure 4.1 (ii) we see the effect of a decrease in demand on the equilibrium price and quantity. Unlike when there is an increase in demand, there is now a decline in both the price and quantity sold on the market. Note that in both Figure 4.1 (i) and (ii) the change in the price level is accompanied by a change in the quantity in the ***same direction.*** This must be the case because the SS curve (which does not change in the analysis above) has a ***positive*** slope.

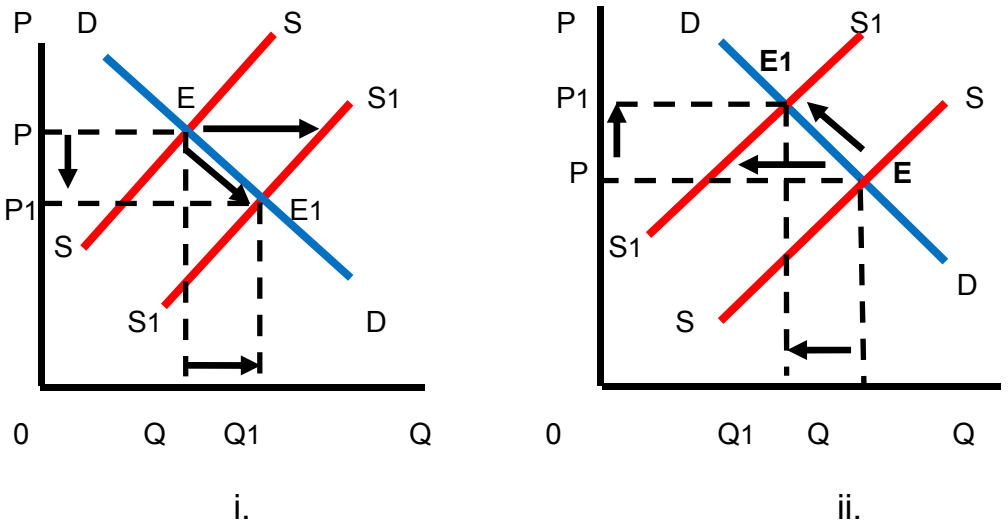
4.3 Changes in supply

In figure 4.2 the effect of changes in supply (due to changes in the cost structure of firms) is shown. Figure 4.2 (i) shows us what might have been happening in the computer industry during the past decade or more. As a result of technological factors (i.e. microchip production) the supply of computers increased from SS to S_1S_1. This rightward shift in supply resulted in a price reduction from P to P_1. At the same time the quantity of computers sold ***increased*** from Q to Q_1. You will notice immediately that the change in the quantity sold is in the opposite direction to that of the price change. This is obviously because the demand curve (which does not change) has a negative slope.

In figure 4.2 (ii) the situation of an increase in costs (e.g. because of wage increases) and the resultant upward shift of the supply curve from SS to S_1S_1 is shown. Once again the change in price is in the opposite direction to that of the change in quantity.

It is immediately clear that a situation such as the one depicted in figure 4.2 (ii) is highly unsatisfactory, since the increase in prices is accompanied by lower production levels. If such a situation is prevalent in all the firms of the economy we have what is known as ***stagflation***. The name is derived from the fact that we are faced with ***stagnation*** in production combined with ***inflation*** (price increases).

Figure 4.2 The effect of a change in supply



4.4 The ceteris paribus condition

You may have wondered why we used the expression "all other things remaining the same" when we discussed the demand schedule and the demand curve. For instance, the law of demand was defined specifically with reference to the *ceteris paribus* condition.

In order to derive the demand schedule for potatoes, we varied the price of potatoes and observed what would happen to the quantity bought in a specific time period when no other factors are allowed to change. This implied that when the price of potatoes changes, other factors such as income, the population size, the price of competing products or people's tastes were not allowed to change at the same time, since all these factors would give rise to a shift of the demand curve. Why did we do this? Because we wanted to isolate the effect of just a single factor, which in this case is the change in P, and determine how it influences Q. If all other things had changed at the same time, we would not have been able to say what the relationship between P and Q is.

4.5 Simultaneous change in demand and supply

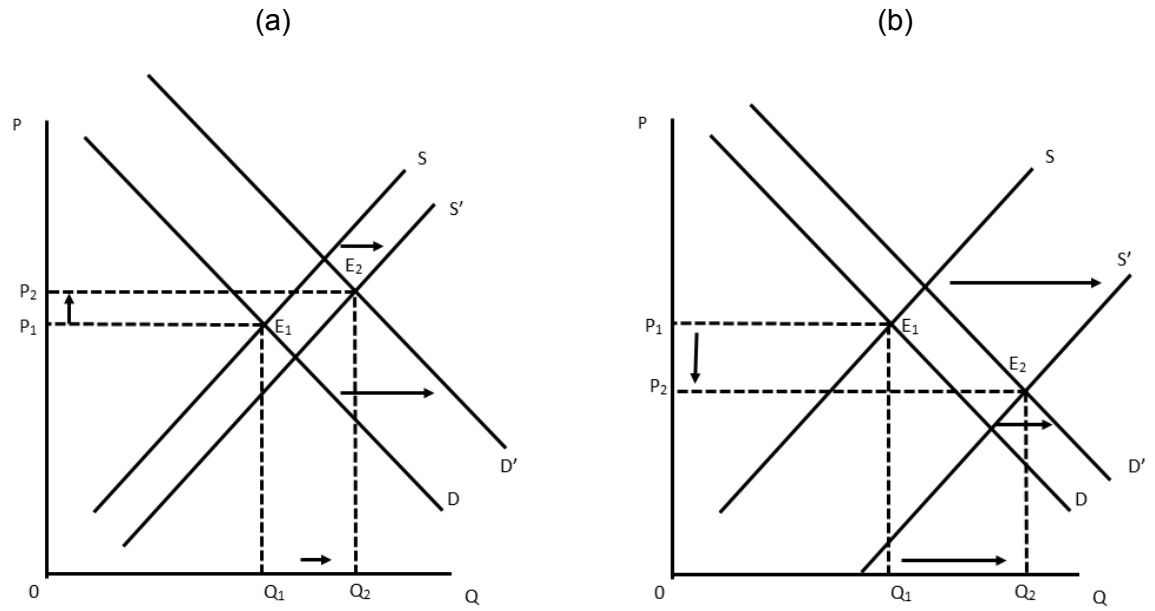
The importance of the *ceteris paribus* condition becomes even more apparent if we consider the possibility of a simultaneous shift in the demand and the supply curve.

We know that an increase in demand leads to an increase in price and an increase in quantity. We also know that a decrease in supply leads to an increase in price but a decrease in the quantity. When demand and supply changes simultaneously we can, however, not always be certain of the direction of the changes. Let’s look at examples.

Let’s consider the situation when we have a simultaneous increase in demand and supply. We are sure that the quantity will increase as both curves will shift to the right, but the change in the price level will depend on the extent of the changes in demand and supply.

Figure 4.3 illustrates this:

Figure 4.3 Simultaneous increase in demand and supply

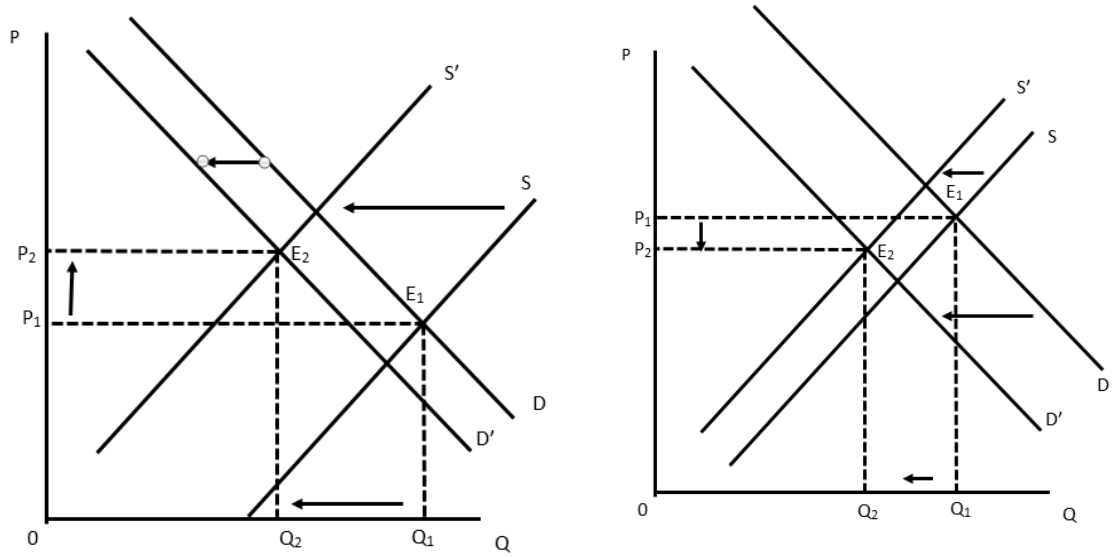


In panel (a) the increase in demand is relatively larger than the increase in supply, and this results in an increase in price. In panel (b) the increase in supply is relatively larger than the increase in demand and this results in a decrease in the price level. It is therefore not possible to predict whether the price level will increase, decrease or stay the same when both demand and supply increases unless we know the extent of the changes.

Similarly the direction of the change in the price cannot be predicted when both demand and supply decreases. As both the decrease in demand and a decrease in supply are illustrated by a leftward shift of the curves, we can predict with certainty that the equilibrium quantity will decrease. However, as shown in figure 4.4, the direction of the change in the price will once again depend on the relative changes in demand and supply:

Figure 4.4 Simultaneous decrease in demand and supply

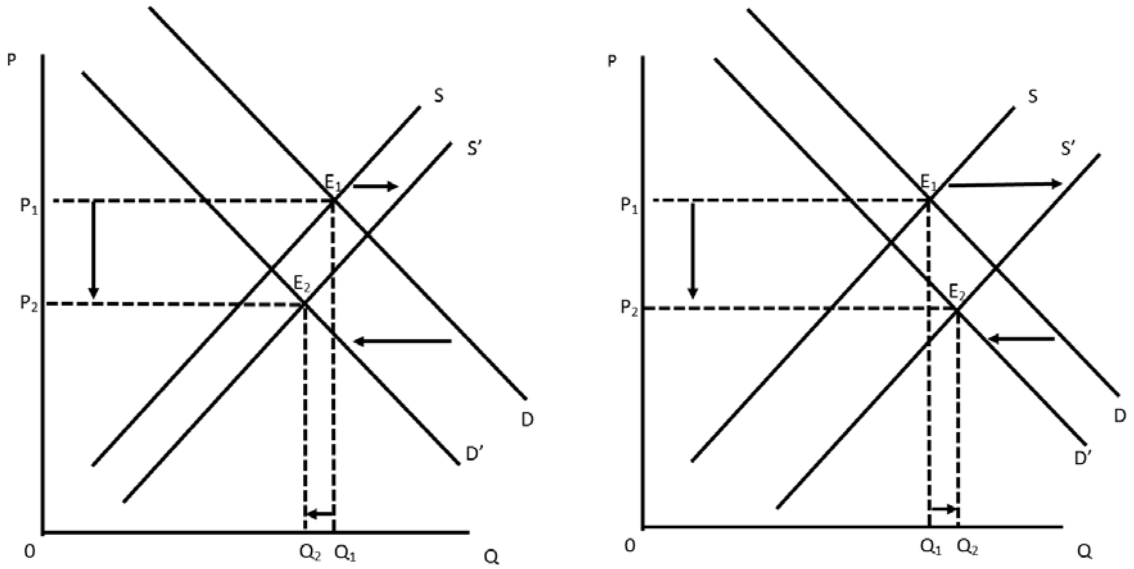
(a) (b)



When demand and supply changes in opposite directions, the direction of price can be predicted with certainty, because both curves will shift upwards or downwards, but the direction of the change in quantity will be uncertain. Figure 4.5 illustrates a decrease in demand and an increase in supply:

Figure 4.5 A simultaneous decrease in demand and an increase in supply

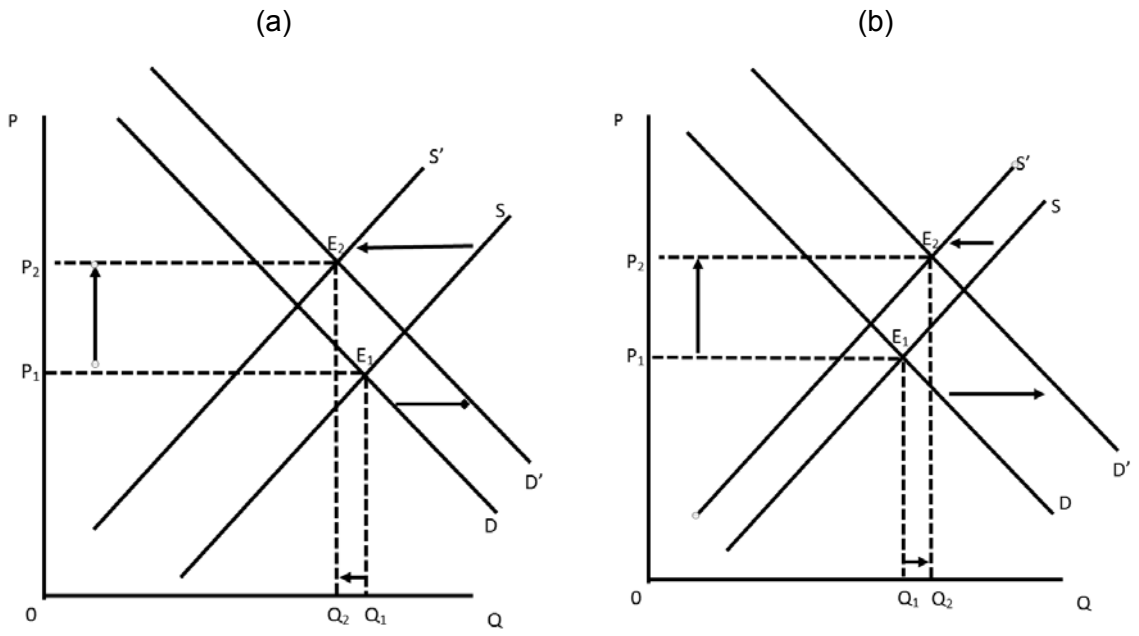
(a) (b)



In both panels the equilibrium price decreases, but in panel (a) the equilibrium quantity decreases while it increases in panel (b).

Similarly we can show that when there is a simultaneous increase in demand and a decrease in supply, the price will increase but the direction of the change in the equilibrium quantity cannot be predicted but will depend on the relative changes in demand and supply. Figure 4.6 illustrates this:

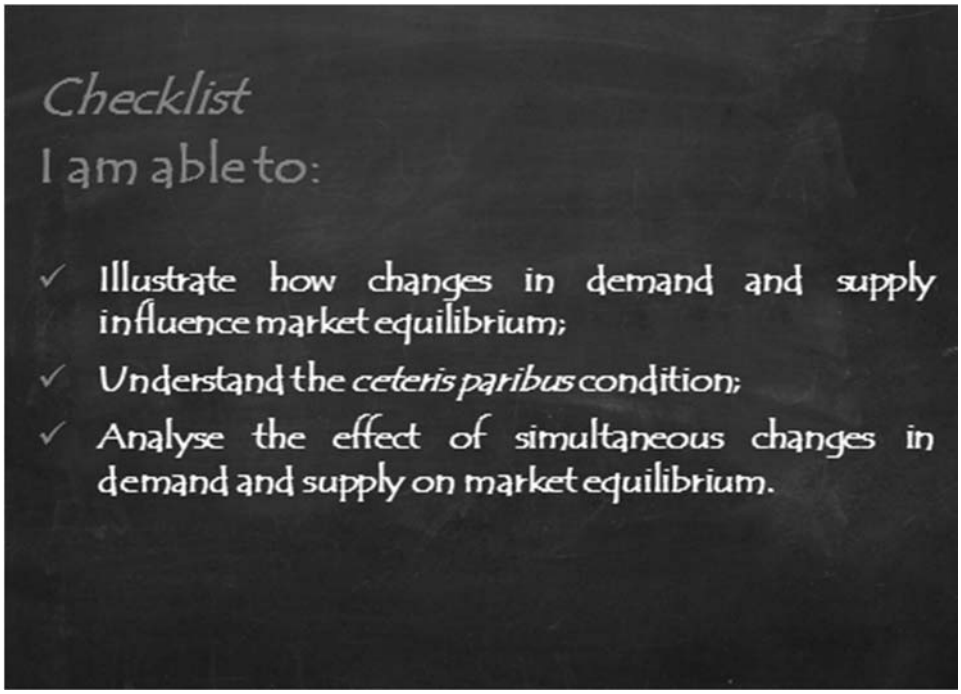
Figure 4.6 Simultaneous increase in demand and a decrease in supply



The following table provides a summary of the outcome if there are simultaneous shifts in both curves.

Table 4.1 Simultaneous shifts in the demand and supply curves

Change in demand	Change in supply	Change in price	Change in quantity
Increase	Increase	Uncertain	Increase
Increase	Decrease	Increase	Uncertain
Decrease	Increase	Decrease	Uncertain
Decrease	Decrease	Uncertain	Decrease



Source: Mohr *et al* (2008:139)

Learning activity: Learning Unit 4

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F):***

		T	F
1.	If the demand for watermelons were to increase, there would be a decrease in the price of watermelons, *ceteris paribus.*		
2.	An increase in the income of households will lead to an increase in the price of meat, *ceteris paribus*.		
3.	If the supply of oranges decreases, there will be an increase in the price of oranges, *ceteris paribus.*		
4.	An increase in the wages of workers in the clothing industry will lead to an increase in the price of clothing, *ceteris paribus.*		
5.	An increase in the productivity of workers in the motor vehicle industry will lead to a fall in the price of new motor vehicles, *ceteris paribus.*		
6.	If the supply of peaches were to increase and the demand for them were to decrease simultaneously there would be a decrease in the price of peaches, but the direction of the change in the equilibrium quantity of peaches would be impossible to predict accurately.		
7.	If the supply of and demand for bananas were to decrease simultaneously, both the equilibrium price of bananas and the equilibrium quantity would definitely decrease simultaneously.		
8.	A lower milk price (complement of tea) will shift the demand curve for tea to the left.		
9.	A higher coffee price (substitute for tea) will shift the demand curve for tea to the right.		
10.	A lower coffee price (substitute for tea) will shift the demand curve for tea to the right.		

Review questions

1. At a price higher than the equilibrium price, supply will be (greater/smaller) than demand.
2. At a price lower than the equilibrium price, demand will be (greater/smaller) than supply.
3. If an excess demand exists in the market the eagerness of buyers to buy the product will result in the price moving _____.
4. Equilibrium implies that market forces are in _____ with each other.
5. Consider the market for wheat. Using the standard notions of demand and supply, explain how the equilibrium price and quantity would change in each of the following situations, *ceteris paribus*:

    5.1 Due to the new Tim Noakes diet, people decide to eat less bread. (Wheat is one of the main ingredients in bread.)

    5.2 Farmers are growing more genetically modified wheat on a large scale, resulting in a significant rise in the wheat harvest.

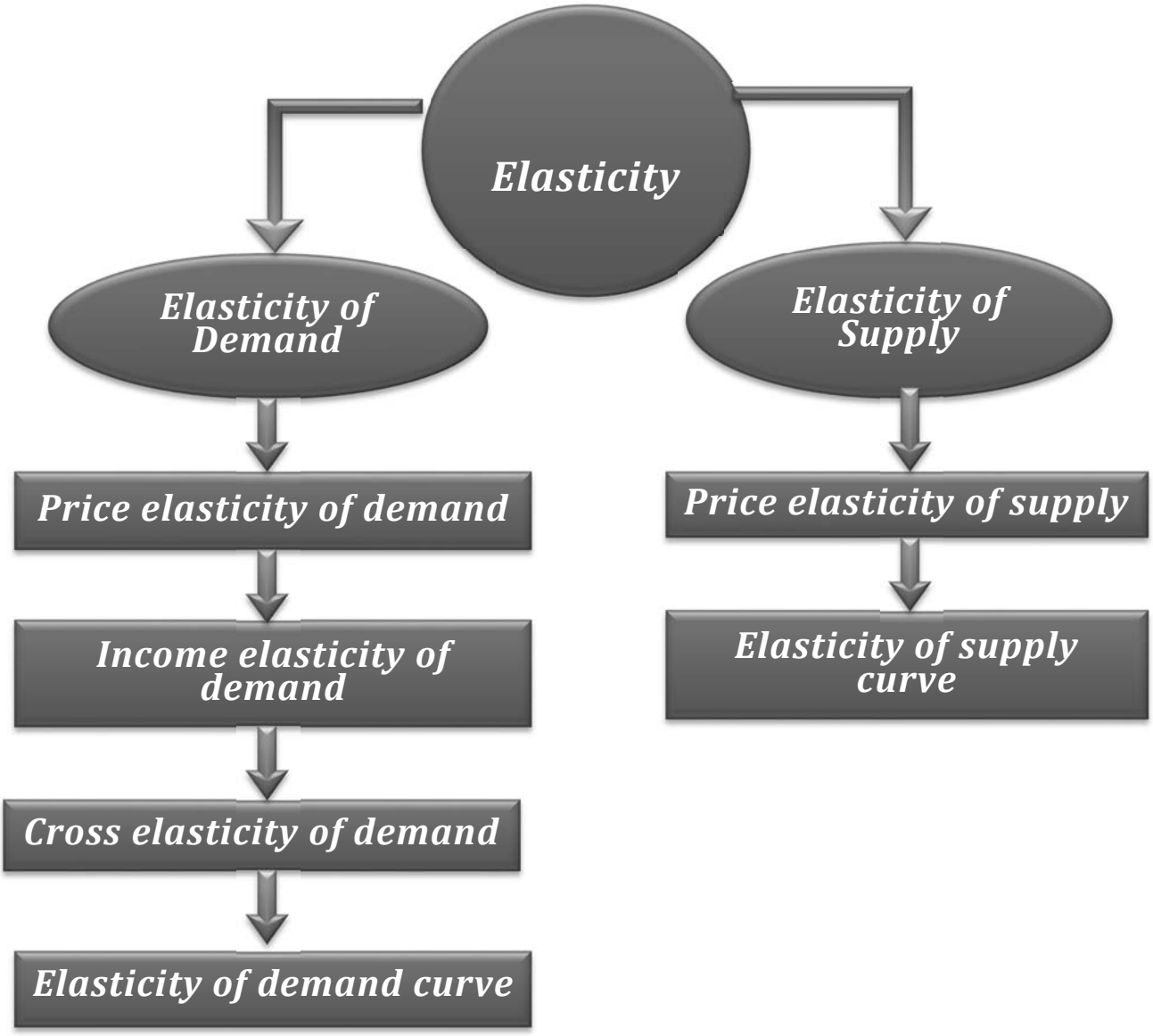
    5.3 The price of wheat is expected to increase.

    5.4 A large portion of the wheat harvest is destroyed by floods, while average consumer income increases at the same time.

Elasticity

Learning Unit 5

Mind map of Elasticity



Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- elasticity
- price elasticity of demand
- income elasticity of demand
- cross elasticity of demand
- price elasticity of supply
- inelastic demand and supply
- elastic demand and supply

5.1 Introduction

In this learning unit we will focus on the responsiveness of the quantity demanded and the quantity supplied to changes in the price and other determinants of the quantity demanded and supplied. We know that changes in demand and supply will lead to different responses in the market equilibrium and price, and we will now determine what the absolute or relative sizes of these changes in price and quantity are.

5.2 What is elasticity?

Elasticity can be defined as the ***measure of responsiveness or sensitivity***. When two variables are related, we want to measure the absolute or relative size of the percentage change in one variable that results from a 1% change in another variable. For instance, when the price rises by 1%, quantity demanded might fall by 5%. Therefore, the price elasticity of demand is -5.

In this learning unit we look at two different types of elasticities: price elasticity of demand and price elasticity of supply. The price elasticity of demand measures how sensitive the quantity demanded is to a change in the price of the good, while price elasticity of supply measures how sensitive the quantity supplied is to a change in the price of the good.

Examples of demand elasticities

- When the price of petrol rises by 1% the quantity demanded falls by 0.2%, so petrol demand is not very price sensitive. In this case the price elasticity of demand is -0.2.
- When the price of gold rises by 1% the quantity demanded falls by 2.6%, so gold demand is very price sensitive and the price elasticity of demand is -2.6.

Examples of supply elasticities

- When the price of Michelangelo paintings increases by 1% the quantity supplied doesn't change at all, so the quantity supplied of Michelangelo paintings is completely insensitive to the price. Price elasticity of supply is therefore 0.
- When the price of cheese increases by 1% the quantity supplied increases by 5%, so cheese supply is very price sensitive and the price elasticity of supply is 5.

5.3 Why economists use elasticity

Economists use elasticity because

- they want to compare the price sensitivities of different products with each other
- they want to determine whether one market is more price sensitive than another, for example, whether the oil market's demand is more price sensitive than wheat demand; or whether the labour supply of women is more wage sensitive than the labour supply of men
- elasticity is a unit-free measure
- if they compare markets using elasticities it does not matter how they measure the price or the quantity in the two markets
- elasticities allow economists to quantify the differences among markets without standardising the units of measurement.

Examples of unit-free comparisons

- ***Petrol and gold***

  It doesn't matter that petrol is sold by the litre for about R10.00 and gold is sold by the ounce for about $1 659.89. We compare the demand elasticities of -0.2 (petrol) and -2.6 (gold). Gold demand is therefore more price sensitive.

- ***Paintings and cheese***

  It doesn't matter that classical paintings are sold by the canvas for millions of dollars each while cheese is sold by the kilogram for about R69.99. We compare the supply elasticities of 0 (classical paintings) and 5 (cheese). Cheese supply is therefore more price sensitive.

Inelastic economic relations

When an elasticity is small (between 0 and 1 in absolute value), we call the relation that it describes inelastic.

- ***Inelastic demand*** means that the quantity demanded is not very sensitive to the price.
- ***Inelastic supply*** means that the quantity supplied is not very sensitive to the price.

Elastic economic relations

When an elasticity is large (greater than 1 in absolute value), we call the relation that it describes elastic.

- ***Elastic demand*** means that the quantity demanded is sensitive to the price.
- ***Elastic supply*** means that the quantity supplied is sensitive to the price.

5.4 Price elasticity of demand

*The **price elasticity of demand** measures the responsiveness of the quantity demanded to changes in the price of the product.*

General formula for price elasticity of demand

$$\text{Price elasticity of demand } (e_d) = \frac{\text{Percentage change in quantity demanded of a product}}{\text{Percentage change in price of the product}}$$

The elasticity measures the percentage change of one variable (e.g. Q) in terms of another (e.g. P). The price elasticity of demand is always negative. We refer to the price elasticity of demand by its absolute value (ignore the minus sign).

So, even though the formula says that the price elasticity of demand is negative, we would say the price elasticity of demand for oil is 0.2 and that for gold 2.6.

Let's look at an example:

Suppose that the quantity demanded of bottled water increase from 5 000 units per month to 6 000 units per month when the price of the water decreases from R5,00 to R4,50.

To calculate the price elasticity of demand:

$$Price\ elasticity\ of\ demand = \frac{percentage\ change\ in\ quanity\ demanded\ of\ bottled\ water}{percentage\ change\ in\ price\ of\ bottled\ water}$$

The percentage change in the quantity demanded of bottled water can be calculated as follows:

$$Percentage\ change\ in\ quantity\ demanded = \frac{change\ in\ quantity\ demanded}{quantity\ before\ change} \times 100$$

$$= \frac{1\ 000}{5\ 000} \times 100 = 20\%$$

The percentage change in the price of bottled water can be calculated as follows:

$$Percentage\ change\ in\ price = \frac{change\ in\ price}{price\ before\ change} \times 100$$

$$= \frac{-0{,}50}{5{,}00} \times 100 = -10\%$$

Now we can calculate the price elasticity of demand:

$$e_d = \frac{percentage\ change\ in\ quanity\ demanded\ of\ bottled\ water}{percentage\ change\ in\ price\ of\ bottled\ water} = \frac{20}{-10} = -2$$

As mentioned above we ignore the minus sign. Therefore we can say that the price elasticity of demand for bottled water is 2. This means that when the price of bottled water decreases by 1%, the quantity demanded of bottled water will increase by 2%.

There are five categories of price elasticity of demand:

- Perfectly inelastic demand: $e_p = 0$
- Inelastic demand: e_p lies between 0 and 1
- Unit elastic demand or unitary elasticity of demand: $e_p = 1$
- Elastic demand: e_p lies between 1 and infinite (∞)
- Perfectly elastic demand: $e_p = \infty$

When demand is inelastic it means that the quantity demanded will not change much when the price level changes. When demand is elastic the quantity demanded will be sensitive to a change in the price level. The larger the elasticity, the more the quantity demanded will change due to a certain change in the price level. Unitary elasticity of demand means that the percentage change in the quantity demanded will be exactly equal to the percentage change in the price level.

5.5 Income and cross elasticity of demand

*The **income elasticity of demand** measures the responsiveness of the quantity demanded to changes in income.*

General formula for income elasticity of demand

Income elasticity of demand (e_y) = Percentage change in quantity demanded of a product

Percentage change in consumers' income

Let's look at an example:

When the income level of a consumer is R400 000 a year he buys 20kg of meat a month. When his income increases to R600 000 a year, the consumer buys 50kg meat a month.

$$Percentage\ change\ in\ quanity\ of\ meat\ demanded = \frac{30kg}{20kg} \times 100 = 150\%$$

$$Percentage\ change\ in\ income = \frac{R200\ 000}{R400\ 000} \times 100 = 50\%$$

$$Income\ elasticity\ of\ demand = \frac{150\%}{50\%} = 3$$

Goods with a ***positive income elasticity*** of demand are called ***normal goods*** ($e_y > 0$). Normal goods are further classified as either ***luxury*** or ***essential goods***. If the income elasticity of demand is greater than 1, the good is called a luxury good ($e_y > 1$). If the income elasticity of demand is positive but less than 1, the good is called an essential good ($e_y < 1$). In our example the income elasticity of demand of meat was calculated to be 3, which shows that this consumer regards meat as a luxury good.

Goods with a ***negative income elasticity*** of demand are called ***inferior goods*** ($e_y < 0$).

*The **cross elasticity of demand** measures the responsiveness of the quantity demanded of a particular good to changes in the price of a related good.*

General formula for cross elasticity

$$\text{Cross elasticity of demand } (e_c) = \frac{\text{Percentage change in quantity demanded of product A}}{\text{Percentage change in the price of product B}}$$

In the case of ***substitutes*** (e.g. butter and margarine) the cross elasticity of demand is ***positive*** ($e_c > 0$), since a change in the price of one of the products will lead to a change in the same direction in the quantity demanded of the substitute product.

In the case of ***complements*** the cross elasticity of demand is ***negative*** ($e_c < 0$), since a change in the price of one of the products will lead to a change in the opposite direction in the quantity demanded of the complementary product.

Suppose that the price of butter increases from R50 a kilogram to R60 a kilogram. Due to this the quantity demanded of Margarine X increases from 800 000 tubs to 900 000 tubs per month. Let's calculate the cross elasticity of demand:

$$Percentage\ change\ in\ quanity\ of\ margarine\ demanded = \frac{100\ 000}{800\ 000} \times 100 = 12{,}50\%$$

$$Percentage\ change\ in\ price\ of\ butter = \frac{R10}{R50} \times 100 = 20\%$$

$$Cross\ elasticity\ of\ demand = \frac{12{,}5\%}{20\%} = 0{,}625$$

Butter and margarine are substitutes. That is why the cross elasticity of demand is positive.

Suppose that the quantity of hot-cross buns demanded decreases from 300 000 per month to 250 000 per month due to the increase in the price of butter. Let's calculate the cross elasticity for this change:

$$Percentage\ change\ in\ quanity\ of\ hot-cross\ buns = \frac{-50\ 000}{300\ 000} \times 100 = -16{,}67\%$$

$$Percentage\ change\ in\ price\ of\ butter = \frac{R10}{R50} \times 100 = 20\%$$

$$Cross\ elasticity\ of\ demand = \frac{-16{,}67\%}{20\%} = -0{,}834$$

Note that the quantity of hot-cross buns demanded *decreased*, that is percentage change in the quantity of hot-cross buns demanded has a negative value. The negative value of the cross-elasticity of demand indicates that butter and hot-cross buns are complements, i.e. goods that are used together.

5.6 Price elasticity of supply

*The **price elasticity of supply** measures the responsiveness of the quantity supplied of a product to changes in the price of the product.*

General formula for price elasticity of supply

$$\text{Price elasticity of supply } (e_s) = \frac{\text{Percentage change in quantity supplied of a product}}{\text{Percentage change in price of the product}}$$

There are five categories of price elasticity of supply:

- Perfectly inelastic supply: $e_s = 0$
- Inelastic supply: e_s greater than 0 but smaller than 1
- Unit elastic supply or unitary elasticity of supply: $e_s = 1$
- Elastic supply: $e_s > 1$
- Perfectly elastic supply: $e_s = \infty$

Let's consider an example. When the price of Fido Dogfood increases from R50 per bag to R55 a bag, the supply of Fido Dogfood increases from 500 000 units to 510 000 units per week.

$$Percentage\ change\ in\ quanity\ supplied = \frac{10\ 000}{500\ 000} \times 100 = 2\%$$

$$Percentage\ change\ in\ price = \frac{R5}{R50} \times 100 = 10\%$$

$$Price\ elasticity\ of\ supply = \frac{2\%}{10\%} = 0{,}2$$

The value of the price elasticity of Fido Dogfood indicates that the supply of the dogfood is inelastic. The value is greater than 0 but less than 1. This means that the

supply of Fido Dogfood is not very sensitive to price changes. The reasons for this may be that the factory cannot expand production in the short run due to capacity constraints. In the long run the situation may be different.

5.7 The elasticity of demand and supply curves

The demand for some products is more sensitive to price changes than the demand for others. When the price of pepper decreases significantly, people will probably not buy more pepper just to take advantage of the price reduction. Would anyone you know buy a huge bag of pepper just because there had been a drop in its price? One can therefore say that the demand for pepper is relatively insensitive to price changes. On the other hand, should the price of meat decrease drastically, one could expect the quantity demanded to increase significantly. Many people who could not afford to buy meat previously would probably start buying meat.

The shape of the demand curve or supply curve for a certain good provides a graphic illustration of the elasticity of such a curve. The most significant feature in this regard is the difference in the slope (or gradient) of the curves. Demand and supply curves will normally have the same shape, falling from left to right in the case of demand (according to the ***law of demand***), and rising from left to right in the case of supply (according to the ***law of supply***) but the slope or gradient of both curves may vary from being vertical parallel to the price axis to being horizontal parallel to the quantity axis. The vast majority of curves will not be linear, but will really be curved (non-linear), as the name suggests.

In figure 5.1 we show the different linear shapes the demand curve may have. You will notice that we use the economic term “elasticity" to describe the differently sloped curves. Elasticity means the same as ***sensitivity.*** It measures how sensitive the quantity demanded is to a change in the price level. A vertical demand curve is perfectly price inelastic because any change in the price level has no effect on the quantity demanded. On the other hand a demand curve that is horizontal (parallel to the quantity axis) is perfectly price elastic because the quantity demanded can change without any change in the price level. In between these two extreme cases the demand curve can have various degrees of elasticity.

Figure 5.1 Different Elasticities of Demand Curves

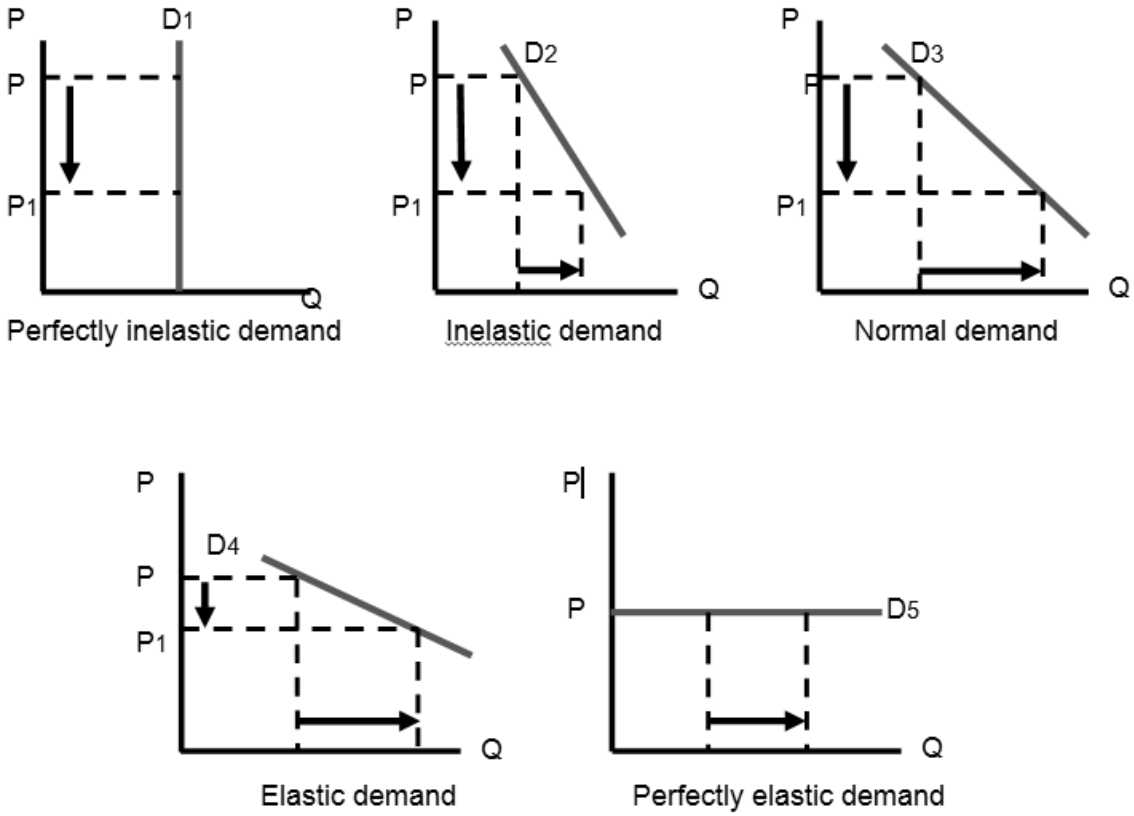
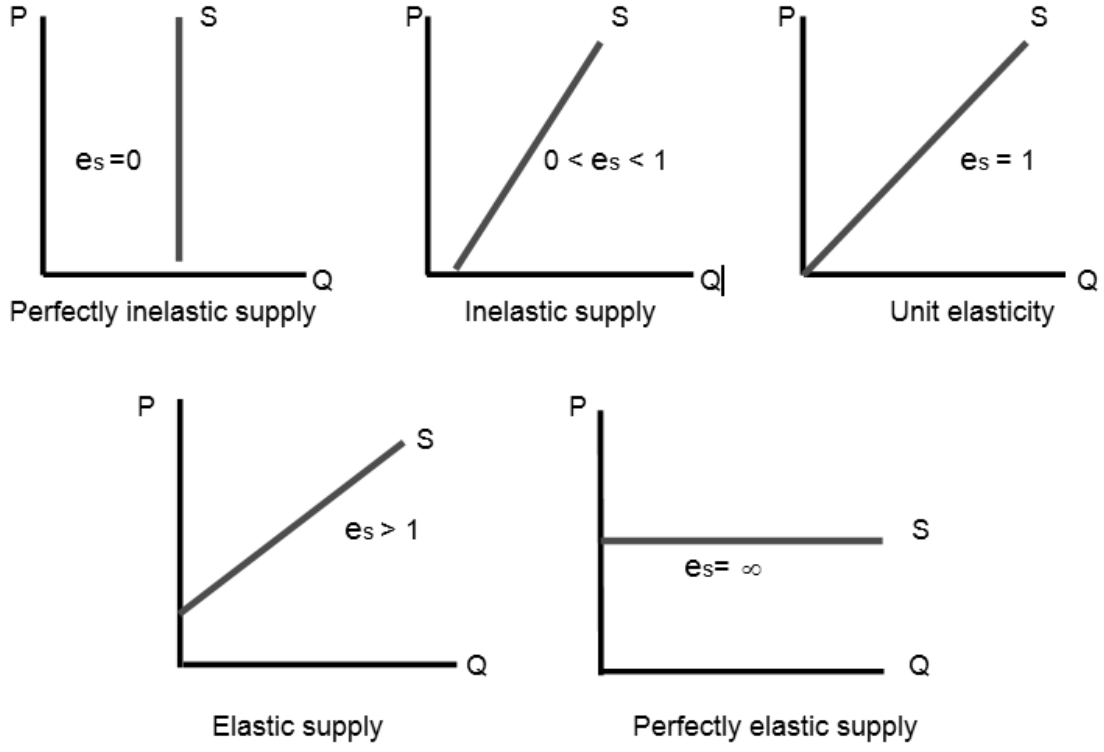
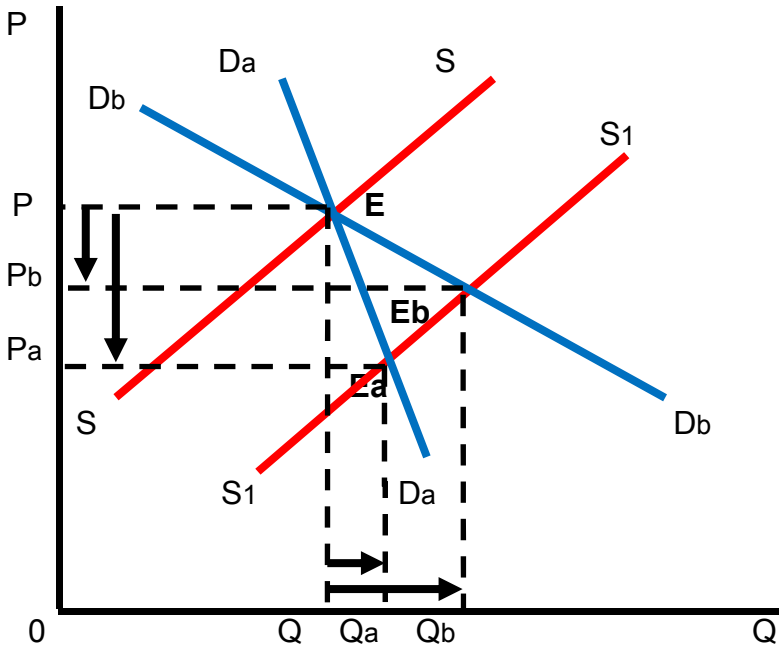


Figure 5.2 Different Elasticities of Supply Curves



In figure 5.3 we see the effect of a change in supply (shift in the supply curve) on two products with different price elasticities of demand. The demand curves for product ***a*** and product ***b*** are shown. Product ***a*** has a relatively inelastic demand curve and product ***b*** has a relatively elastic demand curve.

Figure 5.3 The Effect of Different Price Elasticities of Demand



The sales of product ***a*** with the inelastic demand curve increase from Q to Qa only with a large drop in the price level from P to Pa.

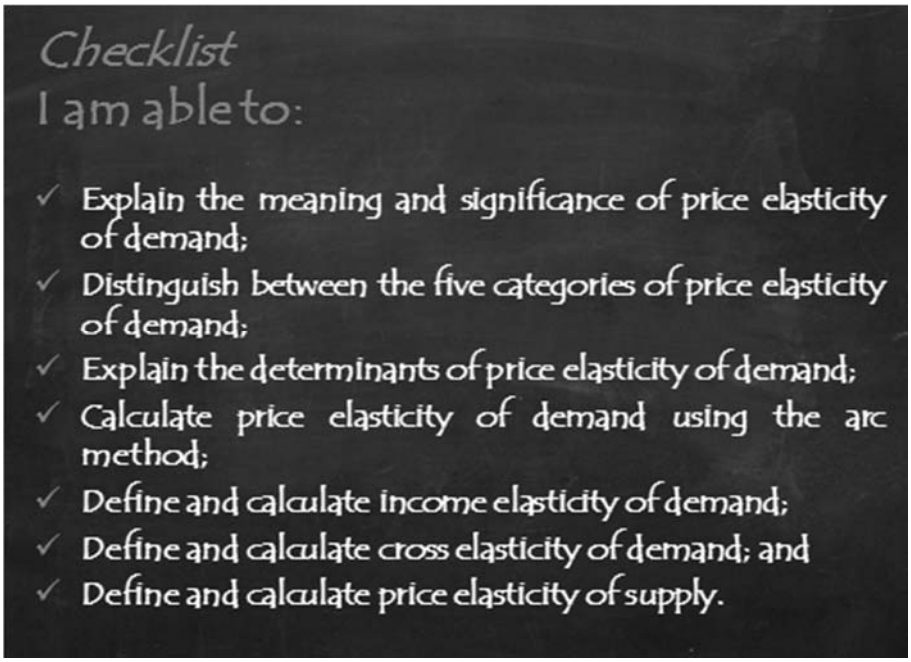
The sales of product ***b*** with the elastic demand curve increase substantially from Q to Qb with a very small drop in the price level from P to Pb.

Numerous reasons can be given for differences in the price elasticity of products, but the most important is the availability of substitutes for the product. The more substitutes there are for the specific product, the more price elastic its demand curve will be, *ceteris paribus*. Examples of products and their substitutes are butter and margarine, apples and pears, beef and mutton and bus tickets and Metrorail tickets. The closer the degree of substitution, the more elastic the demand for the product. Obviously the absence of substitutes will make the demand for a product inelastic – people have to buy the product, irrespective of the price.

Complementary products (i.e. products that are used together with other products), on the other hand, tend to have a low price elasticity of demand. The demand curve for these products will normally be fairly steep. Examples of complementary products are car tyres and cars and DVDs and DVD players.

Another general observation one can make is that the demand for goods which form part of the basic needs of people, for example, staple foods such as bread, rice or potatoes, tends to be less elastic than the demand for luxury or non-basic goods. Hence the relatively inelastic shape of the demand for many agricultural products.

The ***price elasticity of supply*** measures the way in which the supply of a product reacts to a change in the price of the product. What is critically important here is the ***length of time*** between the price change and the resultant change in supply. In the short run most supply curves are inelastic (steep) because producers are unable to react immediately to price changes. To increase production normally takes time. In the long run the production capacity of most firms can be increased/decreased in response to a price increase/decrease.



Learning activity: Learning Unit 5

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

	T	F
1. If the price elasticity of the demand for chocolates is greater than 1, then the manufacturers of chocolates can increase their total revenue by raising the price of chocolate.		
2. The producers of a product with an elastic demand will have a strong incentive to reduce the price of their product.		
3. If a 10% increase in the price of good A results in a 5% reduction in the quantity of A demanded, then the price elasticity of the demand for A is more than 1.		
4. Necessities tend to have a low price elasticity of demand, while luxury goods tend to have a high price elasticity of demand.		
5. The price elasticity of the demand for steak will be greater than the price elasticity of the demand for meat.		
6. Income elasticity of demand is a measure of the responsiveness of quantity demanded to changes in consumers' incomes.		
7. A good with an income elasticity of demand that is positive but less than 1 is classified as an inferior good.		
8. When two goods are totally unrelated, the cross elasticity of demand value will be negative.		
9. Apples and pears are substitute goods for each other. The cross elasticity value for apples and pears will be negative.		
10. If there is an increase in the price of electricity, a complement in consumption to T-shirts, then the quantity of T-shirts demanded will decrease and the cross elasticity value for these two goods will be negative.		

Review questions

1. Define each of the following terms:

    1.1 Price elasticity of demand
    1.2 Income elasticity of demand
    1.3 Cross-price elasticity of demand
    1.4 Price elasticity of supply

2. State the numerical values of the price elasticity of demand for which the demand is

    2.1 perfectly elastic
    2.2 relatively inelastic
    2.3 relatively elastic
    2.4 unit elastic
    2.5 perfectly inelastic

3. The income elasticity coefficients of demand for motor cars and branded clothing have been estimated to be +3.4 and +2.0 respectively. Explain these coefficients.

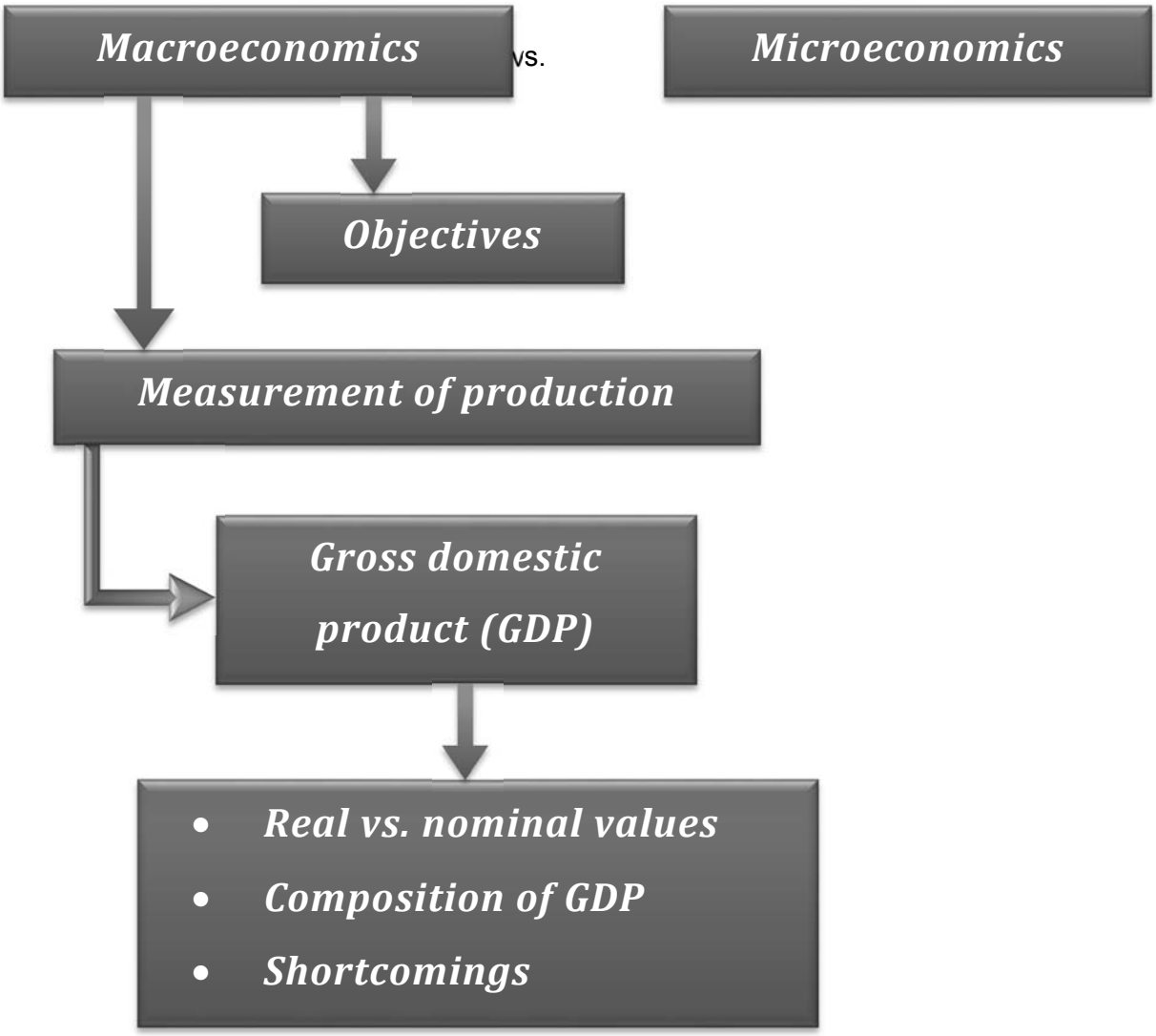
4. Consider two goods, product A and product Q. The price of product A increases from R6 to R8 per unit, and as a result the quantity demanded of product Q decreases from 200 to 190 units.

    4.1 Calculate the cross-price elasticity of demand, using the arc elasticity formula, given the information above.
    4.2 Are product A and product Q substitutes or complements?
    4.3 What are possible real-life examples of goods such as product A and product Q?

Measuring Economic Performance

Learning Unit 6

Mind map of Measuring Economic Performance



Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- microeconomics
- macroeconomics
- macroeconomic objectives
- gross domestic product (GDP)
- double counting
- real vs. nominal values
- shortcomings of GDP
- implicit GDP deflator

6.1 Introduction

When you can measure what you are speaking about and express it in numbers, you know something about it; when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meagre and unsatisfactory kind; it may be the beginning of knowledge, but you have scarcely, in your thoughts, advanced to the stage of science.

- Lord Kelvin -

6.1.1 Microeconomics as opposed to macroeconomics

Before going any further it is important to make a clear distinction between the two main areas of study in economics, namely ***macroeconomics*** and ***microeconomics***. In the previous units we did not refer to them specifically. Although macroeconomics and microeconomics can almost be viewed as two separate branches of economics, we need some knowledge of microeconomics and the basic instruments for analysing it before we are able to understand macroeconomics properly. It is precisely for this reason that we looked at the most important aspect of microeconomics, namely price formation, which is a result of the interaction between the forces of supply and demand, in the previous two learning units.

The two areas of study can be defined as follows:

*In **microeconomics** the prices and quantities of specific goods and services are studied in individual markets and an attempt is made to explain changes in these markets.*

The prefix "micro" is derived from the Greek word *mikro,* meaning ***small***. Microeconomics is therefore not concerned with the big picture or the economy as a whole, but instead concentrates on decisions of individual consumers or firms. This definition can easily be identified in the content of the previous units, as there we looked at the factors that determine the price of individual goods and services. We saw how the forces of supply and demand come into play in determining how much of a good or service will be bought or sold and at what price the transaction will take place. Because the emphasis in microeconomics is mainly on the ***prices*** of goods and services, it is also known as ***price theory.***

*In **macroeconomics** we study the economy as a whole. Here we look at global economic magnitudes such as the total production of a country, total employment, and the inflation rate.*

The prefix "macro" is derived from the Greek word *makro*, meaning ***large.*** Once more it should be clear that the economic environment as we described it in the first learning unit is approached from a macroeconomic perspective. The fact that we combined individual markets to form global markets such as the ***market for consumer goods*** and the market for ***factors of production*** clearly indicates the macroeconomic element of that learning unit.

In microeconomics it would, for example, be possible to look at events in specific markets without having to worry about their possible impact on the rest of the economy. We could analyse the effect of a sudden decrease in the supply of potatoes on the price of potatoes without having to study the effects on South Africa's export achievements or total agricultural production. In macroeconomics, where by definition we look at the whole economy, such an individual or micro analysis cannot be done.

6.1.2 Macroeconomic objectives

As you will realise, it is difficult to observe the detailed effects of events in one particular market on the whole economy. Determining the resulting influences of the effect of prices and quantities on the whole range of goods and services produced in a country is an almost impossible task. In an attempt to solve this problem, macroeconomists have tried to simplify the economic system by means of ***aggregation.*** Aggregation, which means "combining", enables us to combine separate markets and then to view the whole as a single market or system. This allows us to identify different facets of the economy more easily. The degree of aggregation will depend on the specific macroeconomic problem we wish to investigate. It has, for example, become useful to divide the total production in a country into the contributions by sectors such as agriculture, mining and manufacturing. It is just as useful to group the various actors in the economic process according to their activities as ***households*** or consumers, ***business enterprises,*** the ***authorities*** and so on, so that their actions or reactions can be observed individually. By making use of ***combined markets***, to which reference has already been made, we can limit the number of markets to a controllable few.

Owing to the fact that we work with aggregates in a market economy and that the welfare of a country's population is closely related to these aggregates, we can expect that the government in a market economy will strive to achieve certain macroeconomic objectives. The field of study of macroeconomics is therefore heavily involved with economic policy. Greater priority is given to policy in macroeconomics than in microeconomics. The task of the macroeconomist, who is concerned with policy, is to show how the different policy instruments, such as fiscal and monetary policy (which will be discussed further in learning units 8 and 9), can be applied to achieve certain objectives.

A balanced economic policy framework usually takes the following important ***policy objectives*** into account:

i. ***Full employment.*** It is of the utmost importance to ensure that the available factors of production are used to their full capacity. Apart from the material poverty that the unemployed suffer, there is also the socio-economic effect of such. In South Africa, as in most other countries, unemployment poses a serious threat to social and political stability. Full employment can rightfully be regarded as South Africa's most important economic objective.

ii. ***Price stability.*** Even though the desirability of a low rate of inflation is less clear than the objective of full employment, it is generally accepted as being one of the most important aims of macroeconomic policy makers. Rising prices are not a problem in themselves, but their effects on certain sectors and groups are viewed as being undesirable. We will examine this more closely in the next unit.

iii. ***External equilibrium.*** All countries strive to reach a certain level of trade relations with other countries in order to increase their welfare. One of the most notable characteristics of the South African economy is precisely the country's dependence on the outside world (in terms of both imports and exports) to maintain a healthy level of economic growth. A balance between the value of imports and exports is of the utmost importance to ensure that the country will be able to pay for necessary imports. Policy must therefore ensure that the balance of payments (a statement of all transactions with foreigners) is in equilibrium and that the exchange rate (the value of the currency against foreign currencies) remains relatively stable as a result of this. We will pay more attention to these factors in learning unit 10.

iv. ***Economic growth***. Because of the positive relationship between economic growth and employment, this objective is often included in the objective of full employment. The aims of economic growth are probably traditionally viewed separately because

they are associated with longer-term problems. Here the emphasis is more on the climate that will encourage growth rather than on the measures to stabilise aggregate demand over shorter periods and in so doing achieve an acceptable level of employment. As opposed to the other two objectives, price stability and external equilibrium, which are sometimes incompatible with the achievement of full employment, economic growth is complementary to higher employment and should therefore enjoy a high priority in the South African context. We will discuss the calculation of economic growth later in this learning unit and also in the next one.

Besides the traditional policy objectives which we have identified, every country will naturally have certain characteristics of its own that will pose special challenges for policy-makers. South Africa has no shortage of such unique circumstances. We need think of only a few of the most important problem areas which must each be accounted for in a special way when policy is being formulated: the gold mining industry and the unique role that gold plays in the South African economy; the agricultural sector, which because of climatic conditions has always demanded special treatment; and certain aspects of South Africa's political and community problems, such as the unequal distribution of income, which still poses a huge problem despite political reforms that have taken place. It is probably fair to say that in South Africa's case we could add a ***fifth*** macroeconomic objective to the four traditional objectives, namely ***an equitable distribution of income***.

In the next unit we will look at different measures of inequality used by economists.

6.2 The measurement of production

6.2.1 The importance of national accounts

The various objectives identified above are meaningless unless there is some or other yardstick against which they can be measured. Owing to the activities of institutions in the public sector which have been allocated this task, there is a lot of sufficiently reliable information on the above-mentioned variables in the macro economy. The objectives of external balance and price stability are measured by means of yardsticks such as the ***balance of payments*** and ***price indices*** such as the consumer price index respectively. Unfortunately less information exists on the level of ***employment*** in South Africa. In other countries such as the USA, where reliable unemployment figures exist, the level of

employment (i.e. the percentage of the total economically active population) can be measured relatively accurately. Although South African unemployment statistics are published annually, they are incomplete, as they include only the registered unemployed (more on this in learning unit 7).

The most important need in macroeconomics is to have a means of measuring the total economic activity in a country. You often hear questions such as: What is happening in the economy? What is the economic growth going to be this year? All these questions are related to the level of economic activity in a country. Economic activity is best reflected by the total production that takes place in an economy. The more that is produced, the higher economic growth will be, and the closer the economy will be to full employment. The ***national accounts*** provide information on the total production over a particular period. The compilation of these accounts is the responsibility of the South African Reserve Bank (SARB) and Statistics SA. These institutions can, in other words, be regarded as the "bookkeepers" of the economy, seeing that the accounts provide a full record of the total production, income and spending that takes place in a country.

The more important national accounts variables estimated by these institutions are

- gross domestic product (GDP)
- gross national income (GNI)
- gross domestic expenditure (GDE)
- disposable income of households
- gross and net capital formation.

This information enables the government to formulate sensible economic policies which can encourage the macroeconomic objectives mentioned above. The most comprehensive macroeconomic measure of total production (and therefore economic activity) is the gross domestic product (GDP). Even though this measure has a number of shortcomings, it is still the best measure of economic activity in South Africa. The next section is devoted to the measurement of the GDP.

6.2.2 Gross domestic product (GDP)

***GDP** may be defined as the total value of all final goods and services produced within the boundaries of a country during a certain period (usually a year).*

This definition seems quite clear and simple at first. Yet it contains a number of problems and ambiguities peculiar to the measurement of any macroeconomic total. The first concept in the definition which requires more detailed discussion is the word ***value.***

What does the "value" of all goods and services mean? How is it possible to combine the endless variety of goods and services into a unitary measure termed "value"? Is it possible to add together products such as shoes, clothing, medical services, bread and meat to create a meaningful whole?

The obvious solution to the above problem is to use ***prices*** as the link to combine goods and services in a measure of total output or production. The justification for the use of prices as "weights" to measure the relative importance of goods and services lies in microeconomic principles. The price consumers are prepared to pay for a commodity or service is a reflection of the value they attach to it. This principle logically leads to the conclusion that a car, for example, will count for more than a loaf of bread in such a total measure.

To calculate the GDP, all the goods and services produced during the period concerned are multiplied by their prices and then added together to yield the total ***value*** of the GDP. The prices used for this purpose will be the ***market prices*** paid for the various goods and services during the year.

6.2.2.1 Double counting and how to avoid it

The next concept in the definition of the GDP to be discussed is ***final*** goods and services. Final goods and services can be distinguished from ***intermediate*** goods and services on the basis that they are bought by consumers for final use. Any commodity or service purchased for reselling or processing (by processing we mean use in another production process), is regarded as an ***intermediate*** commodity or service and does not form part of the GDP. The intention of the buyer when buying a good is therefore very important when a distinction must be made between final and intermediate goods and services.

Examples of intermediate goods are wheat, which is bought by a miller from a farmer to produce bread, or a battery bought by a motor manufacturer to fit into a new car. However, when I buy a new battery to replace my old battery it is regarded as a final product, because I am the final consumer of the product. Also, when I as a motorist buy a car, the new battery (included in the price of the car) will be regarded as part of the final product. In calculating the GDP we do not include the value of intermediate goods and services, since this leads to ***double counting***.

Here is a simple example to explain the difference between final and intermediate goods.

i. Suppose a farmer produces 1 000 bags of wheat, which he sells to a miller at R10 per bag.
ii. The miller processes the wheat into flour, which he then sells to a baker for R12 500.
iii. After using the flour to bake bread, the baker sells the bread to a shop for R18 000.
iv. The shop subsequently sells the bread to final consumers for R21 000.

These transactions may be summarised as follows:

	Value of sales	**Value added**
	Rand	Rand
Farmer	10 000	10 000
Miller	12 500	2 500
Baker	18 000	5 500
Shopkeeper	21 000	3 000
TOTAL	R61 500	R21 000

The total value of all the transactions (R61 500) cannot, as a whole, be regarded as part of the GDP. Although the miller sold goods for R12 500, he did not ***produce*** goods to the value of R12 500. The farmer has already contributed R10 000 to the production of the flour. This means that the amount of R61 500 includes ***double counting*** to a considerable extent.

6.2.2.2 Three methods to calculate GDP

There are three methods for calculating the value of the GDP without double counting.

(1) By counting only the value of those transactions where a commodity reaches its final destination. As a result only those transactions between the shop and its customers, a total of R21 000, are taken into account, since only the bread has actually been produced in this process. This method of accounting is also known as the ***expenditure approach***. If we go back to the economic circuit in learning unit 1, we see that the value of the GDP could in principle be calculated according to the expenditure method on the market for consumer goods. The market for consumer goods is by implication the market where ***final*** goods and services are sold.

(2) By counting, in each transaction, only the ***value added*** (i.e. the addition to the value of the output). This is shown in the second column above and yields the same result as in (1), namely R21 000. This method is known as the ***production method***.

It is interesting to note that a very important ***equality*** of national income accounts exists. From the above derivation it is obvious that the total expenditure (or spending on final goods and services) is in principle equal to the total value of production. From the example of the bread, it has, however, already become evident that with the expenditure method (adding up the market values of all ***final*** goods) the same result is achieved as with the value-added approach (the adding together of the values added at each stage of the production process). And this should be so, because the value of final goods must necessarily be made up of the successive values added to the raw materials in the different stages of production.

(3) It is also true that the value of production (i.e. all final goods and services) is exactly the same as the income which is paid to the owners of the factors of production. In other words, the compensation paid to labour (wages and salaries), capital (interest), natural resources (rent) and entrepreneurship (profit) is conceptually equal to the total value of production. By adding wages and salaries, interest, rent and profits we can

calculate the value of the GDP through the ***income method.*** Because the income earned by the owners of factors of production is spent on goods that are produced, in principle, total income must also equal total expenditure.

The following identity or equation therefore always holds true for national accounts:

PRODUCTION (P) = INCOME (I) = EXPENDITURE (E)

This identity, which we also encountered in learning unit 1, ensures that the three methods of calculating the GDP (i.e. the production, income and expenditure methods) will conceptually lead to the same result.

One final remark on the definition of the GDP is that only the goods and services produced in a particular year are included in the GDP. It therefore concerns primarily the ***production*** of new products during a specific period. Remember, it does not concern ***sales*** over a specific period. For example, the resale of any second-hand article (say a house or a car) would not form part of the GDP. Nor do activities on the stock market affect the GDP in any way.

6.2.3 Real versus nominal values

In the above discussion, we often referred to the "value" of all final goods and services produced in a particular year. However, we have not really explained which "market prices" must be used to express the goods and services in money terms. In this respect it is important to distinguish between ***real*** and ***nominal*** values. Let us first have a look at the meaning of nominal values.

The nominal value of the GDP in a particular year is measured in terms of the prices that were applicable in that particular year. In this sense “nominal” means “in monetary or rand terms”. We can therefore say that 2010 prices were used to calculate the nominal GDP in 2010, whereas 2011 prices are applicable when measuring the nominal GDP in 2011. In other words, the ***ruling*** market prices in a particular year will always be used to calculate the nominal GDP in that year.

During a period of continuous price increases, it may be possible that the GDP will vary from one year to the next as a result of (1) an increase in real production (more goods and services) or (2) merely because of an increase in the prices of goods and services. There may even be a decline in real production, but the nominal GDP will still increase as a result of the higher prices. This situation often occurred in South Africa during the 1980s and early 1990s. It is therefore self-explanatory that a comparison of yearly nominal GDP values cannot be used as

an indication of economic progress or growth. There is no assurance that an increase in nominal GDP portrays real growth instead of a mere increase in prices.

It is for this reason that estimates of the GDP in terms of real prices are also made. In other words, an attempt is made at measuring the physical extent of the quantity of goods and services every year. Because it is an indication of real production, this measurement is known as the ***real GDP.*** The GDP of different years is therefore measured in terms of the prices that prevailed in one specific year. Should we wish to calculate the growth in real GDP between 2010 and 2011, the GDP in each of these years has to be valued in terms of 2010 prices. In this way we eliminate the effect of price increases from our calculations. The prices for these two years are therefore held constant in this way. By way of an example, table 6.1 depicts the South African GDP in terms of current (nominal) and constant (real) values.

Table 6.1 The GDP at current (nominal) and constant (real) prices and the implicit GDP deflator 2007–2016

Year	GDP at current prices (R million) (1)	GDP at constant 2010 prices (R million) (2)	Implicit GDP deflator 2010 = 100 (3)
2007	2 109 501	2 624 841	80.37
2008	2 369 063	2 708 601	87.46
2009	2 507 677	2 666 940	94.03
2010	2 748 008	2 748 008	100
2011	3 023 659	2 838 257	106.53
2012	3 253 852	2 901 078	112.16
2013	3 539 792	2 973 293	119.05
2014	3 807 677	3 023 826	125.92
2015	4 049 760	3 063 101	132.21
2016	4 336 992	3 071 660	141.19

Source: Statistics South Africa (2015a) and 2017

i. In the ***first column*** GDP is expressed in current prices (nominal values). The prices prevailing in each year were used to calculate the value of GDP. The increase in GDP from 2007 to 2016 was largely due to price increases over this period.

ii. In the ***second column*** GDP is expressed in real (or constant) prices. From this column we can clearly see that the increase in real production was much less

pronounced than the nominal (or current) increases in GDP. For example, compare the small increase in real GDP between 2007 and 2008 (R83 760m) with the relatively large increase in nominal terms (R259 562m).

iii. 2010 prices were used to calculate real GDP. You will notice that the value of real and nominal GDP was the same in 2010. This must be so because the same prices were used in both calculations. 2010 was thus used as the ***base year*** for the calculations.

iv. The ***last column*** gives an indication of price increases during the period. Column 3 can be calculated by dividing column 1 by column 2 and multiplying by 100. From these figures we can calculate the rate of inflation as the percentage change from one year to the next. According to this example, the inflation rate for 2011 was 6.65% (the GDP deflator increased from 100.0 to 106.65).

v. Obviously real GDP (column 2) gives a much better indication of ***economic growth*** than nominal GDP.

6.2.4 Calculation of economic growth

How do we use column (2) to calculate South Africa's economic growth? The economic growth for 2012 can, for example, be calculated by showing the increase in real GDP between 2011 and 2012 as a percentage of the real GDP in 2011.

The formula for calculating the growth rate is the following:

$$Growth\ rate\ in\ real\ GDP\ from\ 2011\ to\ 2012 = \frac{Change\ in\ GDP}{GDP_{2011}} \times 100$$

$$Growth\ rate\ in\ real\ GDP\ from\ 2011\ to\ 2012 = \frac{GDP_{2012} - GDP_{2011}}{GDP_{2011}} \times 100$$

Thus we can calculate the growth rate in GDP from 2011 to 2012 as follows:

$$Growth\ rate\ in\ real\ GDP\ from\ 2011\ to\ 2012 = \frac{\text{R2 901 078m} - R2\ 838\ 257\text{m}}{\text{R2 838 257m}} \times 100$$

$$= \frac{\text{R62 821m}}{\text{R2 838 257m}} \times 100$$

$$= 2.21\%$$

If current prices were used, the growth rate would have been 7.61%. The difference between 2.21% and 7.61% was entirely due to price increases that took place during 2012. We will come back to the issue of economic growth in the next learning unit.

6.2.5 The composition of the GDP

So far we have just looked at the basic methods of calculating the GDP, and we have not spoken about the type of products which comprise the GDP. There is more than one method of calculating the GDP. There is also more than one method of identifying the important subcomponents of the GDP. We will concentrate only on the ***origin of the production*** and the ***total expenditure components.***

6.2.5.1 The origin of the GDP

In the calculation of the GDP, one almost automatically takes into account the branches of industry or economic sectors where it originates. In this way the contribution of the different sectors in the economy can be determined.

The extent to which a country is endowed with natural resources will largely determine the types of products making up its GDP. Table 6.2 shows the relative importance of the main sectors in terms of their contribution to the GDP since 1950. South Africa's considerable mineral wealth is reflected, for example, in the large contribution made by the mining sector to total production in South Africa. The contribution of this sector until the 1980s was more or less consistently greater than 10%, and in 1980 as a result of the abnormally high gold price the relative contribution increased to as much as 21%. Since 1990 it has hovered just below the 10% mark.

The primary sector (consisting of agriculture and mining) contributed 29% to the GDP in 1950 opposed to 2015, when the contribution declined to only 10% in favour of the tertiary and to a lesser extent to the secondary sector. These developments are in line with what one would expect from any developing economy like South Africa. Initially the economy relies on the primary sector for growth, which is gradually overtaken by activities in the secondary sector and finally spills over to a strong and vibrant tertiary sector as the economy becomes more mature.

Table 6.2 Origin of South Africa's gross domestic product (% contribution)

	1950	1960	1970	1980	1990	2000	2005	2010	2015
Primary sector	**29**	**24**	**16**	**27**	**14**	**11**	**10**	**12**	**10**
Agriculture, forestry and fishing	16	11	7	6	5	3	3	2	2
Mining and quarrying	13	12	9	21	9	8	8	10	8
Secondary sector	**23**	**25**	**29**	**28**	**31**	**24**	**24**	**21**	**21**
Manufacturing	18	20	23	22	24	19	18	15	13
Electricity, gas and water	2	2	2	3	4	3	2	3	4
Construction	3	3	4	3	3	3	3	4	4
Tertiary sector	**48**	**51**	**55**	**45**	**55**	**65**	**66**	**67**	**69**
Wholesale and retail trade, catering and accommodation	14	14	14	12	14	15	14	14	15
Transport, storage and communication	9	10	9	8	8	10	10	9	10
Finance, insurance, real-estate and business services	9	11	14	11	14	19	21	21	20
General government services	7	9	10	10	14	16	15	16	17
Other	8	8	7	4	5	6	6	6	6
Gross value added at basic prices	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: South African Reserve Bank Quarterly Bulletin [S.a.]

The manufacturing sector has decreased in importance, and was only responsible for 13% of total production in 2015. This is a worrying trend as this is a sector which can create many employment opportunities.

The growing importance of the financial sector was particularly evident during the 1990s, when its contribution increased from 14% in 1990 to 21% in 2010 and 20% in 2015.

The contribution of the government shows an increasing trend which can be a worrying factor if it has to be sustained by increases in taxes, as it means that less private funds are available for investment and growth.

6.2.5.2 The components of total expenditure

Besides determining the origin of GDP, we would also like to look at the division of the GDP according to the type of expenditure. From the simple circular-flow diagram in learning unit 1 and the discussion of the calculation of the GDP it is clear that the expenditure on the GDP had to be equal to the value of the GDP.

Because total expenditure is a reflection of the demand in an economy, important insights into the components of total demand can be gained by looking at these expenditure categories.

When the various components of expenditure are classified, it is sometimes useful to distinguish between
(1) the nature or type of expenditure involved and
(2) the sector of the economy in which it occurs.

As regards (1), we distinguish between ***consumer expenditure*** and ***capital expenditure.***

As regards (2), it is sometimes desirable to deal with the following groupings or sectors individually: the **private, the government and the external sector**.

In the light of this dual distinction the national accounts identify different components as set out in Table 6.3:.

Table 6.3 Expenditure on gross domestic product in 2015 (R million)

	Current prices	Constant 2010 prices
Final consumption expenditure by		
- Households (C)	2 410 401	1 846 622
- Government (G)	828 669	619 183
Gross capital formation (I)		
- Gross fixed capital formation	827 325	639 383
- Change in inventories	11 201	12 398
Residual item	16 161	-38
Gross domestic expenditure (GDE)	**4 093 757**	**3 117 549**
Exports of goods and services (X)	1 229 935	911 366
Less: imports of goods and services (Z)	1 273 933	965 814
Expenditure on GDP	**4 049 759**	**3 063 101**

Source: South African Reserve Bank Quarterly Bulletin (2017)

It is clear that the GDP, seen from an expenditure point of view, offers a new perspective that we did not have before.

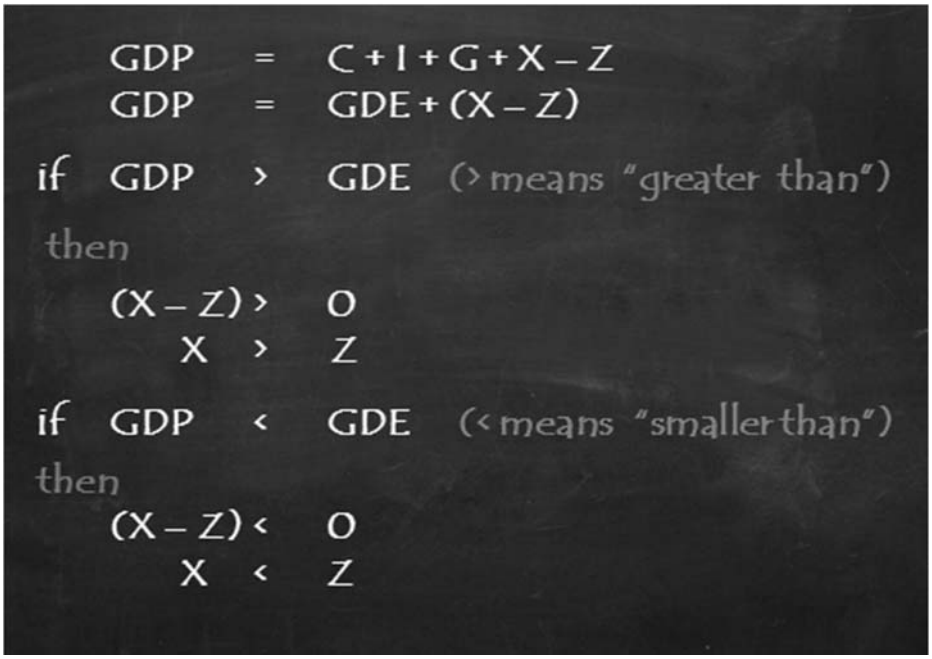
- Final consumption expenditure by households, representing the public's expenditure on goods and services, is the largest single element of expenditure in the economy.
- Approximately 20% of the GDP is spent on capital formation (e.g. factories, buildings, machinery and equipment), which has an influence on the production capacity of the country. In economics this expenditure is identified as ***investment***. Investment in capital goods is therefore expenditure on goods which are used to produce other goods and services.
- Since we are here concerned with the ***gross*** domestic product, no provision is made for capital consumption (i.e. depreciation). Remember, however, that this amount does not include the government's capital expenditure. The latter is taken into account in the capital formation.

Together, these items (C, G and I) represent the gross domestic expenditure (GDE). The residual item is ignored, since it is purely a balancing item.

The treatment of imports and exports in the above account requires further explanation. Since the total of the expenditure components must add up to the GDP at market prices, this means that all products produced in the country must be taken into account. Since the domestic expenditure items (C, I and G) do not distinguish between goods and services manufactured

locally and those manufactured in other countries, such as French wine, Italian shoes and German machinery and equipment, all imports (Z) have to be ***subtracted*** from the GDE. For exactly the same reason, exports (X) such as coal, wool and fruit, which do not form part of the GDE but which have definitely been produced in this country, must be ***added*** to the GDE. The difference between exports and imports (X – Z) is called net exports. The extent of exports and imports, which jointly constitute about 61% of the GDP, is an indication of the importance of the foreign sector for the South African economy. In economic parlance we say that the South African economy is particularly "open".

The above classification can be summarised in the following well-known equations:



From table 6.3 it is evident that imports (Z) exceeded exports (X). This meant that GDE was greater than GDP. South Africans were spending more than what they were producing domestically in 2015. As we will see in learning unit 10, this also implies that we are running a deficit on our trade balance.

6.2.6 Shortcomings of the GDP

True, the statistics are not as good as we want them to be, but what would we do without them?

- Oscar Morgenstem,* Fortune*, October 1963 -

Much has been said about what the GDP is supposed to measure and how the GDP itself can be measured and applied, and so the impression may have been created that this is an extremely accurate and comprehensive measure of all possible economic activity. From the residual item which occurred in the previous section, it could, however, have been deduced that the macroeconomic totals, seen purely from an accounting point of view, are not accurate. Such deviations are understandable if we look at the extent of the measuring problems involved. This is, however, not regarded as a major problem. A far more serious criticism that can be made of the GDP and other national accounts totals is related to these estimates being used as a measure of ***economic welfare.*** The main objections are the following:

Only goods and services appearing on a market, and therefore with a ***market price***, are included in the calculations. This principle has, for instance, resulted in the value of a meal at a restaurant being fully included in the GDP, while a similar meal prepared at home (apart from the purchased ingredients) is excluded. This applies to all work done by stay-at-home parents. When a car is serviced at a garage, the GDP is increased because of the service rendered, but if it is serviced at home, the GDP is not affected.

Closely related to the above problem is the large number of transactions which do go through the market but are never recorded anywhere, and thus cannot be included in the measurement of the GDP. Examples are the wages of many gardeners, maintenance done at home, lift clubs, as well as all illegal activities such as smuggling. These activities are known as the ***informal sector*** or the ***unrecorded economy.***

This sector has gained importance in recent years and for this reason the government has given official recognition to the possibilities of the informal sector, and is at present encouraging a number of different actions to develop healthy activities in this sector.

The inclusion of goods and services for which a market price can be determined has also resulted in the possibility of certain negative elements leading to an increase in the GDP. A deterioration of the security situation on a country's borders will lead to increased defence expenditure (and a consequent increase in the GDP), which can hardly be regarded as an

increase in welfare. Increased production is often accompanied by increased pollution, but no correction is made in the GDP for this decline in welfare. Finally, it should also be noted that the availability of leisure time (i.e. a shorter working day or week) is not reflected in the GDP measure.

Economists who were concerned about the possible misrepresentations which could result from the above defects attempted to find a more acceptable measure of economic welfare. They tried to determine the impact of factors such as leisure time, pollution, and the inconvenience of overpopulated cities in terms of money and to add or subtract it from the GDP. Unfortunately, the problems involved in establishing such a measure are so complex and extensive that their efforts were largely a failure. The GDP and other similar macroeconomic totals remain, in spite of their defects, the best indication of the level of economic activity maintained during a specific period.

Learning activity: Learning Unit 6

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

		T	***F***
1.	Macroeconomics deals with phenomena such as total production, total employment and inflation.		
2.	Microeconomics focuses on specific parts of the economy, while macroeconomics is concerned with the economy as a whole.		
3.	The study of the total output of the motorcar industry is an example of macroeconomics		
4.	An increase in the price of tomatoes is a macroeconomic issue.		
5.	The compilers of the national accounts can avoid double counting by recording only every second transaction in the economy.		
6.	According to the income method, GDP is estimated by adding up the income earned by the various factors of production.		
7.	Market prices are used to calculate the value of all final goods and services.		
8.	The GDP includes goods and services that are produced outside the borders of the country.		
9.	Nominal GDP could increase, while real GDP decreases		
10.	Nominal values should always be used to calculate economic growth.		

Review questions

1. What is the focus area of macroeconomic analysis?
2. What is the focus area of microeconomic analysis?

3. Indicate whether the following will be studied under microeconomics or macroeconomics:

   3.1 Government purchases of goods and/or services

   3.2 The purchase of a new designer T-shirt

   3.3 The price of data bundles charged by Cell C and Telkom

   3.4 The impact of a repo rate increase by the South African Reserve Bank on the decision to buy a house

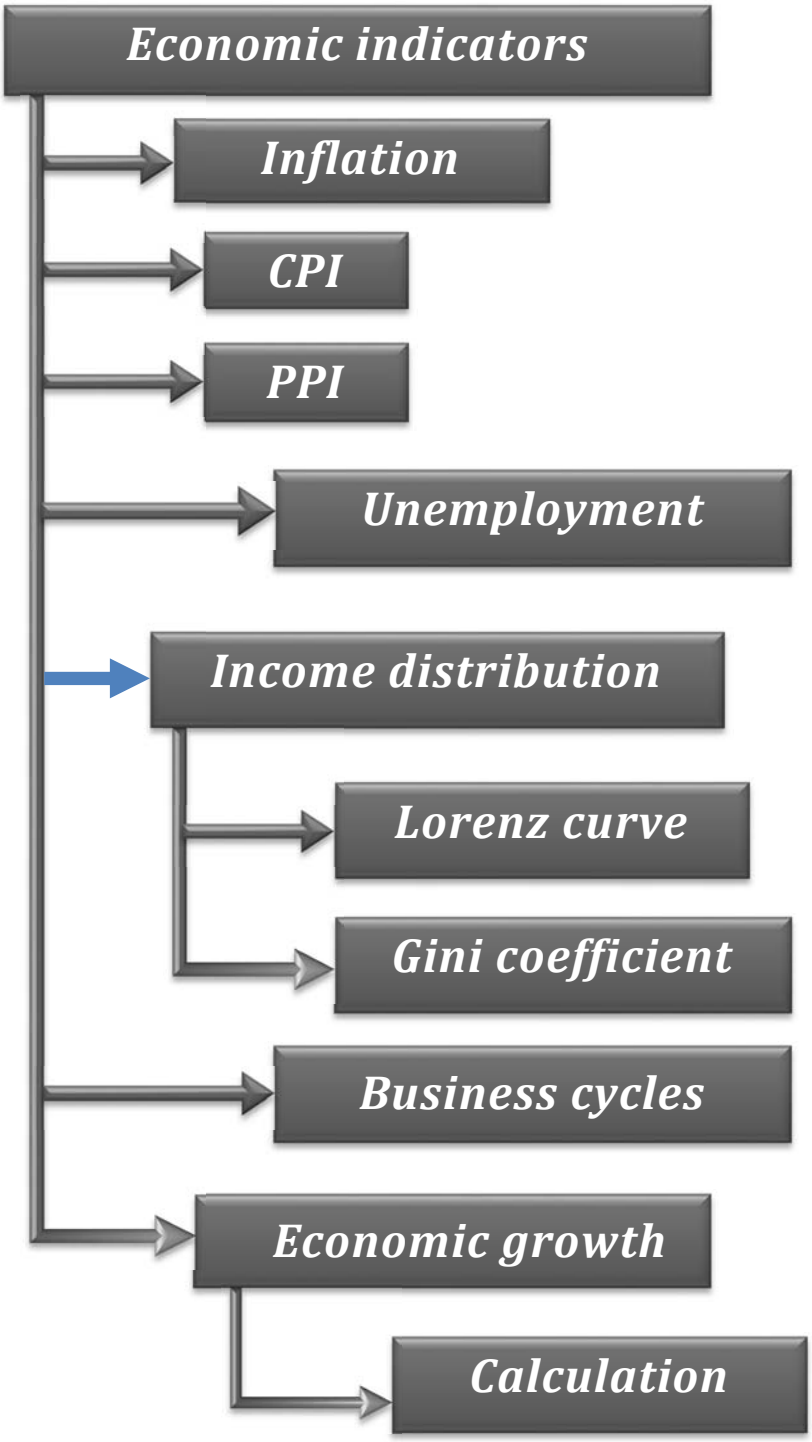
   3.5 The impact of an increase in the petrol price on total spending by consumers

4. To calculate GDP we must add the value of all _____ goods and services.
5. The GDP can be calculated by adding the value added. This is known as the _____ method.
6. GDP can be measured according to three different approaches. What are these approaches?

Selected Economic Indicators

Learning Unit 7

Mind map of Selected Economic Indicators



Contents

Key concepts

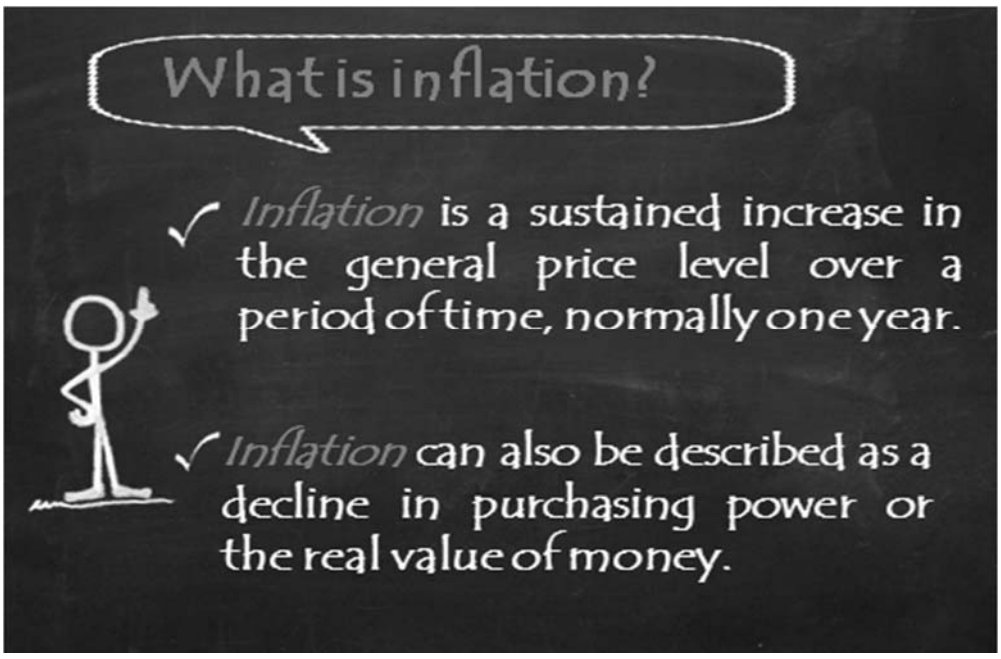
Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- consumer price index (CPI)
- producer price index (PPI)
- unemployment rate
- Lorenz curve
- Gini coefficient
- business cycles
- peak
- trough
- per capita

7.1 Introduction

A number of very important economic indicators, used by economic analysts, are discussed throughout this learning material. Some of these are mentioned or discussed in other learning units – examples are the gross domestic product (unit 6), the budget of the South African government (unit 8), various measures of the money supply (unit 9), the balance of payments (unit 10) and international trade statistics (unit 10). In this unit we discuss some additional economic indicators in order to broaden your vision of the South African economy.

7.2 Inflation



Inflation is regarded as a serious economic problem that should be addressed by economic policy. The reasons why inflation is regarded as a problem include the following:

- Inflation has redistribution effects between debtors and creditors. Due to the decline in the purchasing power of money the value of the debt that debtors pay back to creditors decline. The only way to ensure that creditors are not disadvantaged is to keep the interest rate levels at a higher rate than the inflation rate.
- Inflation can cause a redistribution of wealth from the private sector to the government. A person's nominal income may increase moving him or her into a tax bracket where a larger

percentage of income has to be paid to taxes. However, if the inflation rate is high it is possible that this person's real income has not increased. We call this **phenomenon bracket creep**.

- Poor persons are more severely affected by rising prices during inflation periods. During inflationary periods interest rates will usually increase. Wealthier persons who have invested part of their wealth in interest bearing assets will benefit from the higher interest rates. Poorer persons who spend all their income cannot benefit from the higher interest rates. It is even possible that they have debt that they have to pay back at higher interest rates, disadvantaging them even more.
- Inflation may result in investment in non-productive assets such as rare art, postage stamps, jewellery, etcetera. In a developing country it is important that as much as possible is invested in projects that create infrastructure and increase production and employment opportunities. During inflation periods persons may avoid such productive investment due to the uncertainty attached to the returns.
- Domestic inflation also increases the prices of export goods, resulting in less competitive prices and thus a decrease in exports. This may result in balance of payments problems and a depreciation of our currency.
- Inflation also has socio-economic effects. When persons experience a decline in the purchasing power of their wages and salaries, they become unhappy. This may result in protest action. Inflation will usually also result in increases in administered prices, for example bus and train fares and electricity charges, that also create unhappiness and may lead to protests.

A high inflation rate has severe destabilising effects in an economy. Therefore it is important that the inflation rate will be measured regularly to ensure that policy can be used to address this problem immediately before the problem gets out of hand. The consumer price index and the producer price index are two important measures that are used to measure the inflation rate. These will now be discussed. In Learning Unit 9 we shall briefly explain how monetary policy may be used to address the problem of inflation.

7.2.1 Consumer price index (CPI)

The consumer price index (CPI) is a series of numbers (an index) showing how the average price level of goods and services (basket of goods and services) bought by a typical consumer or household changes over time. The inflation rate is calculated as the annual percentage change in the CPI.

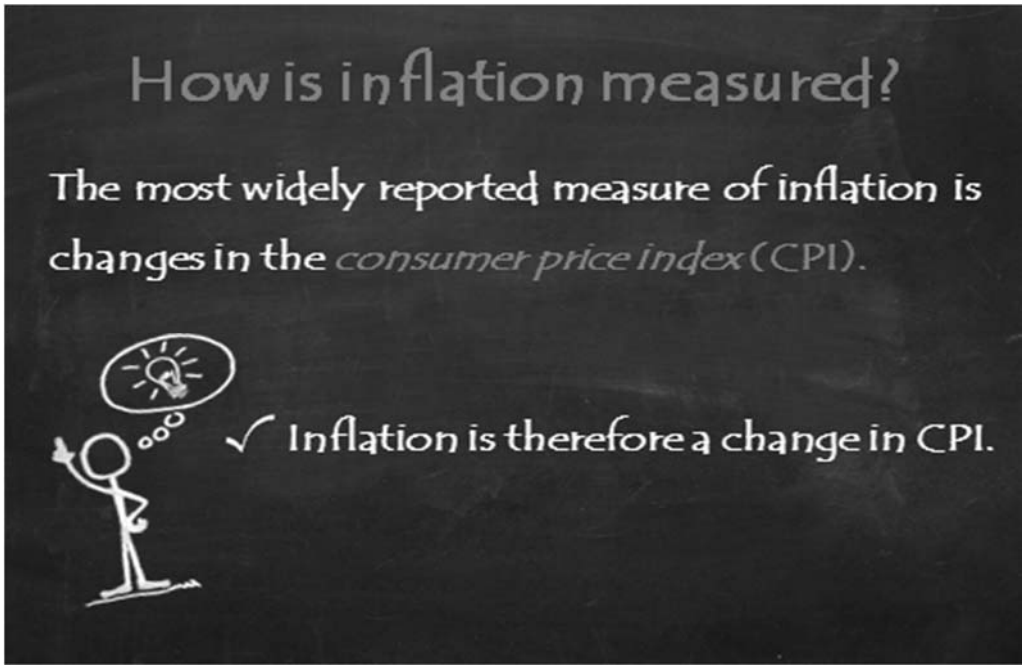


Table 7.1 indicates annual changes in average rates for all service categories according to the classification of individual consumption by purpose (COICOP). There is a noticeable acceleration in the transport category, which is mainly due to the considerable increases in the petrol price.

Table 7.1 Consumer prices for services according to COICOP categories*

	Weights	2011	2012	2013	2014	2015	2016
Housing and utilities	19.31	74.8	78.7	82.9	87.4	92.1	97.2
Household contents, equipment and maintenance	2.35	74.8	79	83.4	88	92.6	97.5
Health	0.72	73.4	78.1	83	88.1	93.8	99.5
Transport	4.12	70.8	79.9	87	92.3	95.8	98.7
Communication	2.50	98.5	98.3	100.2	100	99.7	100
Recreation and culture	1.93	80.1	83.4	87.6	89.5	91.4	98.4
Education	2.95	66.8	72.8	79.3	86.2	94.2	99.3
Restaurants and hotels	3.50	70.1	74.4	79.3	86	91.1	96.8
Miscellaneous services	12.76	70.1	74.3	80.3	85.9	92.2	99.1
Total services	50.14	73.6	77.9	82.8	87.7	92.8	98.1
Total CPI	**100.00**	**74.2**	**78.4**	**82.9**	**88**	**92**	**97.8**

* Seasonally adjusted, indices: 2016 / 12 = 100

Source: South African Reserve Bank (2017)

The CPI is a fixed-weight index, which implies that the weight for each item stays the same throughout the five-year period. The CPI is then compiled by collecting retail prices for all the items included in the basket on a monthly basis (between the first and the seventh day of each month) and weighing each item according to its relative importance in the basket of goods and services. The indices thus compiled for a number of the more important product/service groups are shown in table 7.1.

Table 7.2 Consumer prices for goods according to the COICOP classification*

	Weights	2011	2012	2013	2014	2015	2016
Food and non-alcoholic beverages	15.41	68.2	73.1	77.2	83.1	87.4	96.6
Alcoholic beverages and tobacco	5.43	71	76	81.2	86.3	93.6	99
Clothing and footwear	4.07	78.8	81.6	84.1	88.5	93.2	97.8
Housing and utilities	5.21	65.7	72.7	78.9	84.3	90.8	97.2
Household contents, equipment and maintenance	2.44	94.4	95	97.3	98	97.6	99.4
Health	0.74	78.8	81.5	84.4	88.2	93.1	97.7
Transport	12.31	81.8	85.5	91	96.8	93.5	97.7
Communication	0.13	196.4	71.1	152.9	134.5	117.3	104.5
Recreation and culture	2.16	86.3	85.6	92	93.7	94.5	98.3
Miscellaneous goods	1.96	80.1	81.7	84.4	88.7	93.2	98
Total goods	49.86	74.9	79	83	88.2	91.2	97.5

* Seasonally adjusted, indices: 2016 / 12 = 100

Source: South African Reserve Bank Quarterly Bulletin (2017)

The tables show clearly how divergent price movements in the different categories were. It is important to note that the base year of the indices is 2016. Over the period from 2011 to 2016 the food prices index rose from 68.2 to 96.6. This means that a food basket costing R68.20 at the end of 2011 cost R96.60 at the end of 2016. The price index for clothing and footwear increased from 78.8 in 2011 to 97.8in 2016. The second column shows the weight contribution for all goods to CPI over the period. One can clearly see how the relative importance of food products and transport costs in the goods basket influenced the weight of the total index.

The CPI is often used to calculate the inflation rate as a percentage change in the CPI over a specific period. This rate is then used by numerous institutions and organisations such as trade unions to adjust prices and/or to negotiate for higher wages and salaries.

7.2.2 Producer price index (PPI)

The second important price index that we have to know about is the producer price index (PPI). Before 1980 this was known as the wholesale price index. From this we can deduce that the prices of this index are measured at the level of the first significant commercial transaction. Prices of imported goods are measured at the point when they enter the country, and locally manufactured goods are priced when they leave the factory. In contrast to the CPI, the PPI also includes capital and intermediate goods, but excludes services.

The basic method of calculation is similar to that of the CPI, and is also published every month by Statistics SA. From tables 7.3 and 7.4 below it is clear that the basket of products differs radically from the CPI basket of goods and services. For instance, the weight of food, beverages and tobacco is 33.72% in the case of the PPI, and only 20.84% (15.41%+5.43%) in the case of the CPI.

Table 7.3 Producer prices of selected products*

	2011	2012	2013	2014	2015	2016
Agriculture, forestry and fishing	73.2	74.7	76.6	80.6	84.4	98.4
Mining	83.6	85	89.6	93.3	89.5	98.3
Electricity and water	61.3	72.2	79.8	87.6	97.4	98.3
Intermediate manufactured goods	76.3	78.3	84.4	91.3	92	98.3
Total final manufactured goods**	72.4	77.4	82.1	88.1	91.3	72.4

* Seasonally adjusted, indices: 2016 = 100

** Non-metallic mineral products, furniture and other manufacturing are omitted from total final manufactured goods

Source: South African Reserve Bank Quarterly Bulletin (2017)

Table 7.4 Producer prices of final manufactured goods

	Weights	2011	2012	2013	2014	2015	2016
Food products, beverages and tobacco	33.72	67.1	72.5	76.8	82.6	87.7	96.4
Textiles, clothing and footwear	4.07	73.6	76.6	80.5	86.2	90.9	97.9
Wood and paper products	9.18	65.1	75.7	80.9	85.7	92	97.3
Coke, petroleum, chemical, rubber and plastic products	21.66	84.7	87.9	93.9	100.2	94.8	98.4
Metals, machinery, equipment and computing equipment	14.82	73	77.4	80.9	87.9	92.9	99
Electrical machinery and apparatus and sub-components	1.91	83.6	81.9	86.1	91.5	93.4	98.5
Transport equipment	8.16	79.7	79	84.8	91.8	94.4	101.4
Total final manufactured goods**	100	72.4	77.4	82.1	88.1	91.3	97.8

* Seasonally adjusted, indices: 2016 = 100

** The weights of final manufactured goods do not add up, as non-metallic mineral products (4.20) and furniture and other manufacturing (2,28) are omitted.

Source: South African Reserve Bank Quarterly Bulletin (2017)

Since only a few items are shown in the table, the weights do not add up to 100. In 2015 the highest price increases were experienced in the food products, beverages and tobacco category and the lowest in the Coke, petroleum, chemical, rubber and plastic products group.

An important advantage of the PPI is the fact that it provides some indication of what can be expected from the CPI in the future. Since the prices are measured at the level of the first transaction, the PPI is often used to predict what will happen with consumer prices in a few months' time.

7.3 Unemployment

Unemployment is perhaps the greatest challenge facing economic policy makers in South Africa. The unemployment rate is thus a very important economic indicator. In its simplest form, the unemployment rate is the number of unemployed persons expressed as a percentage of the total workforce. This figure is, however, not so easy to calculate, mainly because of difficulties in finding precise definitions for terms such as “unemployed and “total workforce”.

In 1998 Statistics South Africa revised its definition of the ***official unemployment rate*** in line with the International Labour Organisation (ILO) definition.

In terms of this definition the ***unemployed*** are those people between the ages of 15 and 64 years within the economically active population who:

i. did not work during the seven days prior to the interview;
ii. want to work and are available to start work within a week of the interview; and
iii. have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview.

The ***economically active population*** consists of persons between the ages of 15 and 64 years who are employed and those who are unemployed. Its size therefore varies according to the definition of unemployment used.

The ***official unemployment rate*** is calculated as the percentage of the economically active population which is unemployed, according to the above definition.

This revised definition corresponds to what Statistics South Africa previously called the ***strict*** unemployment rate. By contrast, the ***expanded unemployment*** rate does not require criterion ***(iii)*** above to hold. Only criteria ***(i)*** and ***(ii)*** must be met in order for a person to be classified as unemployed.

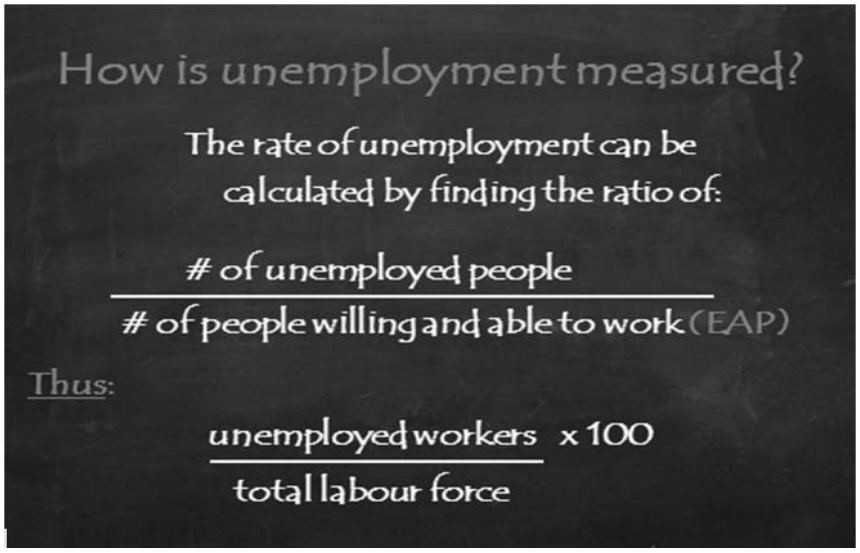


Table 7.5 shows the labour market statistics of South Africa, according to the *Quarterly Labour Force Survey (QLFS).* The year-on-year increase in the labour force from the end of 2015 to the end of 2016 was 638 000. This can be ascribed to the increase in both employment and unemployment by 51 000 and 588 000 respectively (due to rounding the figures do not add up exactly). The total number of persons not economically active decreased by 6 000 year-on-year. The official unemployment rate increased by 2 percentage point to 26.5% over the same period.

Table 7.5 Labour market statistics of South Africa ('000)

	Q3* 2014	Q4** 2014	Q3 2015	Q4 2015	Q3 2016	Q4 2016
a. Total employment	15 117	15 320	15 828	16 018	15 833	16 069
b. Total unemployment (official definition)	5 151	4 909	5 418	5 193	5 873	5 781
c. Total economically active (= a + b)	20 268	20 228	21 246	21 211	21 706	21 849
d. Total not economically active	15 221	15 415	14 867	15 061	15 044	15 055
e. Total aged 15–64 years (= c + d)	35 489	35 643	36 114	36 272	36 750	36 905
*f. Official unemployment rate (= b*100/c)*	*25,4%*	*24,3%*	*25,5*	*24,5*	*27,1*	*26,5*

Source: Statistics South Africa Quarterly Bulletin (2015 and 2016)

* Quarter 3 (Q3) = July to September

** Quarter 4 (Q4) = October to December

Let's use the numbers in the table to calculate the unemployment rates according to the strict definition of unemployment and the expanded definition of unemployment that we explained above.

For the strict definition you have to exclude persons who are no longer seeking work from both the number of unemployed persons and from the number of persons in the labour market. Thus the unemployed persons will be only those who are unemployed and who have been actively seeking work in the past four weeks, while the total labour market will include those persons who are working plus those who are unemployed but have been actively seeking work in the past four weeks.

For the expanded definition those persons who have given up and who have not actively looked for a job in the past four weeks are included in both the number of unemployed persons and the number of persons in the labour market. Thus the number of unemployed persons will include those have been actively looking for a job plus those who have not, while the labour market will include those who are employed *plus* the unemployed who have been actively looking for a job *plus* the unemployed who have not been actively looking for a job.
Let's look at an example:

Suppose there are 10 million persons in country X who are unemployed but still actively l looking for a job, 1 million persons who are unemployed and would like to work but have stopped looking for a job and 30 million persons who are employed. Calculate the unemployment rate according to the strict definition of unemployment and according to the expanded definition of unemployment:

The formula for calculating the unemployment rate:

$$Unemployment\ rate = \frac{Number\ of\ unemployed\ persons}{Labour\ force} \times 100$$

The labour force includes both the unemployed persons and the number of employed persons.
Let's see how we calculate this using the two definitions of unemployment:

Calculating the unemployment ratio using the strict definition of unemployment	Calculating the unemployment ratio using the expanded definition of unemployment
$Number\ of\ unemployed\ persons = 10m$ $Labour\ force = 10m + 30m = 40m$ $Unemployment\ rate = \frac{10m}{40m} \times 100 = 25\%$	$Number\ of\ unemployed\ persons = 10m + 1m = 11m$ $Labour\ force = 10m + 1m + 30m = 41m$ $Unemployment\ rate = \frac{11m}{41m} \times 100 = 26{,}829\%$

Normally six types of unemployment may be distinguished:

i. ***Voluntary unemployment*** occurs when an individual chooses to be unemployed because of low wages.

ii. ***Involuntary unemployment*** occurs when an unemployed person wants to work, but is unable to find work.
(In general, all unemployment is classified as involuntary unemployment.)

iii. ***Frictional unemployment*** (also known as search unemployment) arises during the time it takes to find a new job or to move from one job to another. This kind of unemployment is temporary and unavoidable. It is not really considered as serious.

iv. ***Seasonal unemployment*** occurs when workers are laid off because of the seasonal nature of the work. Examples include workers employed during farm harvest times and festive seasons or to do summer jobs such as life-guarding at outdoor pools or the beach.

v. ***Cyclical unemployment*** arises as a result of fluctuations in the demand for goods and services. When there is a depression, workers normally lose their jobs. This type of unemployment varies with the business cycles (boom and recession periods).

vi. ***Structural unemployment*** has to do with structural changes in the economy causing a mismatch between the skills of workers and the requirements of jobs. Structural unemployment can arise because certain products have become obsolete or unpopular. For instance, the fact that fewer people smoke nowadays has resulted in job losses in the tobacco industry; and with the advent of modern word processing, typing pools were no longer required.

7.4 Income distribution

Estimates show that the proportion of people living in poverty in South Africa did not change between 1996 and 2001 (Schwabe 2004). There is also evidence that those households living in poverty have sunk deeper into poverty, and that the gap between rich and poor has widened. This is true not only of the population as a whole, but also if ethnic groups are analysed separately. Despite rapid rises in black per capita incomes, the gap between rich and poor in the black population has been rising steadily since 1993 (Van der Berg & Louw 2003:16). There is no doubt that income inequality is a serious socioeconomic problem in South Africa. But how do we measure this inequality?

7.4.1 The Lorenz curve

The Lorenz curve and the associated Gini coefficient are the most commonly used indicators of income inequality in a country. Because the Gini coefficient is derived from the Lorenz curve, we will start with how the latter is constructed.

The Lorenz curve can best be explained by using a simple hypothetical example. Let's assume the size of the population of Country A is 100 and the total income of the population is R100. The total income of the poorest 20 people is only R2. The next poorest 20 people earn a total income of R8. The income of consecutive groups of 20 people steadily increases, until the richest 20 people in Country A earn the remaining R65. This information in the form of percentages and cumulative percentages is shown in table 7.6.

Table 7.6 Income distribution of Country A

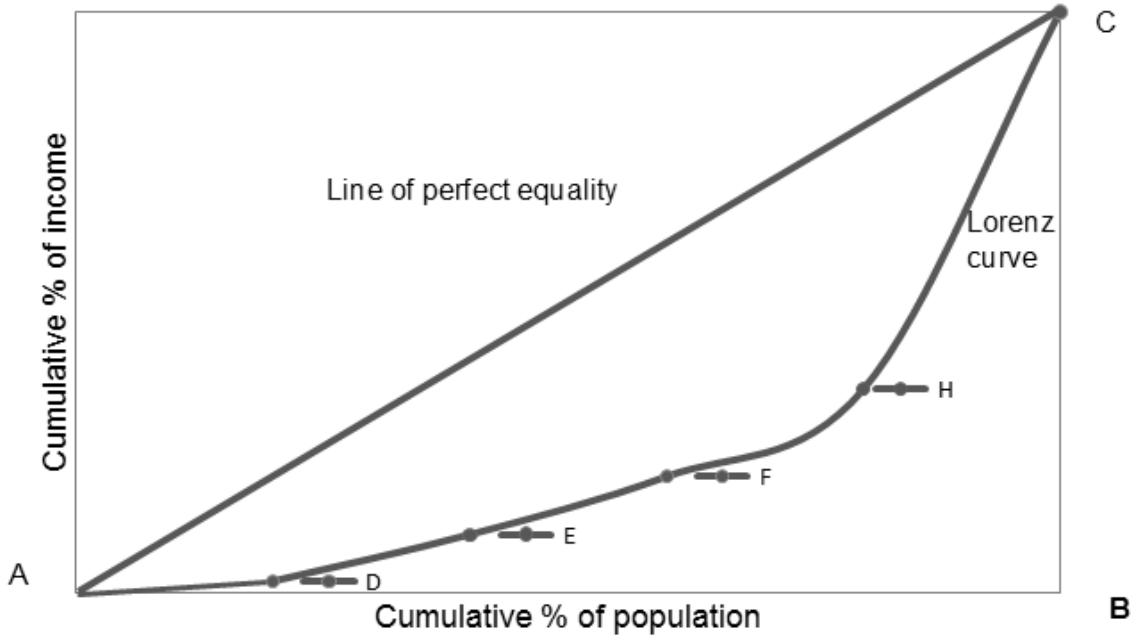
Percentage		Cumulative percentage		Point on Lorenz curve
Population	**Income**	**Population**	**Income**	
poorest 20	2	20	2	D
next 20	8	40	10	E
next 20	10	60	20	F
next 20	15	80	35	H
richest 20	65	100	100	C

By plotting the data for the cumulative percentage population and cumulative income in table 7.6 on a graph we obtain the Lorenz curve for Country A, which you can see in figure 7.1

The cumulative percentage income is measured on the vertical axis, and the cumulative percentage of the population on the horizontal axis. The diagonal line from point A to point C on the graph is the line of ***perfect equality.*** It shows what the Lorenz curve would have looked like if each person earned exactly the same amount (i.e. if there was a perfectly equal distribution of income). In our example of Country A it means that each person would have earned exactly R1. The deviation of the actual Lorenz curve (see figure 7.1) from this perfect equality indicates the ***area of inequality*** or the skewness in the income distribution. This is exactly how the Lorenz curve for a country is constructed if the statistical data is available.

The cumulative percentage income is measured on the vertical axis, and the cumulative percentage of the population on the horizontal axis. The diagonal line from point A to point C on the graph is the line of ***perfect equality.*** It shows what the Lorenz curve would have looked like if each person earned exactly the same amount (i.e. if there was a perfectly equal distribution of income). In our example of Country A it means that each person would have earned exactly R1. The deviation of the actual Lorenz curve (see figure 7.1) from this perfect equality indicates the ***area of inequality*** or the skewness in the income distribution. This is exactly how the Lorenz curve for a country is constructed if the statistical data is available.

Figure 7.1 The Lorenz curve for Country A



What would the Lorenz curve for Country A look like if one person earned R100 and the rest of the population earned nothing? This would be depicted by a right triangle running from A to B to C (ABC) in figure 7.1. The income earned by the first 99 people is zero (shown by AB in figure) and the 100th person earns R100 (the BC line). The further the actual Lorenz curve moves away from the line of perfect equality (or towards ABC), the greater the degree of inequality in the country.

7.4.2 The Gini coefficient

The Lorenz curve gives a good visual picture of the inequality in income distribution, but does not provide us with a quantitative yardstick. The Gini coefficient, which uses the information contained in the Lorenz curve, provides us with a number which allows for more clear-cut comparisons over time and between countries. The Gini coefficient is obtained by dividing the ***area of inequality*** (the area between the line of perfect equality and the Lorenz curve) by the ***area of the triangle ABC*** (when perfect inequality prevails). The value of the Gini coefficient can thus vary between 0 and 1 (0 signifies perfect equality and 1 perfect inequality). In table 7.7 the Gini coefficient for South Africa by population group is given for three years.

By international standards South Africa's Gini coefficient has always been very high, and from the table the situation appears to be worsening. This must be a worry to the South African government, as internationally Gini coefficients range from 0.30 (highly equal) to over 0.70 (highly unequal).

Table 7.7 Gini coefficient by population group for 1991, 1996 and 2001

Population group	1991	1996	2001
Black	0.62	0.66	0.72
White	0.46	0.50	0.60
Coloured	0.52	0.56	0.64
Asian	0.49	0.52	0.60
Total	**0.68**	**0.69**	**0.77**

Source: Schwabe (2004)

7.5 Business cycles

The next indicator we have to consider is the phenomenon of business cycles. Economic growth does not occur smoothly and at the same pace. All economies are subject to periodic booms or upswings, which are often followed by recessions or even depressions. This pattern of expansion and contraction in economic activity is called the business cycle.

A typical business cycle consists of four elements: a ***trough*** (lowest point), an ***upswing*** (also called the boom or expansionary phase), a ***peak*** (the upper turning point) and a ***downswing*** (also called a recession or the contractionary phase).

In figure 7.2 the various phases of the business cycle are illustrated. A complete business cycle is shown from the trough to the next trough. The upswing is shown when the peak is reached. This is followed by the downswing until the trough is reached. The theory of business cycles explains all the possible causes of the cycles, but falls beyond the scope of this module.

In table 7.8 the phases of the South African business cycle since the 1960s are shown. As you can imagine, it is not easy to determine the dates of the turning points which determine the lengths of the

upswings and the downswings. In South Africa the Reserve Bank is responsible for establishing these turning points. The Reserve Bank uses a ***composite index*** of both ***leading*** and ***lagging*** economic indicators to predict and to confirm the downturns and upturns of the business cycle.

In the next unit we will discuss the government's policy with regard to business cycles.

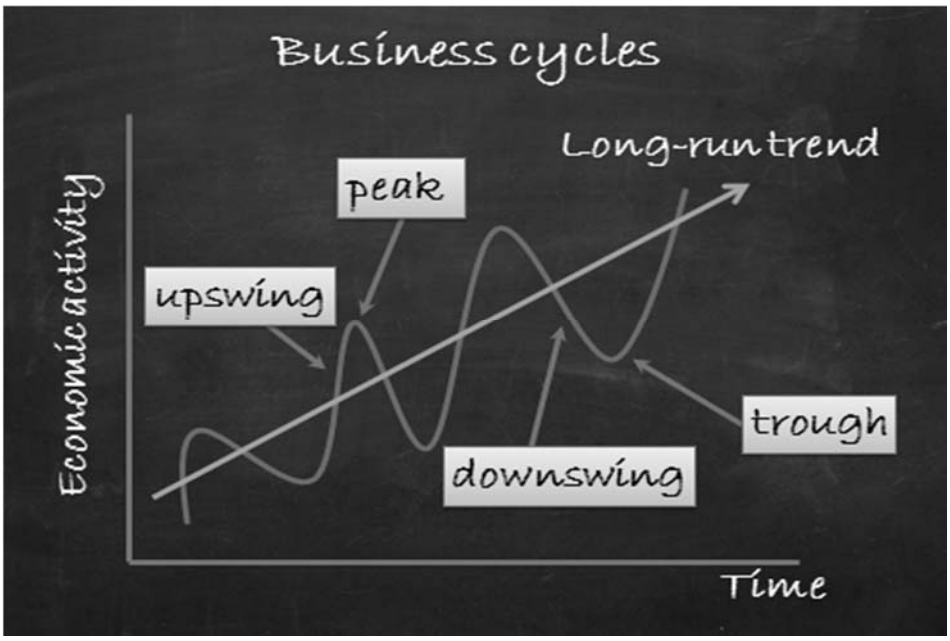
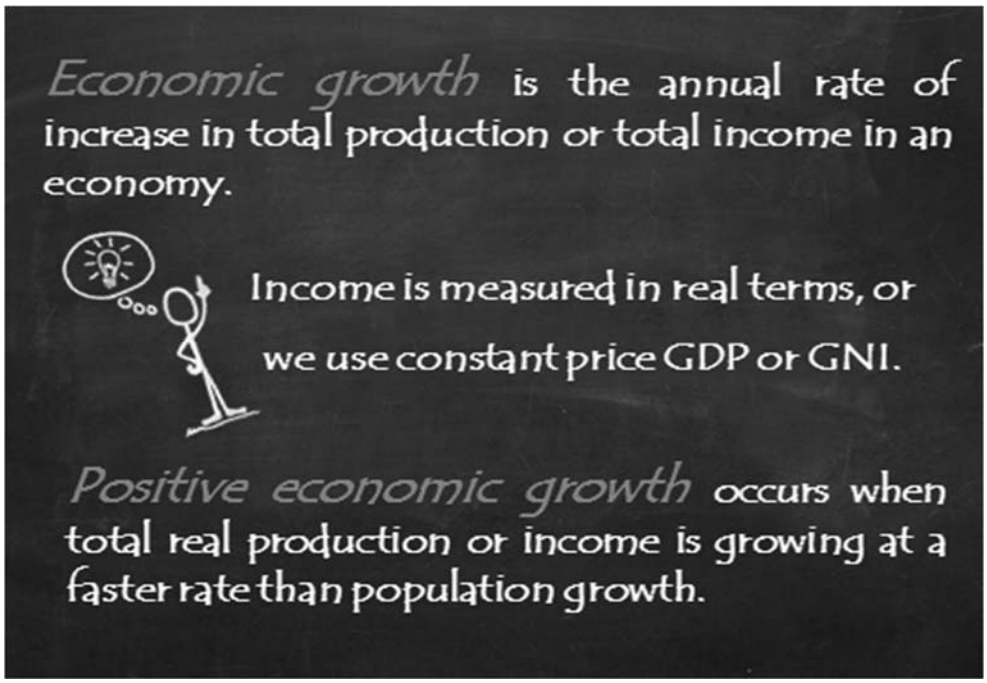


Table 7.8 Business cycle phases of South Africa since 1960

Upward phase			Downward phase		
Start	**End**	**Duration in months**	**Start**	**End**	**Duration in months**
			May 1960	Aug 1961	16
Sep 1961	Apr 1965	44	May 1965	Dec 1965	8
Jan 1966	May 1967	17	Jun 1967	Dec 1967	7
Jan 1968	Dec 1970	36	Jan 1971	Aug 1972	20
Sep 1972	Aug 1974	24	Sep 1974	Dec 1977	40
Jan 1978	Aug 1981	44	Sep 1981	Mar 1983	19
Apr 1983	Jun 1984	15	Jul 1984	Mar 1986	21
Apr 1986	Feb 1989	35	Mar 1989	May 1993	51
Jun 1993	Nov 1996	42	Dec 1996	Aug 1999	33
Sep 1999	Nov 2007	99	Dec 2007	Aug 2009	21
Sep 2009	Nov 2013	51	Dec 2013		

Source: South African Reserve Bank Quarterly Bulletin (2017)

7.6 Economic growth



7.6.1 Calculating economic growth

When we discussed the difference between nominal and real values of the GDP in learning unit 6, the calculation of economic growth was briefly introduced. We explained why GDP at constant prices (real values) should be used when calculating economic growth. We showed you that GDP at current prices (nominal values) does not eliminate the effect of inflation (rising prices), and could therefore not be used to calculate real economic growth. Economic growth may be defined as "the annual rate of increase in total production or income in the economy" (Mohr *et al* 2008:576), and so the GDP is ideally suited for measuring economic growth if real values are used.

Growth in GDP alone, however, does not take into consideration that the population of the country also increases. Real economic growth can occur only when the actual production of goods and services (expressed in real values) grows at a faster rate than the increase in population. If this is not the case people are actually getting poorer, and there is really no improvement in their standard of living.

To solve this problem the GDP should be expressed on a ***per capita*** basis. Per capita means "per person", which implies that the value of GDP should be divided by the population in order to arrive at the GDP per capita. When the growth rate in the population exceeds the growth rate in GDP, the growth rate in per capita GDP will be lower than growth in GDP. Clearly the objective of economic policy should be to increase the GDP per capita, and also the growth rate in the GDP per capita. If this objective is combined with a more equal distribution of income, this will result in a higher living standard for the population as a whole.

The gross national income (GNI) per capita is shown because we are also interested in the growth of the income earned by the citizens of South Africa over time. It gives a better indication of the improvement in the standard of living of South Africans than the GDP.

Table 7.9 Growth rates of GDP, GDP per capita, and GNI per capita at constant 2010 prices

	Annual percentage change (at constant 2010 prices)		
Year	**Gross domestic product**	**Gross domestic product per capita**	**Gross national income per capita**
2002	3.7	1.6	2.8
2003	2.9	1.1	1.3
2004	4.6	2.8	4.0
2005	5.3	3.6	4.0
2006	5.6	4.0	5.2
2007	5.4	3.9	3.3
2008	3.2	1.9	2.7
2009	-1.5	-2.7	-0.3
2010	3.0	1.9	3.4
2011	3.2	2.1	3.5
2012	2.2	1.0	-0.3
2013	2.2	1.2	1.0
2014	1.5	0.4	-0.1
2015	1.3	-0.0	1.0
2016	0.3	-1.1	-1.3

Source: South African Reserve Bank Quarterly Bulletin (2017)

The GDP is an estimate of the total production within the borders of the country, irrespective of the owners of the factors of production used in the production process. The value of the GNI can be derived from the GDP as follows:

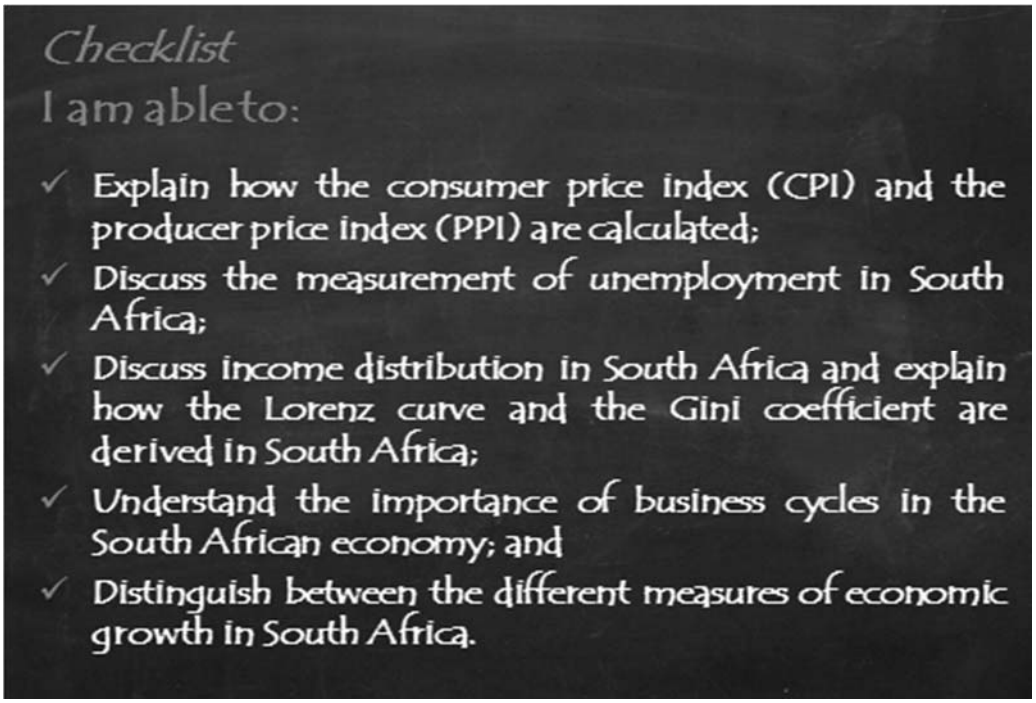
GNI = GDP	*plus*	*Primary income from the rest of the world*
	minus	*Primary income to the rest of the world*

Subtract from GDP:

All wages, salaries, profits, interest and other income earned by residents of other countries in South Africa. For example, profits earned by BMW, and the wages paid to residents from Lesotho who work on South African mines.

Add to GDP:

All wages, salaries, profits, interest and other income earned by permanent South African residents outside South Africa. For example, profits earned by South African construction companies in Botswana and salaries earned by South Africans in Britain.



Learning activity: Learning Unit 7

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

		T	F
1.	The unemployed include those people who are not willing to work.		
2.	There will always be some frictional unemployment, and this type of unemployment is not regarded as a serious problem.		
3.	Cyclical unemployment occurs when there is a recession resulting from a temporary lack of sufficient aggregate demand in the economy.		
4.	Structural unemployment is a serious problem, since it cannot be remedied by simply increasing the aggregate demand for goods and services.		
5.	When measuring economic growth, changes in prices and in the population should be taken into account.		
6.	One of the problems associated with GDP as a measure of economic activity is that not all goods and services are sold in markets, which makes it difficult to value them in monetary terms.		
7.	The expansion phase of the business cycle ends at the peak of the cycle.		
8.	The expansion phase of the business cycle (upswing) always lasts exactly as long as the recession phase (downswing).		
9.	Sustained economic growth requires a sustained expansion of both aggregate supply and aggregate demand.		
10.	An increase in the quantity and/or quality of the factors of production is a necessary condition for economic growth, but not sufficient to ensure economic growth.		
11.	The wages earned by a citizen of Lesotho working at a South African gold mine form part of the South African GDP.		
12.	To measure real economic growth, GDP at current prices has to be transformed into GDP at constant prices.		
13.	During inflationary periods, the growth in real GDP is always higher than the growth in nominal GDP.		
14.	A once-off increase in prices cannot be classified as inflation; inflation is a continuous process of increasing prices.		

	T	F
15. The prices used to calculate the core inflation rate exclude value-added tax (VAT).		
16. The consumer price index measures the cost of living, while the producer price index measures the cost of production.		
17. The PPI includes the prices of capital goods.		
18. Consumers are generally more interested in the rate of change in the implicit GDP deflator than in the rate of change in the CPI.		
19. The objective of price stability means that the inflation rate should be kept as low as possible.		
20. The consumer price index (CPI) and the inflation rate are the same thing.		

Review questions

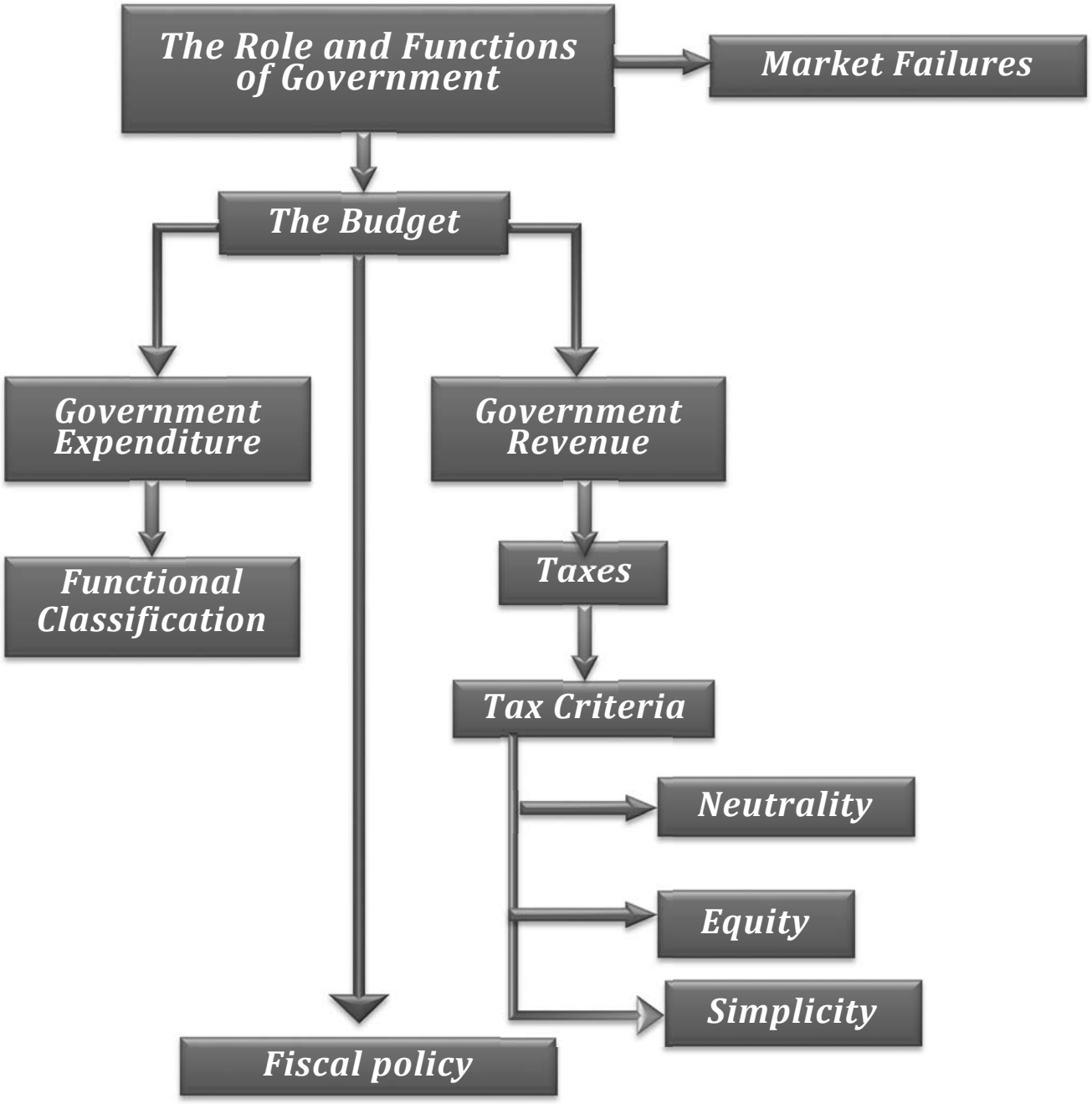
1. Economic growth in South Africa must lead to (an increase/a decrease) in employment opportunities.
2. (Classical/Cyclical) unemployment exists when the wage that is paid to labour is higher than the equilibrium wage.
3. A person is classified as unemployed if the person is between the ages of _____ and _____, is without paid work, is _____ to work and is actively searching for _____.
4. The (consumer price index/producer price index) is an index of the prices of a representative basket of consumer goods and services.
5. Inflation is a _____ and _____ increase in the _____ price level.
6. Consider the population of Utopia. In 2014 the country had a total population of 30 million, of whom 10 million were older than 64 or younger than 16 (the minimum working age), while 9 million, mostly housewives and students, did not want to work. A total of 8 million of the remainder of the population between the ages of 16 and 64 who wanted to work were employed, while the rest remained unemployed. Based on this information, answer the following questions:

    6.1 What is the size of the labour force or economically active population?
    6.2 What is the labour force participation rate?
    6.3 How many people are unemployed?
    6.4 What is the unemployment rate?

The Public Sector

Learning Unit 8

Mind map of the Public Sector



Content

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- market failures
- functions of government
- government expenditure and revenue
- tax criteria
- ability-to-pay principle
- public goods
- benefit principle
- fiscal policy
- policy lags
- progressive tax
- regressive tax
- externalities

8.1 Introduction

The government is one of the important participants in the economy of a country. Everyone's life is influenced daily by laws and regulations made by government to promote an orderly community – for example, we drive on the left-hand side of the road and stop at red traffic lights. Most people receive services from the government – these include education, health services and sanitation. We are protected by the police and the defence force. We must pay for these services by paying taxes – for example, we pay income tax from our salaries and we pay value-added tax (VAT) when we purchase something. From this short list it is clear that government has a substantial influence on our lives.

The public sector in South Africa consists of

- the ***central government***, which concentrates on national issues such as defence and foreign affairs (South Africa's relationship with the rest of the world);
- ***provincial*** and ***regional government***, which concentrates on regional issues such as education and health services;
- ***local governments***, which are involved with local issues such as street lighting and local roads; and
- ***public corporations*** and ***public enterprises***, such as SABC and Eskom.

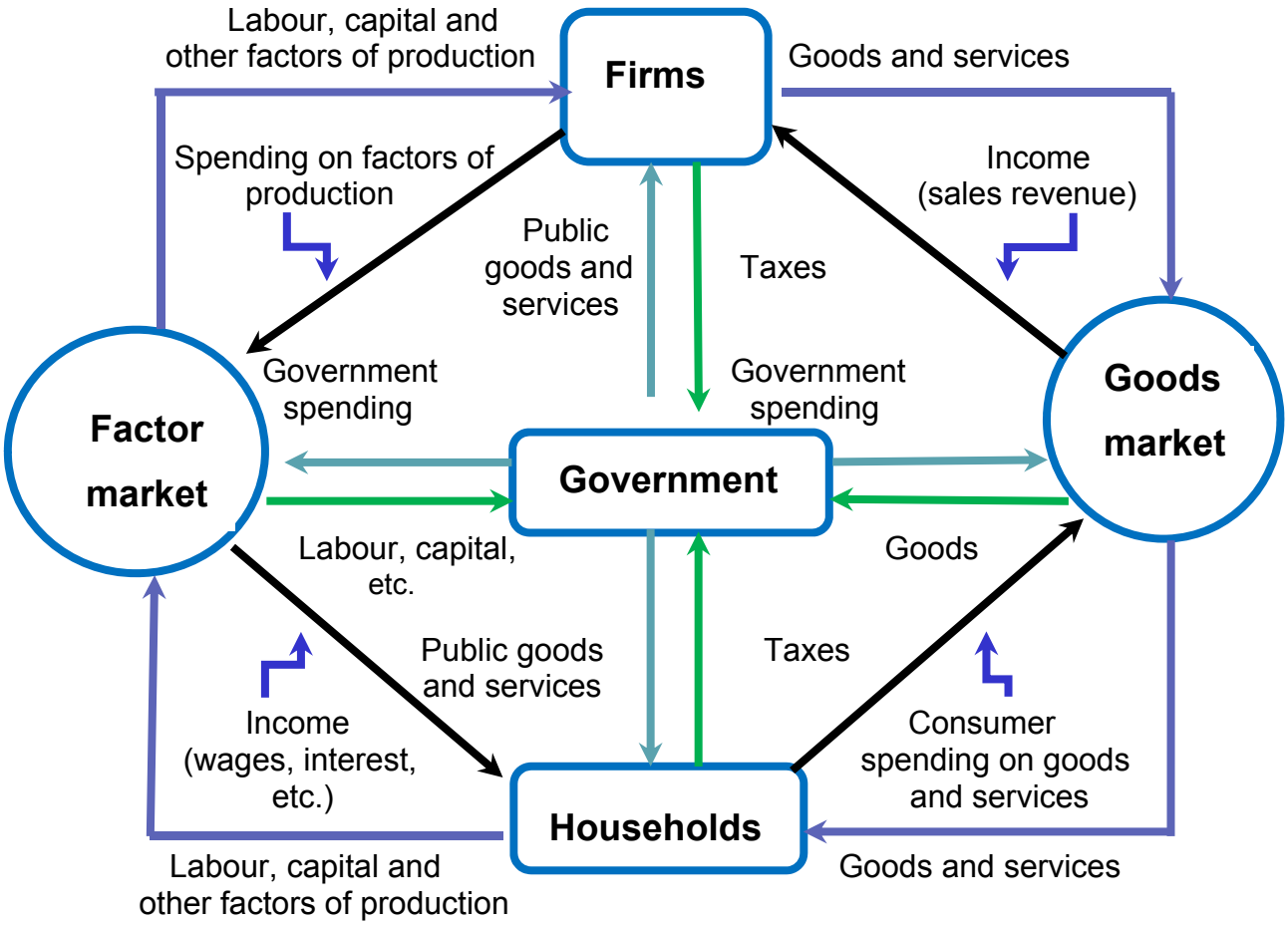
The central government, regional and local authorities together are called the general government.

8.1.1 The role of the government

It is clear that the government's expenditure and tax policies could have a significant impact on the economy. To explain how the government fits into the economy, we will again look at the economic circular-flow model, which you encountered in learning unit 1.

Figure 8.1 now also includes the government. This model, therefore, consists of the household, business and government sectors. From this model it is clear that government receives its revenue from taxes levied on households and business enterprises. Both these sectors in turn receive transfers from the public sector (this is not shown on the diagram). For example, pensions will go to households, while the business sector could receive subsidies such as export promotion benefits. In turn, government purchases services, for example labour, from households and goods and services, for example stationery, from the business sector.

Figure 8.1Circular-flow diagram with government included



Source: Mohr *et al* (2008:49)

8.1.2 Market failures and government measures

In learning unit 1 you learnt that most present-day economies can be classified as mixed economies, which implies that there is a role for the public and the private sector in the economy. In his classical book, *The wealth of nations,* Adam Smith, viewed by many as the father of the market economy, allocated certain functions to government. Two of the functions identified by Smith are the protection of the community against foreign aggressors (i.e. an active defence force) and the protection of the lives and property of citizens against criminals (i.e. an effective police force). Other reasons for government to become involved in the economy are found in ***market failures***. Market failures refer to those instances when markets fail to ensure the best solution to the economic problem. Because of imperfections in the system the signals from the market lead to

harmful distortions in the economy, and government is then obliged to intervene. Let us consider these market failures in greater detail.

8.1.2.1 Imperfect competition

In any market economy monopolistic tendencies may develop, which have to be dealt with. A firm is classified as a ***monopoly*** when it is the only supplier of a good. In such a case the discipline of competition is lacking and the monopolist can greatly influence the quantity supplied and the price of a good. A ***natural monopoly*** refers to a situation where one firm can satisfy the total demand for a good in a certain area. A power station serves as an example. After the original capital outlay has been made, the cost of providing this service to additional people decreases, and therefore it would not make sense for other firms to enter this field. This situation enables one firm to exert such a strong influence that it could lead to inefficiencies.

How should the government deal with this situation? One possible solution is to do nothing and trust that the big profits made by the monopolist will convince competitors to enter this market. However, a monopolist who has the necessary resources can prevent this through a price war. A second possibility for government is to introduce price control to prevent unrealistic prices. A third possibility is to tax away the excess profits of a monopolist. In the case of a natural monopoly it will make no sense for other firms to enter the market. Private production combined with government regulation could be a solution, or government may even decide to produce the good itself.

8.1.2.2 Public goods

The concept "public goods" refers to goods which have specific characteristics that differ from private goods. One of the characteristics of public goods is that you cannot exclude anyone from the benefits of the good. A streetlight is an example of such a good, since houses in its vicinity cannot easily be excluded from the benefits that it offers. In contrast to this, private goods can easily exclude others from their benefits. If somebody purchases a jacket, other consumers are excluded from the benefits of that jacket.

The non-excludability characteristic of a public good can lead to ***free riding***. Free riding means that people expect other people to pay for benefits, which they then enjoy without paying. For example, people can hide their need for street lighting because they know they will in the end also enjoy the benefits without having to pay for it. Government can limit free riding by levying taxes (which everyone has to pay) to fund the provision of public goods.

It is important to note that the existence of public goods does not imply that government must produce these goods. Government can leave the production of goods in the hands of the private sector and just take responsibility for its financing. During the past decade or more, the ***privatisation*** of government services has received much attention, which implies that certain goods and services supplied by government should rather be supplied by the private sector. Supporters of privatisation are of the opinion that it would improve efficiency in the economy, since they are convinced that the private sector is more efficient than the public sector.

8.1.2.3 Externalities

It often happens that the actions of some market participants spill over to other parties in the form of costs or benefits which are not reflected in market prices. In economics these are referred to as externalities. A classic example is pollution. The polluter (e.g. oil refinery) does not take the cost of pollution into account during production. This is called a ***negative externality.*** Government will in most cases have to intervene in the market to promote efficiency. This can be done through regulation, which implies that government can prescribe the levels of production and pollution that are permissible, or alternatively, government can use taxes to compel firms to consider these costs.

On the other hand, production activities of firms can also bring about benefits to other individuals for which they need not pay. These are called ***positive externalities.*** Inoculation against measles is an example of a positive externality. The benefits of inoculation are not limited to the person receiving the inoculation, since other people also receive a benefit: they cannot be infected by the person who has been inoculated, because this person will now not contract measles.

8.1.2.4 Income inequalities

A market system may lead to an unequal distribution of income because individuals do not all have the same opportunities, talents and abilities. It can therefore happen that some people receive a very high income, while others hardly survive on their meagre incomes. From an ***equity*** perspective a skew distribution of income is unacceptable (also see learning unit 7 in this regard). Government therefore tries to reduce inequality, because most people will not be prepared to voluntary redistribute income. Government can do this through its tax and expenditure policies. A progressive income tax (the higher a person's income, the greater the proportion of tax he or she pays) takes from the rich, and this revenue can be used to finance housing, education and other social services for the lower-income groups.

8.1.2.5 Economic instability

The economy usually moves through a phase of high economic growth (an upswing), followed by zero or negative economic growth (a downswing), also called a recession or a depression in severe circumstances. This phenomenon is called the business cycle. Government can use its macroeconomic policy, monetary and fiscal, in an effort to smooth this wave. ***Monetary policy*** refers to the money supply and interest rate policy of the central bank – this is something we will discuss brieflyin the next unit. ***Fiscal policy*** refers to changes in government expenditure and/or taxes in order to promote economic stability. We will look at fiscal policy later in this unit.

8.1.3 The functions of government

In short, the functions of government can be classified as follows:

- ***Allocation*** – this refers to the role of government in ensuring the efficient allocation of resources (we considered this topic in our discussion of public goods and externalities).
- ***Regulation*** – this refers to the function of government to promote efficiency by implementing legislation to ensure certain minimum standards (this was something we explored in our discussion of imperfect competition and externalities).
- ***Distribution*** – this refers to the function of the government to promote a more equitable distribution of income.
- ***Stabilisation*** – this refers to the monetary and fiscal policy measures of government to promote macroeconomic stability (i.e. full employment, price stability and balance of payment stability).

8.2 The budget of the South African government

As mentioned earlier, the government can use its expenditure and tax policy to influence specific sectors in the economy and also redistribute available resources. In this section we will look at the sources of government revenue and also at how the government spends these funds.

Table 8.1 provides a broad overview of South Africa's ***main budget*** framework. The table gives an indication of the relative importance of parliament's involvement in the economy. Roughly one-quarter of the gross domestic product seen from either the revenue or expenditure side in South Africa is associated with decisions made by parliament. In the top part of the table we can see that taxes are the dominant source of income and that a significant portion of these tax collections is paid over to other members of the Southern African Customs Union (SACU), namely Namibia, Botswana, Swaziland and Lesotho.

Table 8.1 Main budget framework, 2011/12 to 2016/17 (R billion)

Budget category R billion	2012/13 Outcome	2013/14 Outcome	2014/15 Revised estimate	2015/16 Budget estimates
Revenue				
Gross tax revenue after proposals	813.8	900	979	1 081.3
Non-tax revenue	16.2	18.9	18.1	17.0
SACU[1]	-42.2	-43.4	-51.7	-51.0
National Revenue Fund receipts[2]	12.3	11.7	8.9	2.0
Main budget revenue	**800.1**	**887.3**	**954.2**	**1 049.3**
Percentage of GDP	***24.0%***	***24.6%***	***24.6%***	***25.0%***
Expenditure				
National departments	420.0	453.2	491.4	523.0
Provinces	380.9	410.6	439.7	468.2
Local government	76.4	82.8	89.1	99.8
Non-interest allocations	**877.4**	**946.6**	**1 020.1**	**1 090.9**
Debt-service costs	88.1	101.2	115.0	126.4
Main budget expenditure	**965.5**	**1 047.8**	**1 135.1**	**1 222.3**
Percentage of GDP	*29.0%*	*29.0%*	*29.3%*	*29.2%*
Main budget balance	**-165.4**	**-160.5**	**-180.9**	**-173.1**
Percentage of GDP	*-5.0%*	*-4.4%*	*-4.7%*	*-4.1%*
Primary balance ***Percentage of GDP***	*-2.3%*	*-1.6%*	*-1.7%*	*-1.1%*

1. *SACU payments and other adjustments*
2. *Previously classified as extraordinary payments*

Source: National Treasury Budget Review (2017)

In 2015/16 government spent more than it earned in taxation, resulting in a budget deficit. In 2015/16 government expenditure was R1 222.3 billion and revenue was R1 049.3 billion. The budget deficit was therefore R173.1 billion, or approximately 4.1% of GDP. Government has to finance this deficit, and for this it can employ two methods: funds can be borrowed locally and overseas by issuing government bonds to the public and commercial banks; and government can create new money. A direct result of borrowing is that interest must be paid on these loans.

Furthermore, continuous deficits increase the public debt. Money creation may be inflationary which may have serious detrimental effects on the economy as explained in section 7.2.

8.2.1 Government expenditure

In table 8.2 you can see how government's expenditure priorities in South Africa are structured for the financial years ending in 2014/15, 2015/16 and 2016/17. From this table we can see that economic affairs, basic education and local development and social infrastructure dominate government expenditure. Consolidated government expenditure is projected to increase from R1 351.0 billion in 2015/16 to R1 448.8 billion, financed largely through the national budget.

Table 8.2 Consolidated government expenditure by function (R billion)

	2014/15	2015/16	2016/17
R billion	**Revised estimates**	**Budget estimates**	**Budget estimates**
Basic Education	189.5	203.4	216.0
Health	144.6	157.3	167.5
Defence, Public Order and Safety	163.0	171.2	181.2
Post-school Education and Training	56.6	62.2	65.6
Economic Affairs	189.4	206.2	219.5
Local Development and Social Infrastructure	176.6	199.6	210.2
General Public Services	64.7	64.3	66.7
Social Protection	143.9	155.2	165.9
Allocated Expenditure	**1 128.4**	**1 219.6**	**1 292.8**
Debt-Service Costs	115.0	126.4	140.9
Unallocated Reserves	-	5	15
Consolidated Expenditure[1]	**1 243.3**	**1 351.0**	**1 448.8**

1. Consisting of national, provincial, social security funds and selected entities

Source: National Treasury Budget Review (2017)

8.2.2 Government revenue

In this world nothing can be said to be certain except death and taxes.

- Benjamin Franklin 1789 -

Thus far we have established that government has certain functions in the economy. We also know that government pursues a number of economic and political objectives through its expenditure policy. In order to spend, government needs revenue. The revenue of government consists of ***non-tax revenue, tax revenue*** and ***loans***. In table 8.3 the 2013/14 and 2014/15 budget revenue outcomes and estimates (excluding loans) are shown.

The non-tax revenue stems from departmental income and the various business enterprises (e.g. the SABC and Eskom) owned by government. Government also sells agricultural, forestry and fishing products and receives rent from gold mining leases. In this respect government is not really different from ordinary businesses. In 2014/15, the non-tax revenue of government was expected toamount to approximately R27 006 million, an 11.8% decrease from 2013/14 (towards the bottom of table 8.3). A large number of services such as protection, the judiciary, primary health care, education and roads are rendered free of charge by government. These expenditures are mainly financed from taxation.

Taxes are compulsory payments, and in this respect government differs from ordinary business enterprises regarding finances. Government can obtain revenue through coercion. In 2014/15 taxes were expected to amount to approximately R979 000 million. We distinguish between direct and indirect taxes. ***Direct*** taxes are levied on people and include personal income tax, company tax and wealth taxes such as estate duty. ***Indirect*** taxes are levied on goods and services, and people therefore pay these taxes indirectly.

As can be seen from table 8.3 the most important indirect tax sources are VAT, fuel levies, excise duty and customs duty. Excise duty is a ***selective*** tax – it is levied on specific goods. The traditional excisable products include fuel, perfume, cigarettes and alcohol. The excise duty on these goods is often jokingly referred to as “sin taxes”.

Table 8.3 Budget estimates and revenue outcome, 2013/14 and 2014/15

R million	2013/14 Outcome	2014/15 Revised	2013/14–2014/15 % change
Taxes on income and profits	**507 759**	**556 700**	***9.6%***
Persons and individuals	309 834	350 000	*13.0%*
Companies	177 324	183 000	*3.2%*
Dividends tax	17 309	21 400	*23.6%*
Other taxes on income and profits	3 292	2 300	*-30.1%*
Taxes on payroll and workforce	**12 476**	**13 200**	***5.8%***
Taxes on property	**10 487**	**12 603**	***20.2%***
Domestic taxes on goods and services	**324 548**	**355 718**	***9.6%***
Value-added tax	237 667	260 600	*9.6%*
Specific excise duties	29 039	32 000	*10.2%*
Ad valorem excise duties	2 363	3 232	*36.7%*
General fuel levy	43 685	48 200	*10.3%*
Other domestic taxes on goods and services	11 794	11 686	*-0.9%*
Taxes on international trade and transactions	**44 732**	**40 779**	***-8.8%***
Customs duties	44 179	39 900	*-9.7%*
Diamond export levy	93	87	*-6.4%*
Miscellaneous customs and excise receipts	460	792	*72.1%*
Total tax revenue	**900 013**	**979 000**	***8.8%***
Non-tax revenue	30 626	27 006	*-11.8%*
of which:			
Mining royalties	*6 439*	*5 636*	*-12.5%*
Less: SACU payments	-43 374	-51 738	*19.3%*
Main budget revenue	**887 265**	**954 269**	***7.6%***
Provinces, social security funds and selected public entities	120 838	136 722	*13.1%*
Consolidated budget revenue	**1 008 103**	**1 090 991**	***8.2%***

Source: National Treasury Budget Review (2015)

8.2.3 Personal income tax

The most important direct tax in South Africa is personal income tax. This is the tax we all have to pay if we earn more than a minimum income. To understand this tax, we need to distinguish between the average and the marginal rate of taxation. The ***average*** tax rate is the ratio of tax to income. The ***marginal*** rate is the fraction of each additional rand (income) surrendered as tax. An important characteristic of personal income taxation in South Africa is that the average tax rate is progressive.

- The tax is ***progressive*** if the average rate increases as income increases.
- The tax is ***proportional*** if the average rate is constant as income increases – that is, the tax part (percentage) the individual pays is the same at all income levels.
- The tax is ***regressive*** if the average rate decreases as income increases.

Table 8.4 will help you understand the difference between the average and marginal rate of taxation.

Table 8.4 Personal income tax rates and bracket adjustments, 2013/14–2014/15

2014/15		2015/16	
Taxable income (R)	Rates of tax	Taxable income (R)	Rates of tax
R0–R174 550	18% of each R1	R0–R181 900	18% of each R1
R174 551–R272 700	R31 419 + 25% of the amount above R174 550	R181 901–R284 100	R32 742 + 26% of taxable income above R181 900
R272 701–R377 450	R55 957 + 30% of the amount above R272 700	R284 101–R393 200	R59 314 + 31% of taxable income above R284 100
R377 451–R528 000	R87 382 + 35% of the amount above R377 450	R393 201–R550 100	R93 135 + 36% of taxable income above R393 200
R528 001–R673 100	R140 074 + 38% of the amount above R528 000	R550 101–R701 300	R149 619 + 39% of taxable income above R550 100
R673 101 and above	R195 212 + 40% of the amount above R673 100	R701 301 and above	R208 587 + 41% of taxable income above R701 300
Rebates		*Rebates*	
Primary	R12 726	Primary	R13 257
Secondary	R7 110	Secondary	R7 407
Tertiary	R2 367	Tertiary	R2 466
Tax threshold		*Tax threshold*	
Below age 65	R70 700	Below age 65	R73 650
Age 65 and over	R110 200	Age 65 and over	R114 800
Age 75 and over	R123 250	Age 75 and over	R128 500

Source: National Treasury Budget Review (2015)

Take an example of a person with a taxable income of R250 000 in 2015/16:

Tax payable	= R32 742 + (26% of R68 100[2]) = R32 742 + R17 706 = R50 448
Average tax rate	= (50 448 ÷ 250 000) x 100 = 20.2%

An example of a person with a taxable income of R475 000 in 2015/16:

Tax payable	= R93 135 + (36% of R81 800[3]) = R93 135 + R29 448 = R122 583
Average tax rate	= (122 583 ÷ 475 000) x 100 = 25.8%

It should be clear from these examples that the average rate increases as income increases – the personal income tax is therefore progressive. ***Taxable income*** is the difference between income earned and any rebates allowed by the Receiver of Revenue.

8.2.4 Company taxation

Company taxation is also regarded as a direct tax, since companies are legal persons. Company tax is payable not on income but on profit – in other words, expenditures such as salaries and wages, interest, and rent are first deducted from income. A company can distribute its after-tax profit to shareholders in the form of dividends, or the after-tax profit can be retained by the company. If the after-tax profit is distributed, it is subject to a 10% ***secondary tax on companies*** (STC), which is levied on the net amount of any dividends declared. The purpose of the STC is to encourage companies to reinvest their profits and in this manner promote economic growth and development. The STC obviously increases the effective rate of tax for companies to more than 29% if they declare any dividends.

[2] R250 000 – R181 900

[3] R475 000 – R393 200

8.3 Tax criteria

The best tax is that which is least in amount.

- JB Say -

We are probably all in agreement with Say's remark. Government, however, has expenditures which must be financed, and taxes are the most important sources of revenue. Taxes affect almost every economic activity, and the impact on economic growth and development may be either positive, negative or neutral. In the design and reform of tax systems the implications of taxes on the economy must be considered, and often there is a trade-off between objectives. The question is: What is a good tax or tax system? There are basically three characteristics of a good tax system:

- ***Neutrality:*** the tax system should not distort relative prices
- ***Equity:*** the tax system should treat individuals fairly
- ***Administrative simplicity:*** taxes should be easy and cheap to collect

8.3.1 Neutrality

In a market economy, prices determine how much, what and for whom should be produced. The premise is that the market, via the price mechanism, will satisfy the aspirations and desires of all market participants (producers, workers, employers and consumers) best – the economic problem of scarcity and multiple needs is solved efficiently. Taxes, however, affect relative prices and market participants react to these price changes. Consider the following example:

Assume that excise duty on cigarettes is increased drastically. Smokers can react in two ways: they can either reduce their consumption, or leave it unchanged. If they reduce their consumption, this could affect their state of mind (they become edgy) and everyone around them suffers. Consequently, office morale is affected adversely and productivity declines. If smokers do not change their consumption and if, in addition, they are also poor, they might spend less on food. Consequently work performance and production are affected.

Take another example. The personal income tax rates of blondes are increased by 10%. How do you think they will react? Well, some will probably change their hair colour to red, and some may reduce their work effort.

Relative price changes affect choices and behaviour. If economic actors/participants are made unhappy, their utility will decline and their welfare will be lowered. The economy is furthermore worse off, since work effort is reduced. The difference between the tax amount paid to the Receiver of Revenue and the costs the tax causes the taxpayer and the economy is called the ***excess burden*** of the tax. Whereas government can compensate the taxpayer for the taxes he or she pays in the form of public goods and services, the taxpayer cannot be compensated for the excess burden.

A good tax is therefore a tax which has the smallest possible excess burden. Which taxes are good taxes from this perspective? Since people always attempt to avoid taxes by changing their behaviour (this is legal), a good tax is one which does not cause people to change their behaviour. Taxes should therefore be neutral, that is, relative prices should be disturbed as little as possible. However, we have to remember that taxes do not affect the economy in a negative way only. Think, for example, of externalities. In this example, corrective taxes can be levied which not only generate revenue for government but also cause the economy to function more efficiently.

8.3.2 Equity

Although taxpayers are not always familiar with the excess burden of a tax, they are very aware of the sacrifice tax payments cause. No one wants to pay more tax than is necessary, and taxpayers are therefore very interested in how the tax burden is distributed among them. It is important that the burden should be perceived as being distributed equitably, since this ultimately affects people's willingness to pay taxes. Even high taxes will be tolerated, as long as there is the perception that everyone is treated fairly. But what is fair?

There are two equity principles according to which the tax burden can be distributed in the economy: the ***benefit principle*** and the ***ability-to-pay principle.*** But before we can determine whether a tax is fair, we must first know who really bears the burden. In other words, we must know what the ***tax incidence*** (i.e. how the tax burden will eventually be distributed) is going to be. A tax such as an excise duty on locally produced perfume must be paid by the producer to the Receiver of Revenue. But who bears the tax burden? You would have been right if you had said it is the consumer. The seller shifts the tax burden to the consumer by increasing the price of the product by the amount of the tax. This is known as ***tax shifting.*** You were, however, only partly correct.

Consumers are sensitive to price increases particularly when the taxed good is a non-essential. If the tax causes a substantial increase in the price, consumption declines. The manufacturer is aware of this, and to temper the impact of the tax on the consumer, does not increase his or her price by the full tax amount. In other words, the seller absorbs part of the tax. The tax incidence is therefore on both the seller and the buyer. This is important to know, since if it was government's aim to tax rich consumers and to lower the consumption of perfume, government was only partially successful. The incidence of taxation cannot be determined easily and economists differ in this regard, but the probable incidence of taxes is as follows:

Personal income tax	– the individual on whom the tax is levied
Company tax	– the firm and consumers
VAT	– consumers
Excise duty	– consumers and distributors
Property tax	– the owners in cases where they occupy the property themselves; tenants in the case of rented land or property; consumers in the case of commercial property

Now that we know the incidence of a tax, we can return to the question: What is a fair tax?

i. Ability-to-pay principle

The ability-to-pay principle states that people should pay taxes according to their abilities. In the case of income taxation a person's income is considered to be indicative of ability; in the case of property tax the value of the owner's property is considered to represent ability. Furthermore, according to the ability-to-pay principle, a distinction is made between horizontal and vertical equity. The horizontal equity rule states that people who are in the same position should be taxed equally (i.e. high-income groups should be taxed similarly, and the low-income group similarly). The vertical equity rule states that people in different positions should be taxed differently. According to this rule, rich people should therefore pay more tax than poor ones.

On the surface the ability-to-pay principle and rules appear obvious, but they in fact cause many practical problems. For example, take income as a measure of ability:

> Ruben earns R20 per hour and works 8 hours a day; in total he earns R160 per day. Lorraine also earns R20 an hour, but works 10 hours as day; in total she earns R200 per day. According to the vertical equity rule Lorraine should pay more tax. Is this fair?

ii. Benefit principle

The benefit principle states that the person receiving the benefit of a particular public expenditure should pay for it. Taxation is therefore viewed as a fee which is paid for goods and services rendered by government. Consequently it is considered to be fair that the more a person uses a service, the more he or she should contribute. Benefit taxes (also known as user charges) are levied when mixed public goods and services have the characteristic of exclusion – examples are toll roads, parks, libraries, electricity and water provision, hospitalisation and university training. An earmarked fuel levy used for the maintenance of roads can also be viewed as a mechanism to link benefits and taxes. The different school fees paid at different schools can also be considered as a user charge.

8.3.3 Administrative simplicity

Taxes are a cost to taxpayers. In addition to the normal tax payments, taxpayers also incur expenditures such as the cost of time to complete tax returns, record keeping or paying an accountant for tax advice. These costs are called ***compliance costs.*** The Receiver of Revenue also has to employ people to write tax laws, design tax forms, collect tax and assess tax returns. A good tax system is one that tries to keep the administration and compliance costs as low as possible. This implies that taxes must be simple. Complicated taxes not only cause high administration and compliance costs, but also often present taxpayers with all kinds of tax loopholes. The tax revenue of government is lowered in this manner. If people exploit tax loopholes, we refer to this practice as ***tax avoidance***. This is perfectly legal. However, if you, for example, make pottery items and sell these at a flea market and don't declare the profit as income, you are ***evading tax.*** That is illegal.

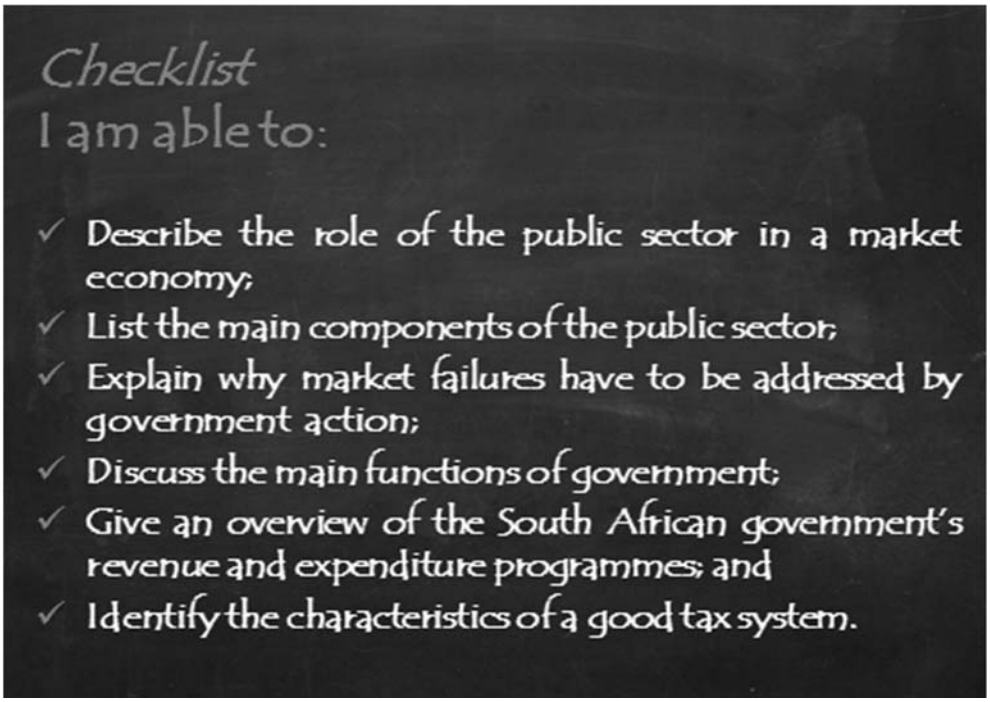
8.4 Fiscal policy

You already know that the economy is characterised by changes in the structure of the economy and cyclical movements in economic activity (see learning unit 7). The economy experiences times of high and low economic activity (the phases of the business cycle), and conditions of inflation and unemployment occur. Governments aim at stabilising their economies and it is their task to try and achieve the macroeconomic objectives of full employment, price stability, balance of payments equilibrium, and so on. In order to realise these objectives government has monetary and fiscal measures available. These measures manifest in policy, which is something we discuss in the next

unit. ***Fiscal policy*** has to do with the manipulation of the budget of government (changes in government spending and taxation) to influence macroeconomic objectives. There are, however, a number of barriers which restrict the effectiveness of fiscal policy. One of these is the influence of ***policy lags***. Let us briefly consider the problems associated with lags.

Stabilisation policy is hampered by three types of policy lags, namely the recognition, administrative and impact lag. The ***recognition lag*** refers to the length of time it takes policy makers to realise that macroeconomic conditions have changed sufficiently to warrant attention. Remember that data must be compiled, processed and interpreted before macro trends can be observed. Then one must determine whether the trend is temporary or permanent, and whether action should be taken. The ***administrative lag*** refers to the length of time it takes policy makers to make a decision and implement it. In the case of fiscal policy the implementation phase often coincides with long delays. Certain taxes, such as income tax, can be changed only once a year. Usually such changes are made known in the Budget during February and come into effect after three months or even later. When the structure of the tax system is affected, laws must be amended and it takes time to write laws, get them passed by Parliament and eventually implement them. Spending decisions are also subject to similar administrative lags. Firstly, expenditure must be budgeted for. Secondly, in the case of projects of a capital nature such as roads and bridges, it may take months or even years before funds are actually spent. The ***impact lag*** refers to the length of time it takes new measures to have an effect on the economy. In the case of fiscal policy measures, the ***impact lag*** is relatively short in comparison with that of monetary policy measures. People immediately experience the effect of an increase in VAT. The commercial sector similarly quickly feels the effect of an increase or decrease in government expenditure.

Because of the long administrative lag, fiscal policy measures are regarded as more appropriate for corrections aimed at economic growth rather than for anti-cyclical purposes – in other words, it is a long-term policy instrument. It is even possible that because of lags, fiscal policy can cause instability if it is used for anti-cyclical purposes. Fiscal policy can furthermore be manipulated by politicians who want to be re-elected, resulting in a ***political business cycle.*** For example, politicians would prefer popular expenditure and tax measures to be introduced just before an election, but these measures could wreck the stabilisation policy.


Checklist
I am able to:
✓ Describe the role of the public sector in a market economy;
✓ List the main components of the public sector;
✓ Explain why market failures have to be addressed by government action;
✓ Discuss the main functions of government;
✓ Give an overview of the South African government's revenue and expenditure programmes; and
✓ Identify the characteristics of a good tax system.

Learning activity: Learning Unit 8

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

		T	F
1.	The existence of externalities prevents the attainment of a socially efficient allocation of resources in the economy.		
2.	Government could use the budget to try to influence variables such as total production, income and employment and to redistribute income in the economy.		
3.	Government should implement restrictive fiscal policy measures during a recession.		
4.	The budget deficit is usually financed through taxation.		
5.	Direct taxes are levied directly on goods and services.		
6.	A tax is progressive if lower income groups pay a smaller percentage of their taxable income in the form of tax than higher-income groups pay.		
7.	Value-added tax (VAT) is a regressive tax.		
8.	Government can always specify precisely who will ultimately bear the burden of a tax.		
9.	An increase in the excise tax on beer will affect only the consumers and producers of beer.		
10.	An increase in the excise tax on wine could affect workers in the wine industry.		

Review questions

1. If you are a merchant selling medical equipment, you will definitely prefer (to be/not to be) exempt for VAT.
2. If individuals are taxed at a fixed rate of 25% and all taxpayers are eligible for a tax rebate of R7 200, personal income taxation is (proportional/progressive) to income.
3. An efficient tax does not affect _____ prices at all.

4. Explain each of the following:

    4.1 Progressive tax
    4.2 Proportional tax
    4.3 Regressive tax

5. Government functions can be classified according to the following categories:

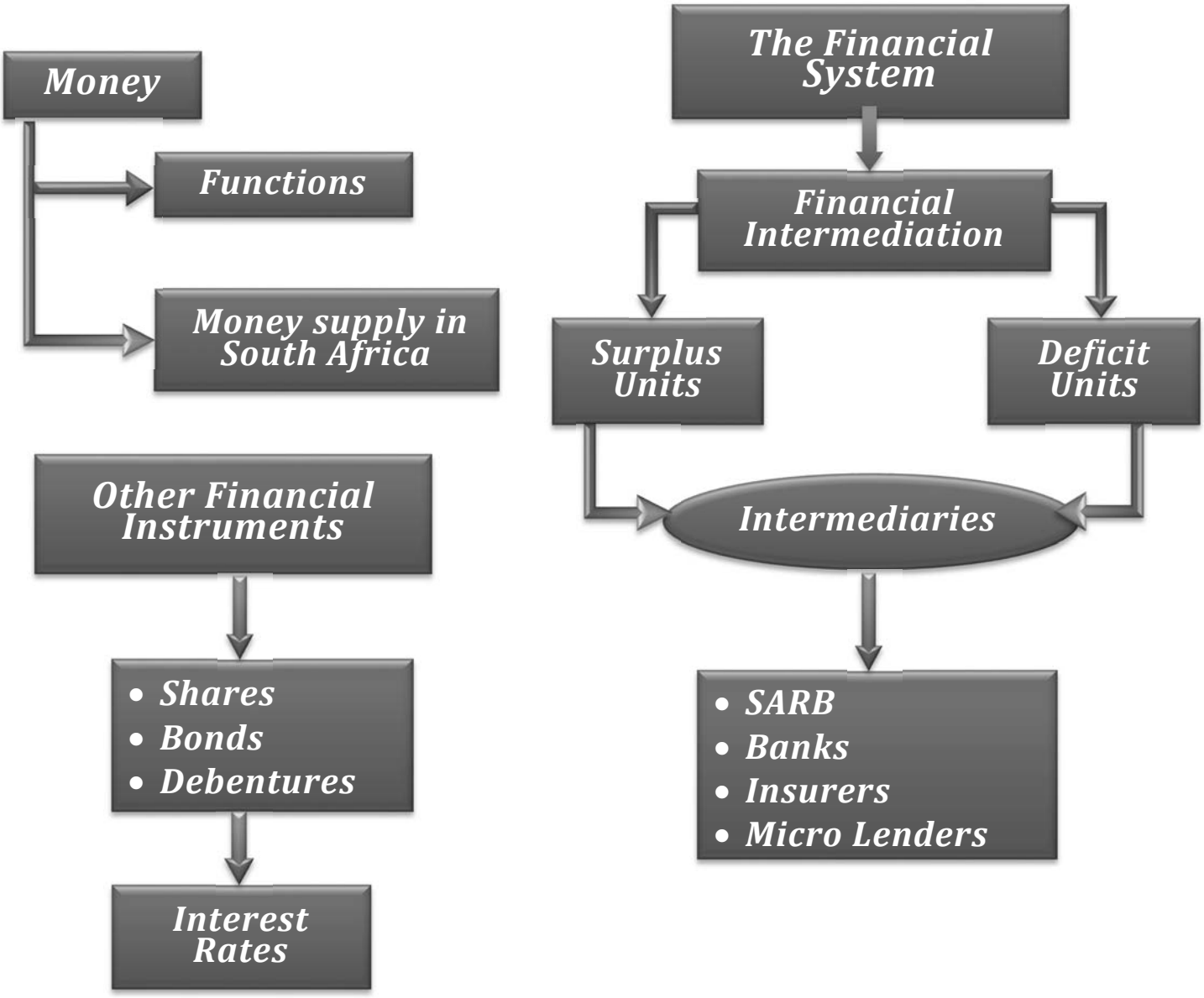
    5.1 Allocation
    5.2 Regulation
    5.3 Distribution
    5.4 Stabilisation

Describe each category briefly.

The Financial Sector

Learning Unit 9

Mind map of the Financial Sector



Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- medium of exchange
- store of value
- financial instruments
- financial intermediaries
- monetary policy
- measure of value
- M1, M2 and M3 definitions of money
- financial markets
- interest rates

9.1 Introduction

The two most important ways in which the government can influence the economy of a country are through its fiscal and monetary policies. In learning unit 8 you were introduced to the role of the government and how it influences the economy via fiscal policy. In this unit we are going to look at the role of the financial sector in South Africa. Exactly how changes in the quantity of money affect the real or actual welfare of a country remains a matter of controversy among economists. It is surprising that no certainty (or even any generally accepted theory) exists, even today, regarding exactly how money influences the economy. One could well ask whether it would not be obvious that an increase in the money supply would lead to increased expenditure and hence greater demand, which in turn would lead to an increase in production and/or prices.

The important point to remember, however, is that money is not real income. It should be obvious by now that there can be no mechanical or technical connection between an increase in the quantity of money and a higher production of goods and services. If this were the case, the world's poverty and development problems would be solved overnight.

Nevertheless, the role of money remains an extremely topical issue. Although no simple relation exists between money and real economic growth, economists do, in fact, accept that changes in the money supply affect the economy in some way or another.

Let us now look at some of the basic characteristics of money.

9.1.1 The functions of money

9.1.1.1 Money as a medium of exchange

Money is such an integral part of our daily lives that we don't always appreciate its significance. Just how important money is can perhaps be understood by imagining an economy that functions without it. In a ***barter economy,*** goods can only be exchanged for other goods. For example, a wheat farmer requiring clothing for his family first has to find a tailor who needs wheat. Then the exchange can take place. If he cannot find a tailor who happens to want wheat, the farmer will have to exchange his wheat for something else that the tailor does require. The barter economy is

therefore characterised by numerous exchange transactions which are cumbersome and inefficient.

This obvious inefficiency of the barter economy led, even in early primitive communities, to the use of some form of money. The advantages of a ***monetary economy***, where exchange takes place through the medium of money, are just as obvious as the disadvantages of a barter economy. The farmer no longer has to look for a tailor who needs wheat – as long as a ***buyer*** can be found for his product, he can use the money yielded by such a transaction to buy clothes. Money therefore serves as a lubricant or ***intermediary*** to facilitate the process of exchange and to make it more efficient. This function as ***a medium of exchange*** is the first and most important function of money.

Money is anything that is generally accepted as payment for goods and services or which is accepted in settlement of debt.

9.1.1.2 Money as a store of value

A further function of money is to serve as a store of value. In any society a need exists to conserve wealth (or surplus production) in some form or other. The most common form in which wealth can be conserved is money, since money can be used in exchange for other goods and services. Wealth can, however, also be conserved in more specific forms, such as fixed property, real assets, stocks and shares. The advantage of using money as a store of value lies in the fact that it is usually more convenient and can be used immediately in exchange for other assets. We therefore say that money is the most ***liquid*** form in which wealth can be conserved.

However, it is not always advantageous to use money as a store of value. In times of high inflation, when money loses its purchasing power, it cannot be successfully utilised as a store of value. A person who keeps all his or her wealth in the form of money will soon realise that his or her wealth is not retaining its value. If the price level is unstable, as in our present inflationary climate, there will be a tendency to use other objects as stores of value, for example, fixed property, shares, works of art and postage stamps. The store of value function, unlike the medium of exchange function, is therefore not unique to money.

9.1.2 The evolution of money

Through the ages, various goods have from time to time served as money. For example, beads, tea, cattle, silver and cigarettes (in prisons, for example) have served as money at one time or another. The evolutionary process whereby various forms of money were developed runs from commodity money right through to the modern cheque account with a bank.

The earliest form of money was ***commodities;*** the intrinsic value (the inherent value of the product itself) of the commodity was equal to the exchange value assigned to it. Naturally, certain commodities were more suitable to be used as money than others. Not all commodities had properties such as ***uniformity, durability, divisibility*** and the ability to be ***carried*** (which is determined by size and weight). For example, cattle are not divisible into "change", nor can they easily be carried about.

In due course, this type of commodity money made way for coins made of various kinds of metal, which were more efficient. Initially, iron and copper coins were very popular as money, but soon lost their value because of their abundance. They were replaced by scarcer, more durable metals such as silver and gold.

In time, however, the exclusive use of coins as a medium of exchange also became inconvenient as a result of increasing specialisation of production and the resultant greater dependence on trade. In large transactions, in particular, the coins became unwieldy and difficult to handle. This in turn led to the use of ***paper money,*** which made its first appearance in England in the 16th century. What happened was that the owners of gold (or silver) ***deposited*** it with certain institutions, for instance, the goldsmiths of that time. In exchange for these ***deposits*** they received certificates of deposit, and these certificates could be transferred to another person to pay for a transaction. The certificate of deposit was the first form of paper money which was fully covered by the coins it was supposed to represent.

The next step in the evolutionary process was the replacement of this entirely representative paper money (i.e. 100% coverage) by notes which were only partially covered by a commodity (e.g. gold). The gold standard, which applied in most countries up to the 1930s, functioned under such a partial coverage of gold. This form of money therefore had an exchange value which was much higher than its commodity value. Money of this kind is called ***fiduciary*** or ***credit money.*** The modern bank note which is in use today bears no relationship to any commodity, and its value is based solely on ***confidence*** in the government or monetary authorities to control the supply of notes in such a way that their purchasing power will not

disappear completely. As long as one is assured that goods and services can be obtained in exchange for bank notes, the confidence in and acceptability of, such paper money will not be affected.

This confidence is further supported by the fact that the notes and coins issued by the Central Bank have been declared by law to be legal tender. (In South Africa these notes and coins are issued by the South African Reserve Bank.) This means that such notes or coins cannot be refused if they are tendered in payment of a debt.

The next important development in the evolution of money is the use of cheque books by banks. In any developed country this form of money constitutes the greater part of the money stock. Let us now see how money is defined in South Africa.

9.1.3 The money supply in South Africa

When we talk about the money supply (or quantity of money) in a modern economy such as that of South Africa today, we may be referring to any one of several measures. Naturally the different measures have to relate to the general descriptive definition of money we supplied earlier.

9.1.3.1 The conventional measure (M1)

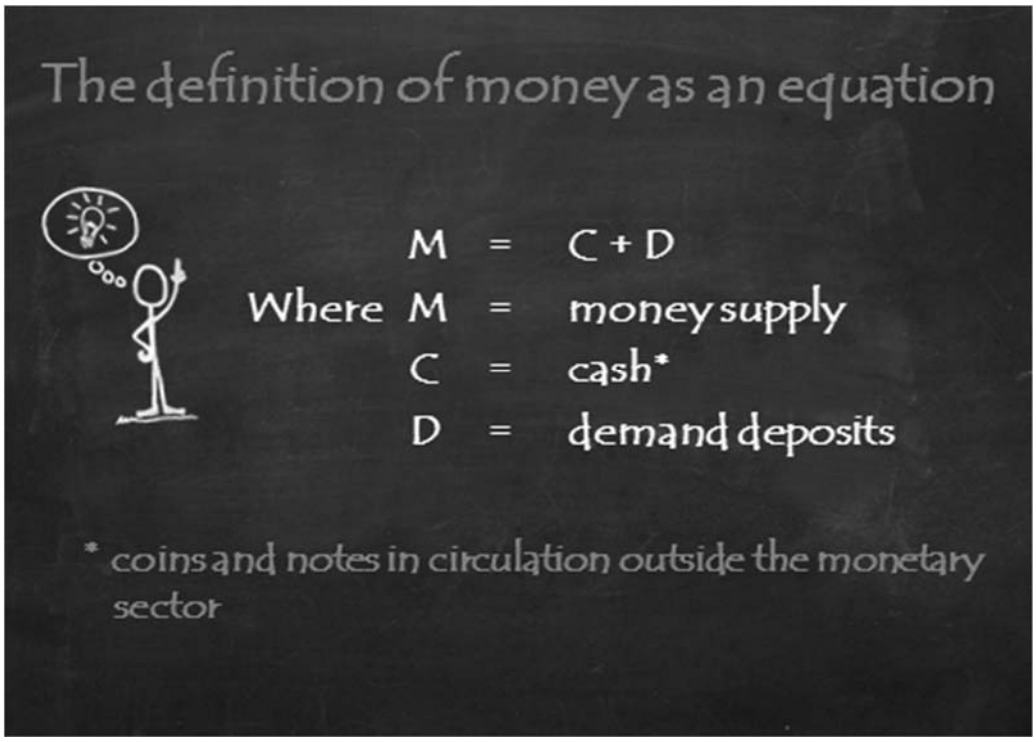
According to this measure, M1 is defined solely on the basis of the function of money as a medium of exchange. The money supply is therefore measured on the basis of those articles which are regarded as general means of exchange.

M1 *includes coins and notes (in circulation outside the monetary sector), as well as all demand deposits (including cheque and transmission deposits) of the domestic private sector with monetary institutions.*

This definition of M1 is very important for our purposes, and you need to understand its meaning. The concept of ***demand deposits*** refers to deposits (money which has been deposited) that can be withdrawn immediately in the form of cash, for example, at an automated teller machine, or it can be transferred to someone else's bank account. It is therefore simply a more scientific term for the money which may be withdrawn in the form of cash or transferred to another account, even out of the country. The value of these accounts forms part of the money supply since it is immediately available and is also generally accepted as payment in South African society.

Since only demand deposits of the ***domestic private sector*** are taken into account, deposits of the government and the foreign sector are not included in the money supply. Only coins and notes ***in circulation outside the monetary sector*** constitute a part of the money supply. The reason is that only cash in the hands of the public can be used as a means of payment. The cash in the bank vaults and in the hands of other institutions obviously cannot be used in the money–goods flow, and is consequently excluded. A practical implication of this is that the cash in an automatic teller machine becomes part of the money supply only after it has physically been drawn by a cardholder.

To summarise, we can see that everything that serves and is available to the domestic private sector as a means of payment in the normal course of events is included in the definition of M1.



Contrary to what may have been expected, demand deposits (D) forms by far the largest part of the M1 measure of money. In South Africa the composition of M1 at the end of 2016 was as follows:

C = R107 573 million
D = R1 499 342 million
Total (M1) = R1 606 915 million

About 93,31% of M1 therefore consisted of demand deposits.

9.1.3.2 A broader definition of money (M2)

M2 = M1 *+ all short-term and medium-term deposits of the domestic private sector with monetary institutions*

As the name indicates, these short-term and medium-term deposits (savings accounts) are not immediately available as a medium of exchange. They are deposits invested for a certain period (less than 30 days in the case of short-term deposits and less than six months in the case of medium-term deposits) and can only be withdrawn at considerable cost in the interim. Since the maturity of these deposits is not very long, it is very similar to M1 money, and is known in South Africa as ***quasi money.*** Together with M1, this quasi money forms the M2 measure of money.

9.1.3.3 The most comprehensive measure of money (M3)

For many years, M1 and M2 were the only measures used to measure the money supply, but today great significance is attached to the M3 measure, which gives money an even broader definition than M2.

M3 = M2 *+ all long-term deposits of the domestic private sector with monetary institutions*

Over and above the short-term and medium-term deposits included in M2, long-term deposits (with a currency of longer than six months) are added to form the M3 measure. The monetary authorities today use this broad measure of the money supply to evaluate the success of monetary policy, since they are of the opinion that this is the most reliable indicator of developments in the monetary (or financial) sector of the economy.

At the end of 2014 the extent of the different measures of the money supply was as follows:

	R million
Coins and bank notes	107 573
Demand deposits	1 499 342
M1	***1 606 915***
Short and medium-term deposits	994 290
M2	***2 601 205***
Long-term deposits	555 346
M3	***3156 550***

Source: South African Reserve Bank Quarterly Bulletin (2017)

9.1.3.4 Medium of exchange as against store of value

Looking at the above three measures, it is clear that M1 is the only one that takes purely the medium of exchange function as its point of departure. As financial assets (other than C and D) are added to this measure, the emphasis placed on the medium of exchange function becomes less distinct. As we move from M1 to M2 to M3, the emphasis on the store of value function grows. It is evident that a deposit with a banking institution having a currency of more than six months can hardly be regarded as an available means of payment today. This type of deposit is much closer in kind to the store of value function.

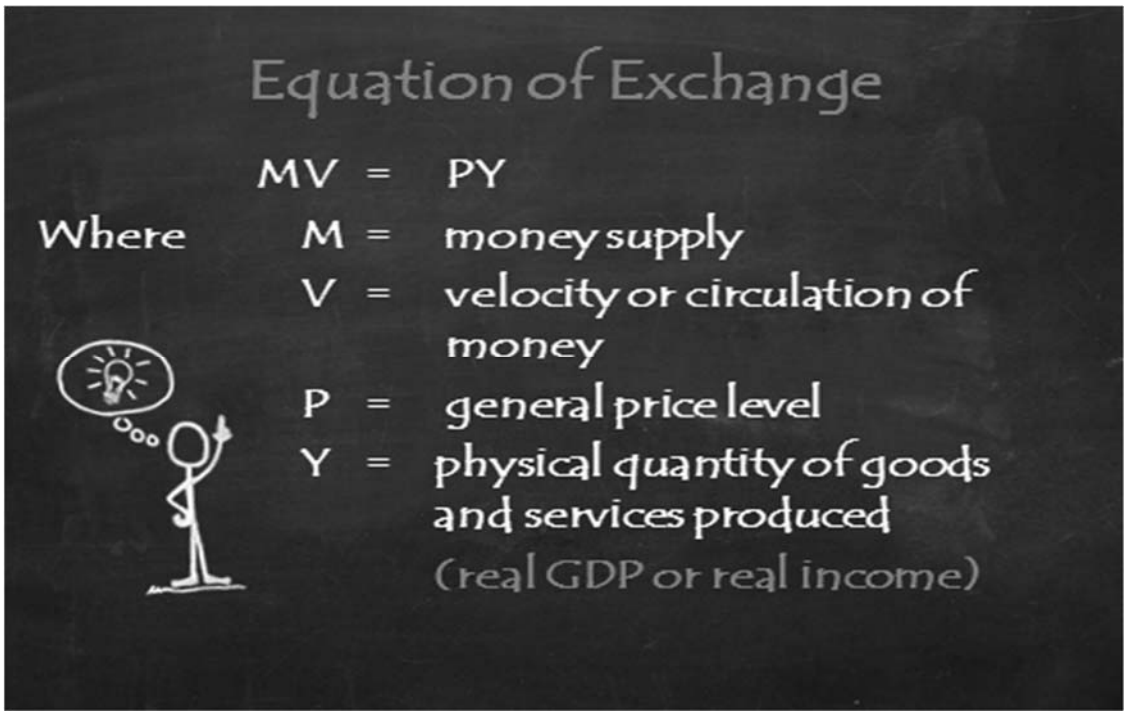
9.1.3.5 Money and other related concepts, and the equation of exchange

Money is such a commonplace phenomenon that it is often confused with other concepts. It should not, for example, be confused with concepts such as ***income*** or ***wealth.*** A person in possession of great wealth does not necessarily possess a great deal of money. This wealth can take many other forms, such as shares or fixed assets. Nor is a person's income equivalent to the money he or she possesses. This confusion between the three concepts ***money, wealth*** and ***income*** arises from the fact that all three can be expressed in terms of a particular monetary unit (e.g. rands, dollars or pounds).

Money supply and wealth are both ***stock concepts*** which can be measured at a particular point in time. Wealth, however, is a far more comprehensive measure and includes other assets in addition to money. In contrast, income is a ***flow concept*** which can be measured over a period of time, say, R1 000 ***per month*** or R12 000 ***per annum.***

From a macroeconomic point of view, the difference between income and money can best be illustrated when we consider that the GDP (current value), which is a measure of income, amounted to approximately R4 336 988 million in 2016, while the money in circulation during the same year came to only R1 606 915 million (M1). M1 as a percentage of the GDP therefore amounted to around 32.05%.

This apparent contradiction can easily be resolved if we understand the concept of ***velocity of circulation*** (V), which is the number of times the money supply is circulated in a given period. We may also interpret it as the number of times an average rand changes hands — that is, the number of times it has been used to execute a transaction. Here is a practical example to show you what we mean.



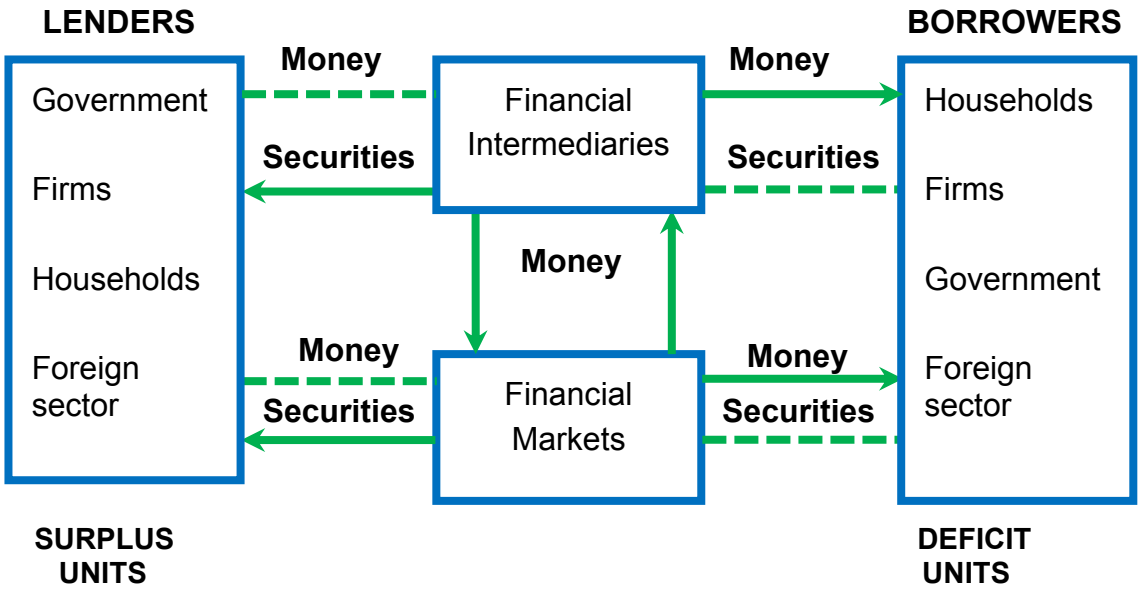
Suppose we have a simple economic system in country Z with three participants — John, Sue and Pete. The "system" kicks off by paying John R50 for being the president. John now pays Sue the amount of R50 to prepare a banquet for him. Sue then pays Pete R50 to service her car. From this it is clear that the ***money supply*** in country Z is only R50, but that the total income generated is equal to R150. The total income earned is calculated by multiplying the money supply by the number of times it has been circulated, that is M x V = R50 x 3 = R150. This R150 now also represents the value of all goods and services (or transactions) in country Z for the relevant period. From learning unit 5 you should know that the total value of goods and services (transactions) is a good approximation for the (nominal) GDP of a country (in this case, country Z). You also learnt that the nominal GDP consists of a ***price component*** (P) and a ***quantity component*** (Y). You should be able to see that

M x V is equal to the nominal GDP (P x Y).

9.2 The financial system

Now that we know what money is, we can take a closer look at the other elements of the financial system. For a better understanding of the "mechanics" of this system in South Africa, we express the flow of activities with the aid of figure 9.1.

Figure 9.1: The flow of funds through the financial system



Source: Mohr *et al* (2008)

The financial system contains the following elements:

Market participants, which are made up of

- ✓ ***Non-financial market participants***, consisting of surplus units and deficit units, that is, those wishing to borrow money (deficit units) and those wishing to lend money (surplus units).
- ✓ ***Financial intermediaries***, which facilitate the lending and borrowing process.

Financial instruments which are available to set the lending and borrowing process in motion.

Financial markets on which the instruments are traded.

The ***non-financial market participants*** need no introduction, since they consist of the government, the firms and all the private individuals (households) in the country. The role of each of these participants should already be well known to you. However, we need to pay more attention to the financial ***elements*** of the system.

9.3 Financial intermediaries

The first of the financial elements are the intermediaries. In any money economy we find a number of institutions specialising in financial transactions. There are, however, many different types of institutions within the financial sector, each specialising in a specific kind of service or market segment. Regardless of this specialisation, we find that the common purpose of each of these institutions is to act as an ***intermediary between the surplus units and the deficit units of the economy.***

At any particular stage there are surplus units (usually households which have saved money) disposing of funds that can be invested, and deficit units (e.g. entrepreneurs wishing to start new business enterprises) who are in search of funds. Although it is possible, and does in fact happen, that such parties can contact each other directly, it has been shown in practice that the vast majority of business transactions take place through the intervention of financial intermediaries. These institutions therefore specialise in the acceptance of the surplus funds of surplus units and granting of credit to deficit units.

The government is definitely also part of this process. On the one hand, it periodically places surplus funds, e.g. received from taxes, with financial institutions; while on the other hand, it acts as a deficit unit seeking funds to finance government projects.

Credit is granted when a person or institution lends funds to another person or institution. In exchange for the funds a piece of paper (a security or credit instrument, often also called a bond) is issued that stipulates at what ***interest rate*** the funds are borrowed, and when and how the amount is to be repaid.

The financial intermediaries in South Africa can be divided into two main categories. On the one hand we have the monetary authorities, with the ***South African Reserve Bank*** (SARB) as the most important, and on the other the institutions of the ***private sector***.

9.3.1 The South African Reserve Bank (SARB)

The SARB, established in 1921, is the central bank of South Africa. Together with the Treasury, the Reserve Bank forms the monetary authority in South Africa. The main functions of the SARB are to act as the

- controller of note issues
- banker for the government
- banker for other banks
- custodian of the country's gold and other foreign exchange reserves
- institution responsible for the formulation and implementation of monetary policy in South Africa

In the execution of these functions, the SARB uses its powers to exercise control over the money supply and credit creation.

9.3.1.1 Controller of note issues

Since its inception, the Reserve Bank has had the sole right to the issue of bank notes and coins. This cash comes into general circulation through the granting of overnight loans (against the security of financial assets) by the Reserve Bank. The Reserve Bank is largely guided by the public's cash requirements in its issues of notes and coins.

9.3.1.2 Bankers' bank

In its capacity as bankers' bank, the SARB is the holder of the minimum (compulsory) cash reserves required of banks. Banks have to hold 2,5% of all deposits that they hold in the form of cash in a non-interest bearing account with the SARB. On a daily basis a bank may experience a cash deficit due to the fact that funds are transferred between banks, and also to the SARB. They may borrow funds from the SARB to finance such deficit. They will pay a predetermined interest rate called the repo rate which is determined by the Monetary Policy Committee (more about this in section 9.5). As bankers' bank, the Reserve Bank also acts as ***lender of last resort.*** This means that the SARB will assist a bank that is experiencing a serious lack of cash in order to preserve the stability of the financial sector as a whole. Such

a loan will, however, be subject to strict conditions and the reason for the lack of cash will be thoroughly investigated.

9.3.1.3 Banker for the government

As government banker, the Reserve Bank handles all financial receipts and payments of the state. The bank–client relationship in this case also includes the granting of credit. The Reserve Bank also advises the government about monetary and financial matters and is responsible for the administration of all exchange control regulations.

9.3.1.4 Custodian of gold and other foreign exchange reserves

With the exception of smaller necessary balances held by banks and the Treasury, the Reserve Bank keeps all the country's gold and foreign exchange reserves. Gold coins and gold bullion are added to the reserves at a market-related price. The level of South Africa's gold and other foreign exchange reserves is one of the main barometers of the state of the economy and of prospects for future economic growth.

9.3.1.5 Formulation and implementation of monetary policy

The SARB, in cooperation with the Department of Finance, is responsible for formulating and implementing monetary policy. The way in which the bank’s other functions is fulfilled will be determined mainly by the goals of monetary policy at that juncture. In this regard it should be mentioned that the Reserve Bank has accepted the protection of the domestic and external value of the rand as its most important goal. The main objective of monetary policy is to keep the domestic inflation rate as low as possible, and the main instrument used to attain this objective is the repo rate, which as previously explained, is the rate at which banks borrow from the SARB to finance their daily cash shortage.

9.3.2 Financial institutions of the private sector

South Africa has a plethora of different institutions operating in the financial markets. Some of you may have, at some stage in your life, invested some money with or borrowed money from

a ***bank,*** taken out a policy through an ***insurance company*** or opened a savings account at ***Postbank***.

The following list gives some indication of the variety of financial intermediaries in the South African economy.

Classification of South African financial intermediaries

Deposit intermediaries

private banks
mutual banks
Postbank

Non-deposit intermediaries

Contractual intermediaries

long-term insurers
short-term insurers
pension and provident funds

Collective investment schemes

unit trusts
property unit trusts
participation mortgage bond schemes

Development finance intermediaries

Development Bank of South Africa (DBSA)
Industrial Development Corporation (IDC)
National Housing Finance Corporation (NHFC)

Microfinance institutions

stokvels
village banks
friendly societies
micro lenders

Microfinance institutions are "organisations that provide savings, loans, money-transfer services, insurance and other financial services to poor and low-income clients – clients who are generally poorer and more vulnerable than traditional banking clients" (Goodspeed in Van Zyl *et al* (2009)). It is estimated that more than 50% of adult South Africans are currently unbanked.

9.4 Financial securities and markets

Refer again to the flow diagram in figure 9.1. The second financial element of the system is the ***securities*** (or ***instruments)*** which flow between the ***non-financial market participants*** (surplus and deficit units) and the ***financial intermediaries.*** Once again a great number of different instruments are to be found in the South African system. Some of you may have encountered either ***shares, bills, bonds, debentures*** or other ***credit instruments*** at some stage of your life.

In the sophisticated financial world we live in today there are also ***derivative instruments*** (options, swaps, warrants, futures and forwards). The name of these instruments arises from the fact that they are derived from the value of an underlying asset, reference rate or index. Therefore they cannot exist on their own. In this module no further attention will be devoted to these and the other more conventional financial instruments.

The place where lenders and borrowers meet in order to trade financial instruments with the aid of intermediaries is called the ***financial market.*** Activities on these markets are not restricted to a particular building, as is the case with the market for fresh produce, but can be represented by a broker or banker or any post office. The buying and selling of securities discussed in the previous section occur in either the ***primary*** market or the ***secondary*** market. The primary market is identified with the issuing of new securities that are being traded on the market for the first time. The secondary market, by contrast, is identified with the trading of existing securities, namely securities that have already been issued. The prices of shares and bonds traded on the JSE which are published in the daily papers apply mainly to secondary market instruments.

A final distinction I would like to make is that between the ***money market*** and the ***bond market***. The difference is simply that the bond market is associated with ***long-term securities***, with tenure of more than one year. Eskom domestic bonds which mature in the year 2020 are a typical example of a bond market instrument. The money market, by contrast, is associated with ***short-term securities,*** namely instruments with tenure of less than one year. Three-month bankers' acceptances and Treasury bills are good examples of money-market instruments. However, the distinction between the money market and the bond market is not always exact. Bonds with tenure of less than three years are often regarded as liquid or money-market instruments.

Both these markets (the money market and the bond market) in South Africa are well developed markets offering sound credit and investment facilities to both the private sector and the government. They are active and respond quickly to any market impulse (e.g. when rumours of an interest rate change develop), and also improve the efficiency of the government's monetary policy actions.

9.5 Different interest rates

It is important to remember that there is not only one rate of interest. In reality there are many interest rates tied to different financial assets. One of the most influential interest rates is the SARB's repurchase (or repo) rate. This is the rate at which banks obtain funds from the Reserve Bank when they experience a shortage of reserves. Other interest rates, such as the prime lending rate of banks, the mortgage rate on residential houses and the banker's acceptance rate (BA rate), all tend to move in harmony with one another and follow the direction of the repo rate. Therefore, when we refer to the interest rate in macroeconomics, we should see it as one that represents all the individual rates that exist in practice. In this respect, the general interest rate level corresponds to the general price level, which is also an important variable in macroeconomics.

Why are interest rates important? The newspapers discuss interest rates daily – and with good reason. Interest rates influence practically all our economic decisions. Should we spend more, or should we rather save to buy a house? If we have a house, how will an increase in the mortgage rate influence our financial position? Interest rates also influence decisions taken by business people. Should they invest in new production plants or equipment, or should they buy treasury bills? If the interest rate on bank deposits is, for example, in the region of 10% while the inflation rate is 15%, the general public who have surplus funds will find this ***negative real interest rate*** unacceptable. They might decide instead to buy alternative securities with a higher expected rate of return. It can also happen that individuals prefer not to save or buy any financial instruments, but to spend their money instead. From this it is clear that investment decisions are quite complicated, as all the numerous alternative opportunities have to be weighed up against one another.

As we have said, the most important interest rate in the economy is the ***repo rate***. This is the rate at which the SARB lends money to the banks to finance their daily liquidity deficit. This rate also determines the interest rate at which the banks are willing to provide loans to the

private sector, and therefore the banks' ***prime overdraft rates*** and other lending rates will change in harmony with the repo rate. The repo rate thus plays a key role in the interest rate structure of the country. Table 9.1 gives an indication of how often the SARB has changed the repo rate during the past few years.

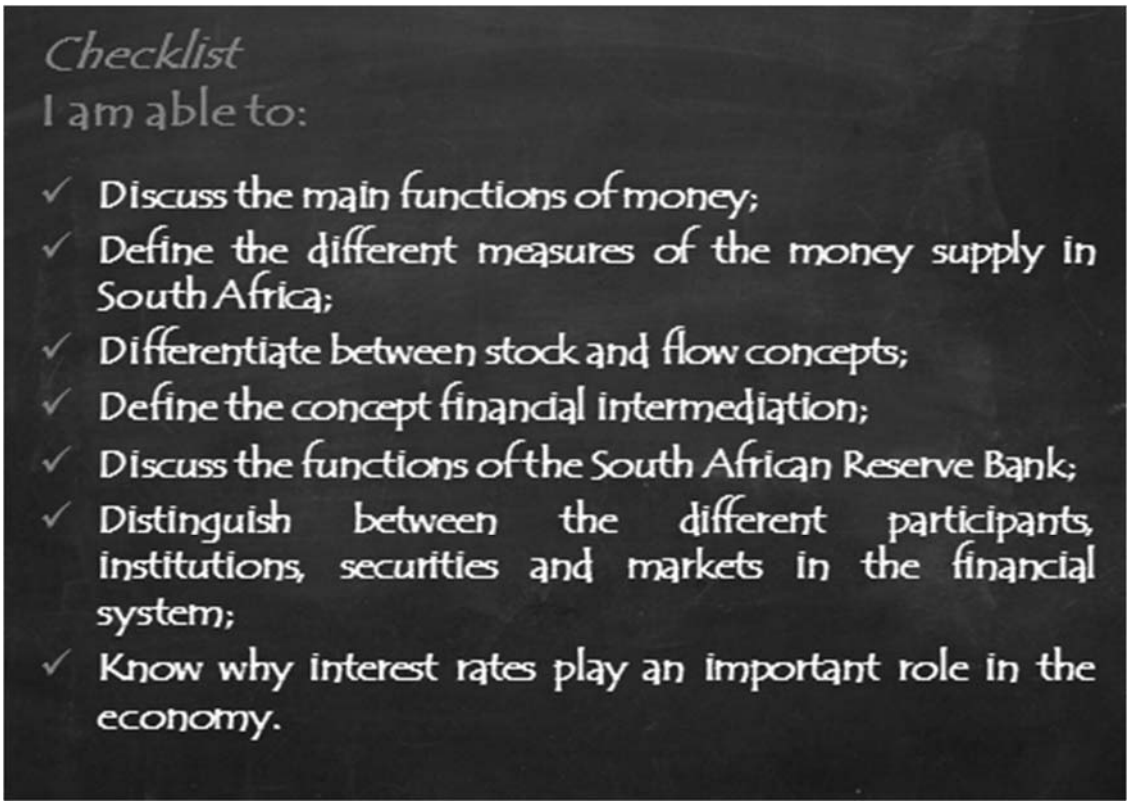
Table 9.1 Changes in the repo rate since 2007

Date changed	Repurchase rate (%)
07/12/2007	11.00
11/04/2008	11.50
13/06/2008	12.00
12/12/2008	11.50
06/02/2009	10.50
25/03/2009	9.50
04/05/2009	8.50
28/05/2009	7.50
13/08/2009	7.00
25/03/2010	6.50
09/09/2010	6.00
19/11/2010	5.50
20/07/2012	5.00
30/01/2014	5.50
18/07/2014	5.75
24/07/2015	6.00
20/11/2015	6.25
29/01/2016	6.75
18/03/2016	7.00

Source: South African Reserve Bank (2015 and 2017)

We also have to distinguish between ***short-term interest rates*** and ***long-term interest rates.*** Short-term interest rates are determined in the money market, and long-term interest rates in the bond market. The level of long-term interest rates is one of the most important determinants of investment. The monetary authorities work mainly in the money market and therefore mainly influence the short-term interest rates through the repo rate. Long-term interest rate will usually also move in harmony with the short-term rates.

The rate of interest (via changes in the repo rate) is the most important operational variable used by the monetary authorities (mainly the SARB) in the execution of ***monetary policy.*** In essence monetary policy is aimed at keeping the inflation rate as low as possible. The main tool that the SARB has available to influence the inflation rate is the interest rate level. Generally it is accepted that higher interest rates will result in lower levels of spending (because it is more expensive to borrow money) and this may result in prices increasing at a slower rate and thus a lower inflation rate. However, a detailed analysis of monetary policy, and its influence on the economy, falls outside the scope of this course.



Learning activity: Learning Unit 9

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

		T	F
1.	The use of money eliminates the need for a double coincidence of wants associated with a barter economy.		
2.	When inflation is experienced, money loses some of its usefulness as a store of value.		
3.	Individuals can hold their wealth in the form of money only – in other words, money is the only possible store of value.		
4.	In South Africa, there are at least three different measures of the quantity of money: M1, M2 and M3.		
5.	M1 is the narrowest measure of money and consists of coins, notes and demand deposits.		
6.	The cash reserve requirement of any South African bank is held in a non-interest-bearing account with the SARB.		
7.	The money creation process is based on the ability of banks to lend part of the deposits they receive to other customers.		
8.	Banks can create demand deposits by granting credit to their clients in the form of overdraft facilities.		
9.	In South Africa, monetary policy is formulated and implemented by the SARB, which is the country's monetary authority.		
10.	The rate at which the SARB grants accommodation to the banks is called the repo rate.		

Review questions

1. The M3 money supply includes both the _____ function of money and the _____ function of money.
2. A _____ concept is measured at a particular point in time, while a _____ concept is measured over a period.
3. Monetary policy in South Africa is applied within an _____ framework.
4. The interest rate that banks have to pay when they borrow money from the Reserve Bank is called the _____ rate.
5. The following values for M1, M2 and M3 are taken from the *Quarterly bulletin*:

Year	*M1*	*M2*	*M3*
2013	1 132 039	2 049 694	2 512 251
2014	1 243 571	2 228 790	2 696 145

   5.1 Calculate the value of short-term and medium-term deposits for 2013 and 2014.

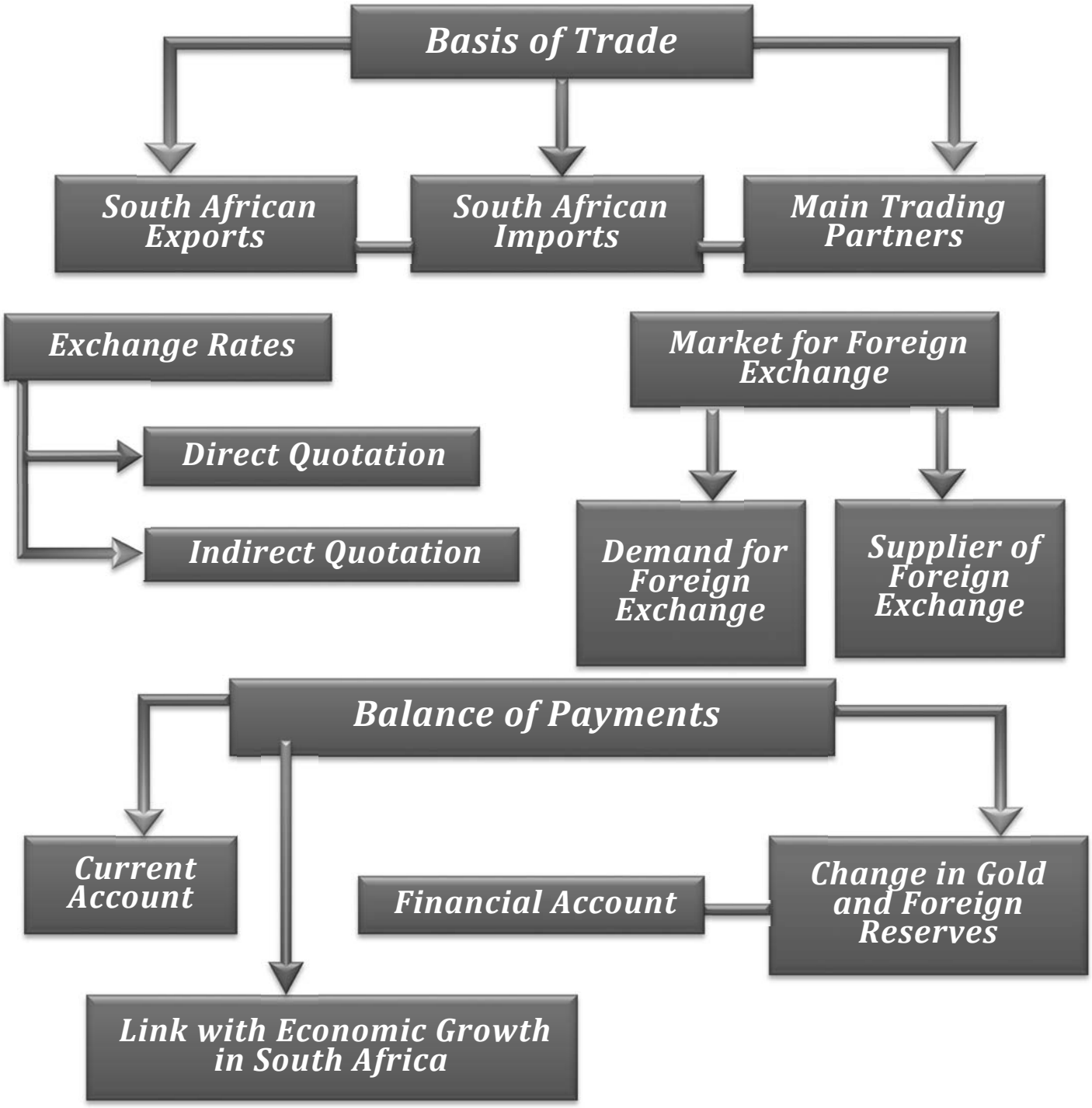
   5.2 Calculate the value of long-term deposits for 2013 and 2014.

6. Discuss the functions of money.

The Foreign Sector

Learning Unit 10

Mind map of the Foreign Sector



Contents

Key concepts

Once you have studied this learning unit you will be able to understand and discuss the following key concepts:

- absolute advantage
- comparative (relative) advantage
- exports and imports
- exchange rates
- market for foreign exchange
- balance of payments (BoP)
- current account of balance of payments
- financial account of balance of payments
- foreign reserves
- direct and indirect quotation

10.1 Introduction

The South African economy is regarded as a very open economy because of the importance of international trade as a share of total economic activity. Internationally the USA may be regarded as less open because international trade makes a relatively small contribution to overall economic activity. In contrast to this, Japan (which relies heavily on both imports of raw materials and exports of manufactured products) may be considered as one of the more "open" economies in the world. This unit will focus more closely on our trading relations with the rest of the world.

The only way international trade differs from "domestic" trade is that one of the parties to the transaction concerned is from another country. Naturally there are difficulties, in the sense that different languages may be spoken and different currencies may be encountered, but the fact remains that all the economic principles you have learnt up to this point are wholly applicable to the study of international economics.

Some of the questions raised in international economics are: Why do we sometimes choose to do business with foreigners rather than with our fellow South Africans? What is the extent and composition of this cross-border economic activity? How are different monetary units exchanged for one another?

10.2 The basis for trade

Why does international trade take place? The answer to this question lies in the endowment of different countries with ***natural resources*** (including climate), ***human resources*** and the ***resources*** of ***capital equipment*** and ***technology*** which are built up over the years. This can be illustrated by means of various examples. A country such as Japan has a large and reasonably well-educated labour force – skilled labour is abundant and therefore quite cheap. Japan can thus produce (efficiently and at low cost) a variety of goods for which skilled labour is required: cameras, computers, TVs and DVD players are examples of such ***labour-intensive*** commodities. In contrast, a country like Australia has vast tracts of land in comparison with its human and capital resources, and so can produce ***land-intensive*** commodities such as wool and meat. Brazil, on the other hand, possesses the soil, tropical climate, rainfall and ample supplies of unskilled labour needed for the efficient, low-cost production of coffee. Industrially advanced nations (such as Germany) are in a strategic

position to produce a variety of ***capital-intensive*** goods such as cars, heavy machinery and chemicals.

The fact that these cases would lead to trade is easy enough to understand, because each country has an advantage over other countries in the production of a specific commodity.

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*An **absolute advantage** is the ability of one country to produce more of a particular commodity within a certain period of time compared with another country using the same amount of resources.*

However, international trade is ***not*** confined to cases where countries have an absolute advantage over others in terms of the production of certain goods. International trade may even be advantageous to a country that is extremely efficient in producing ***all*** goods. One would think that such a country could produce anything it needed. This is indeed true, ***but*** the advantage of trade would then lie in the fact that the country in question could specialise in those goods where its ***comparative (or relative) advantage*** was greatest.

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*A **comparative advantage** is the ability of one country to produce a particular commodity at a lower cost within a certain period of time compared with another country.*

The following example (although based on very simplified assumptions) illustrates the nature of comparative advantage.

Suppose we have two countries, A and B, which can both produce only two possible products, rice and wine. If A devotes all its resources to the production of rice, it will be able to produce 40 bags of rice per person-hour. If it devotes all its resources to the production of wine, it can produce 8 bottles of wine per person-hour. Country B, on the other hand, can produce either 8 bags of rice or 4 bottles of wine per person-hour.

This situation is illustrated in the following table.

	Rice	Wine
Country A	40	8
Country B	8	4

We can make the following deductions from this:

- Country A has an absolute advantage in the production of both rice and wine. However, it has a greater absolute advantage in the production of rice. It is 5 times (40:8 or 5:1) more efficient than country B in the production of rice, and only twice as efficient (8:4 or 2:1) as country B in the production of wine.
- Therefore, country A will specialise in the production of rice, and export rice to country B.
- On the other hand, country B is less efficient in both products than A, but is relatively more efficient in the production of wine than the production of rice.
- Therefore, country B will specialise in the production of wine and export wine to country A, while it imports rice from country A.
- The cost ratio of producing the two products is 5:1 (40:8) in country A and 2:1 (8:4) in country B.
- Any trade ratio that falls between these two cost ratios can benefit both countries if they traded.
- Let us take as an example a trade ratio of 4:1 (e.g. the two countries decide to trade 4 bags of rice for 1 bottle of wine).
- ***Country A*** will benefit because by switching a person-hour from wine production to rice production it loses 8 bottles of wine, but gains 40 bags of rice. The 40 bags of rice can now be traded for 10 bottles of wine. In the process, A has gained 2 bottles of wine.
- ***Country B*** will also benefit because by switching a person-hour from rice production to wine production it loses 8 bags of rice, but gains 4 bottles of wine. The 4 bottles of wine can earn 16 bags of rice through trade. In the process, country B has gained 8 bags of rice.
- It is quite clear that both countries can gain by specialising in the products in which they have a comparative advantage or comparatively the least disadvantage.

According to the general principle of comparative advantage, the greatest benefit for all is obtained when there is specialisation according to endowments and talents between people,

between regions within a country and also between countries. This type of specialisation can arise naturally provided there is no interference with market forces; it forms the background to the policy of ***free trade*** or free international trade, which is regarded by most policy-makers and economists as the ideal condition.

International trade, however, by definition involves two independent countries, and for this reason it is very difficult to put this principle into practice. Particularly in the case of countries endeavouring to catch up economically with other countries with a higher level of industrial development, it is often argued that local industries cannot get off the ground without a certain measure of ***protection*** (the so-called “infant industries” argument), and even that free trade could ruin existing industries. This is the opposite of the principle of free trade, and is known as ***protectionism.*** Protectionism involves policies such as imposing tariffs on imports and the subsidising of exports. These measures tend to distort prices and lead to retaliation by the trading partners, eventually leading to a reduction in trade. There is no country in the world today which does not have some form of protection for its local industries, agriculture and mining sector.

10.3 South Africa's foreign trade

In table 10.1 the total exports to some of South Africa's main trading partners are shown from 2012 to 2016. The countries are ranked according to the value of total exports during 2016. Table 10.2 shows the total imports from some of South Africa’s main trading partners, also from 2012 to 2016. The countries in table 10.2 are ranked according to the value of total imports during 2016.

Table 10.1 South Africa's exports – top 10 trading partners (R'm)

	Exports (R millions)					Ranking	% of total
Country	**2012**	**2013**	**2014**	**2015**	**2016**	**2016**	**2016**
CHINA	84 839	116 335	106 021	94 396	101 231	1	9.2
GERMANY	37 244	41 327	53 271	67 727	82 015	2	7.5
UNITED STATES	64 422	66 881	75 559	78 577	80 542	3	7.3
BOTSWANA	41 416	44 451	55 612	52 508	54 555	4	5.0
NAMIBIA	33 528	40 943	52 429	52 835	51 928	5	4.7
JAPAN	46 744	53 827	57 068	50 826	50 831	6	4.6
INDIA	30 743	29 012	43 231	40 482	47 152	7	4.3
UNITED KINGDOM	27 411	31 875	41 172	41 830	46 477	8	4.2
BELGIUM	15 377	18 966	28 354	29 356	33 646	9	3.1
MOZAMBIQUE	19 315	27 316	35 296	29 535	33 284	10	3.0
TOTAL	**820 097**	**926 764**	**1 079 119**	**1 032 501**	**1 097 936**		

Source: Department of Trade and Industry (2017)

Table 10.2 South Africa's imports – top 10 trading partners (R'm)

	Imports (R millions)					Ranking	% of total
Country	**2012**	**2013**	**2014**	**2015**	**2016**	**2016**	**2016**
CHINA	119 945	154 448	183 861	199 400	199 031	1	18.1
GERMANY	83 962	103 225	116 773	122 344	129 679	2	11.8
UNITED STATES	61 047	63 030	76 860	76 286	72 870	3	6.6
INDIA	37 700	51 890	54 399	53 701	45 641	4	4.2
SAUDI ARABIA	65 148	77 440	86 206	33 607	41 692	5	3.8
JAPAN	37 815	39 393	44 075	39 889	37 528	6	3.4
FRANCE	20 351	22 367	26 335	24 478	33 055	7	3.0
UNITED KINGDOM	28 834	32 283	38 064	35 002	31 806	8	2.9
THAILAND	22 137	26 537	27 843	26 306	31 758	9	2.9
NIGERIA	30 550	34 898	61 527	38 558	30 428	10	2.8
TOTAL	**851 660**	**994 766**	**1 178 093**	**1 088 074**	**1 099 065**		

Source: Department of Trade and Industry (2017)

10.3.1 South Africa's exports

In the previous section we said that the reason for foreign trade is to be found in the differences between countries in respect of the availability of natural, human, technological and capital resources. This statement is clearly illustrated by the composition of South Africa's imports and exports. Table 10.3 contains South Africa’s exports according to the trade structure for 2012 to 2016.

From table 10.3 it can be seen that South Africa’s exports in general show a growing trend, although mining exports declined in 2014 and 2015.

Table 10.3 Structure of South African trade: exports 2012–2016

	Exports (Rand million)				
	Agriculture	**Mining**	**Manufacturing**	**Other manufacturing**	**Other sector**
2012	40083	316015	441799	1427	2106
2013	51513	358228	496017	1792	2264
2014	59941	339321	570829	2483	3482
2015	64775	338386	601808	2731	6477
2016	75470	339536	645039	3047	8092
	Per cent growth				
	Agriculture	**Mining**	**Manufacturing**	**Other manufacturing**	**Other sector**
2013	28.52	13.36	12.27	25.53	7.54
2014	16.36	-5.28	15.08	38.57	53.79
2015	8.07	-0.28	5.43	9.99	85.98
2016	16.51	0.34	7.18	11.56	24.94

Source: Department of Trade and Industry (2017)

10.3.2 South Africa's imports

Table 10.4 shows that the growth rate of agricultural imports declined considerably in 2013 and 2014, and then increased substantially in 2015 and 2016. Mining imports started to increase again in 2015 after a decline in 2014. From table 10.4 it can also been seen that manufacturing imports represent the largest part of South Africa’s imports.

Table 10.4 Structure of South African trade: imports 2012–2016

	Imports (Rand million)				
	Agriculture	**Mining**	**Manufacturing**	**Other manufacturing**	**Other sector**
2012	28349	6473	812106	7069	993
2013	29942	9183	949874	7892	1165
2014	32181	7790	1032835	9167	1539
2015	38879	7845	1030324	9674	1414
2016	49023	8208	1029616	10085	1496
	Per cent growth				
	Agriculture	**Mining**	**Manufacturing**	**Other manufacturing**	**Other sector**
2013	5.62	41.86	16.96	11.64	17.25
2014	7.48	-15.17	8.73	16.16	32.13
2015	20.81	0.71	-0.24	5.52	-8.13
2016	26.09	4.63	-0.07	4.25	5.78

Source: Department of Trade and Industry (2017)

10.4 Exchange rates

10.4.1 Definition, methods of quotation and methods of calculation of exchange rates

The need for rates of exchange arises because countries make use of different currencies: South Africa uses the rand (abbreviated to R), and the USA uses the dollar (US$). Other examples of national currencies are the euro (€) for the European Union, the British pound sterling (£), the Japanese yen (¥) and the Zimbabwean dollar (Z$). Once trade is carried on between two nations, the parties conducting these international transactions would normally prefer to pay, or to receive payment, in their own currencies. For this to be possible there must be a going rate at which one currency can be exchanged for another. This is referred to as an exchange rate.

*An **exchange rate** is the rate at which one monetary unit can be exchanged for another monetary unit.*

10.4.2 Direct and indirect quoting of exchange rates

Exchange rates are normally expressed in terms of how much of the local monetary unit is needed to purchase one unit of the foreign currency concerned. This is the direct method of quoting exchange rates. Let us consider two examples.

For a South African, the direct method of expressing the exchange rate between the rand and the US dollar involves writing the number of rand needed to buy one dollar at that time. For instance, the price of one dollar may be equal to R11.50. Using the direct method of quotation, we say that the rand/dollar (R/$) exchange rate is R11.50 = $1.00, or simply that the R/$ rate is R11.50 to the dollar.

What about the rate of exchange between the rand and the British currency, the pound sterling? If the price of one pound is equal to R19.50, then the rand/pound (R/£) exchange rate, using the direct method, is R19.50 = £1.00, or R19.50 to the pound.

Imagine that a South African buyer wants to import English cutlery to the value of £500. Not having any pounds available, the importer wants to pay in rand. The English exporter, in turn, would prefer to be paid in pounds. Therefore, the South African may have to exchange a certain number of rand for the required number of pounds. The number of rand needed is calculated by multiplying the R/£ exchange rate by the quantity of pounds needed, that is, R19.50 multiplied by £500, which is equal to R9 750. This number of rand will be sufficient to purchase the £500 needed to pay the English exporter.

Instead of the R/$ rate, we can also refer to the $/R rate. The difference is that the $/R rate is the price (in dollars) of one rand, whereas the R/$ rate, as you will recall, is the price (in rand) of one dollar. In our example the R/$ exchange rate is R11.50 = $1.00. Inverting this to arrive at the $/R rate of exchange, we now have $1.00 = R11.50. This can also be expressed as $1.00/R11.50, which is calculated as 1/11.50 = 0.087. In other words, the $/R exchange rate is equal to $0.087 = R1.00, or $0.087 to the rand. This way of expressing the exchange rate between the rand and the dollar is known as the ***indirect*** method of quotation, from the South African point of view, since it prices the rand in terms of the dollar. As far as the Americans are concerned, of course, the $/R rate would be the ***direct*** method of quotation.

Regardless of whether the direct or indirect method of quotation is used, the exchange rate is always expressed as a certain number of units of one of the currencies required to purchase ***one unit*** of the other currency. The denominator (the currency named second) is always

reduced to 1. To recap: the R/$ rate is the number of rand needed to buy ***one dollar***; the $/R rate is the amount of dollars needed to buy ***one rand***.

While it is common to use the direct method of quoting exchange rates, there are exceptions. For example, the exchange rate between the dollar and the euro is quoted as €/$, rather than $/€, even by the Americans. This is a matter of convention (a convention is a practice that is continued because it has become customary for some reason). The exchange rate between the Japanese yen and the US dollar is quoted as ¥/$, rather than $/¥, because it is less cumbersome to speak of an exchange rate of 100 yen per dollar, than one-hundredth of a dollar per yen! Note that although neither the ¥/$, nor €/$ rate of exchange involves the rand, these two rates of exchange are important international economic indicators that are quoted in South African news bulletins.

The importance of the dollar as the major international currency unit means that the exchange rates of most other currency units are usually quoted against the dollar. In South Africa, if we know the R/$ exchange rate and the dollar exchange rate with another foreign currency, say the Japanese yen, then it is possible for us to calculate the exchange rate between the yen and the rand. Because this calculation is done using dollar rates of exchange, the resultant yen per rand (¥/R) exchange rate is referred to as a ***cross rate.***

For example, if we know the R/$ (= R11.50) and the ¥/$ (= ¥100) exchange rates, it is possible for us to work out the cross rate of exchange between the yen and the rand (¥/R). This may be done by inverting the R/$ rate to arrive at the $/R rate of exchange. Next, the $/R rate is multiplied by the ¥/$ rate:

$$\frac{\$}{R} \times \frac{¥}{\$} = \frac{¥}{R}$$ (the two $ signs cancel out)

Thus:

$$\frac{1}{11.50} \times \frac{100}{1} = \frac{100}{11.50} = 8.70$$

Note that the dollar signs cancel each other out. Therefore the ¥/R rate of exchange is equal to 100 ÷ 11.50 = ¥ 8.70 per R1.

We have now defined what is meant by an exchange rate, and we have seen that there are different ways of quoting exchange rates. But how are exchange rates arrived at in the first place? Well, because an exchange rate is simply a price, we can expect that exchange rates

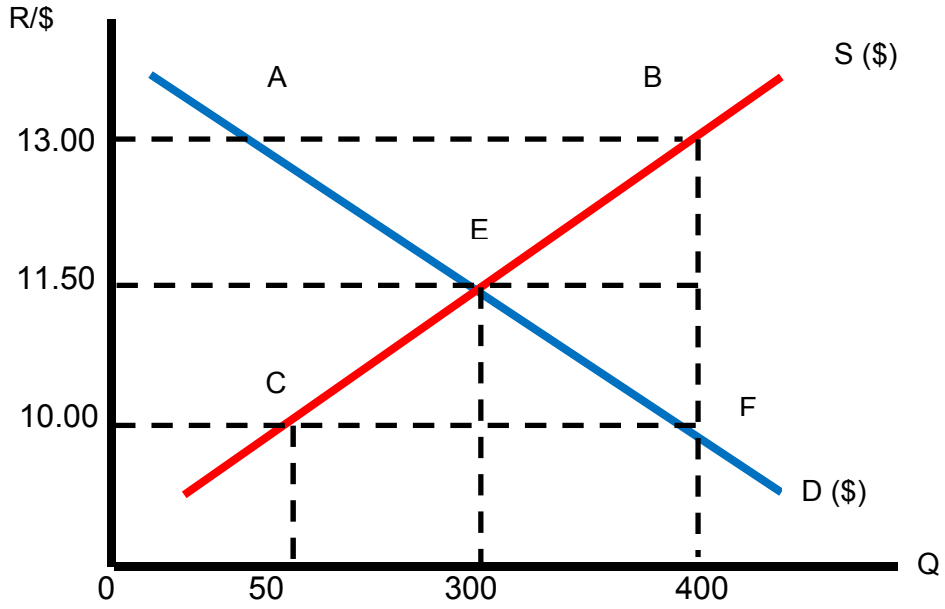
are established by means of demand and supply interaction, just as other prices are determined (remember the analysis in learning unit 6). This is indeed the case, and the mechanism by which this process takes place is the ***foreign exchange market.***

10.4.3 The market for foreign exchange

The participants in the foreign exchange market are involved in buying and selling foreign exchange (forex). A South African importer buys (demands) dollars in order to effect payment for a consignment of American-made computers. By contrast, an American importer of South African platinum needs rand to pay for it, and would therefore sell (supply) dollars in order to obtain rand.

In all likelihood the two parties, the South African importer of computers and the American importer of platinum, don't know about each other. If they did, the South African could buy the dollars from the American importer and use them to pay for the computers. The American would receive rand from the South African, which would be used to pay for the platinum. What is more probable, however, is that both parties will go through a forex broker (i.e. a foreign exchange dealer), or the forex department of a bank, in order to change their money. So will thousands of other participants in international transactions, which means that on any trading day, a substantial amount of various currencies is bought and sold on behalf of exporters, importers, travellers, investors, borrowers, lenders, speculators and others. A balance between the quantity of forex (in this case the US dollar) ***supplied*** and ***demanded*** will be established at a market-clearing price. As you know by now, equilibrium is reached where demand and supply intersect, and so the equilibrium R/$ exchange rate is established (see figure 10.1).

Figure 10.1 The market for foreign exchange

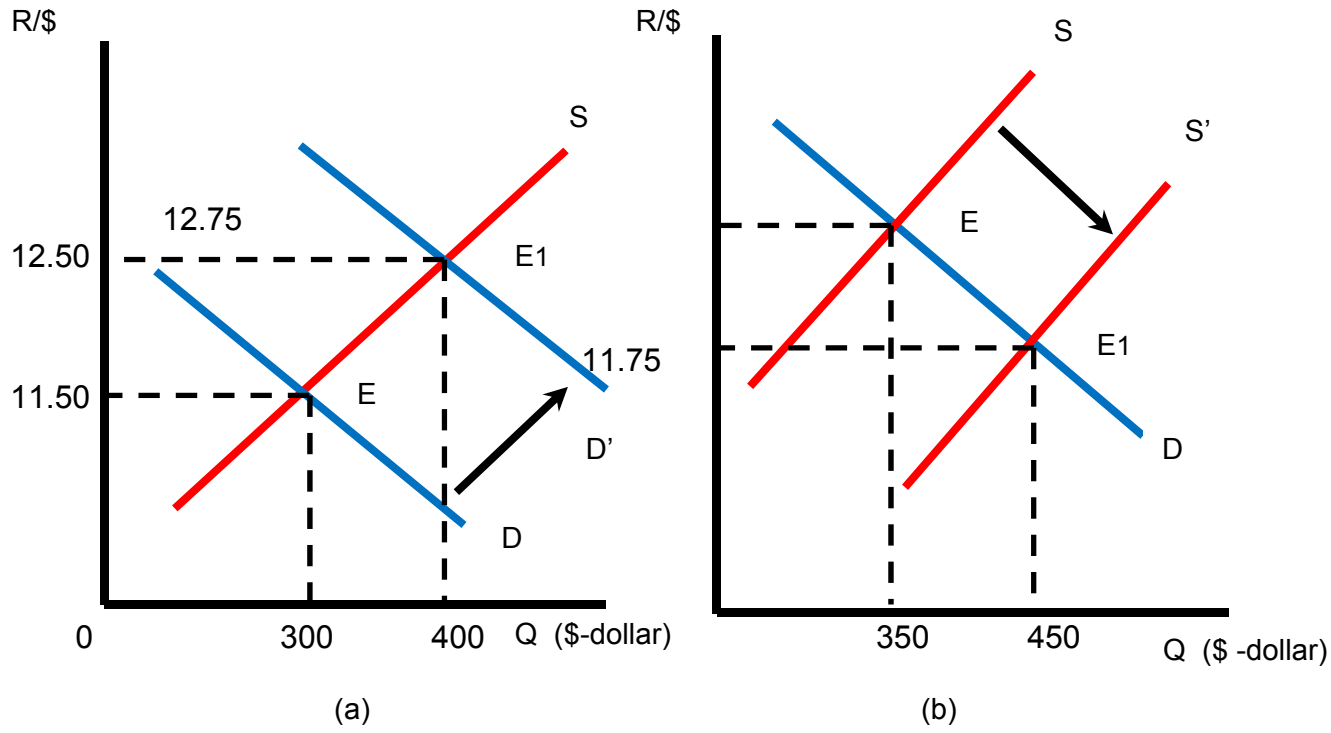


Note that the ***quantity*** of dollars is measured on the horizontal, or X axis. The ***price*** of one US dollar is on the vertical axis, expressed in rand per dollar (R/$). The $ part of this ratio is always equal to 1, as was mentioned earlier.

From figure 10.1 we can see that the equilibrium quantity of dollars traded ($300 million) is supplied and demanded at the equilibrium exchange rate of R11.50 = $1.00. At a higher dollar value (e.g. R13.00), an excess supply of dollars (AB) will exist, and at a lower dollar value, excess demand (CF) for dollars will result.

Just as any other price is set by means of supply/demand interaction, the equilibrium exchange rate is liable to change in response to a shift of either the supply or the demand curve for foreign exchange (or both). An increase in South African exports to the USA would lead to a greater supply of US$ on the local forex market, causing the supply curve for US$ to shift to the right. A fall in exports would shift the supply curve to the left. Conversely, a rise in South African imports from the USA would mean that South African importers would need to supply more rands in order to demand more dollars, causing the demand curve for forex to shift to the right. A fall in imports (fewer dollars are required for imports) would shift the demand curve for dollars to the left. See figure 10.2 for the effects of these changes on the equilibrium R/$ exchange rate.

Figure 10.2 Changes in the demand and supply of foreign exchange



A rise in the R/$ exchange rate is referred to as a ***depreciation*** of the rand against the dollar.

Depreciation *of a currency is a decrease in the value of a currency in comparison with other currencies. This means that the depreciated currency is worth fewer units of some other currency.*

For example: the price of the dollar in rand terms has risen, which means that the price of the rand in terms of the dollar has fallen: fewer dollars are now needed to buy one rand; therefore the rand has depreciated. A depreciation of the rand is depicted in figure 10.2 (a), where the value of the dollar has risen from R11.50 to R12.50.

In contrast, a fall in the R/$ exchange rate indicates an ***appreciation*** of the rand against the dollar.

Appreciation *of a currency is an increase in the value of a currency in comparison with other currencies. This means that the appreciated currency is worth more units of some other currency.*

For example: the price of the dollar in rand has fallen, whereas the price of the rand in dollar terms has risen. More dollars are now needed to buy one rand; therefore the rand has appreciated against the dollar. This is shown in figure 10.2 (b), where the value of the dollar has fallen from R12.75 to R11.75.

Table 10.5 Impact of changes in rand/dollar exchange rate

Change in R/$ exchange rate	Impact on		
	Export prices (in dollars)	Import prices (in rands)	Domestic prices
Rand depreciates against dollar	Decrease	Increase	Rise
Rand appreciates against dollar	Increase	Decrease	Fall

10.5 The balance of payments

10.5.1 What is the balance of payments?

All transactions with an international flavour are summarised in a set of accounts called the balance of payments. The balance of payments is divided into a current account, a capital transfer account and a financial account. Included in the ***current account*** of the balance of payments are the total rand amounts of goods and services imported and exported during a certain period of time. The Department of Customs and Excise publishes the figures that can be used to calculate the ***trade balance*** each month.

*The **trade balance** is the difference between total exports (gold and merchandise) and total merchandise imports.*

A positive balance is a surplus, while a negative balance is a deficit. Once data on service receipts and payments, as well as current transfers, are included, the balance on the current account can be calculated. This indicates whether the country is living within its current means.

Any balance on the current account is offset by an equal but opposite flow on the other two accounts. The capital transfer account is normally very small, and can be ignored for our

purposes. The ***financial account*** records all international transactions in assets and liabilities and is an indication of the compensating flows of investment and loans, coupled with a depletion or accumulation of gold and foreign reserves.

10.5.2 The items that make up South Africa's balance of payments

Table 10.6 is a slightly simplified presentation of South Africa's balance of payments for 2014. It shows that South Africa's merchandise exports for the period amounted to R941 171 million, plus gold to the value of R62 655 million.

South Africa's ***trade balance*** for 2014 is represented by the addition of all exported and imported goods in rand value terms together with net gold exports for the given period. South Africans rendered services to foreigners (e.g. hotel accommodation for tourists) worth R182 814 million and earned income to the value of R82 235 million in 2014. The fourth item, income receipts, refers to income earned by South Africans in the rest of the world. The income earned in this way consists of compensation of employees (wages, salaries and benefits earned overseas) and investment income (dividends, interest and profits from overseas investments).

These four amounts (merchandise exports, gold exports and service and income receipts) are all added up in the balance of payments. They represent an inflow of foreign exchange in return for goods, gold and services provided by South Africa. Many foreign currencies are involved in this payment, and because these amounts are all converted into rand by South African exporters and service providers, the total amounts are shown in rand terms.

Payments for merchandise imports and income and services rendered by foreigners to South Africa (including large amounts to service South Africa's foreign debt) are listed as negative amounts in the balance of payments. This is because they reflect the outflow of foreign exchange needed to pay for imports and foreign services. In 2014, imports amounted to R1 072 464 million, and payments for income were R183 779 million and services R184 828 million. The final item in the current account is the net amount of current transfers, that is, remittances of funds with no corresponding flow of goods in the other direction. In 2014 there was a net outflow of R34 448 million of transfers. By adding all of the above items together, a deficit of R206 644 million on the current account is arrived at.

As we have said, the capital transfer account is of minor importance, and may be disregarded for our purposes.

The ***financial account*** is divided into three categories of investments:

Direct investment includes all transactions related to the acquisition of share capital in foreign countries with the purpose of gaining control of or a meaningful say in the management of the enterprise in which the investment is made. The figure of R13 297 million shows that there was a net outflow of direct investment during 2014.

Portfolio investment, on the other hand, refers to the purchase of assets such as shares or bonds, where the investor is interested only in the financial return of the investment. The purpose of the investment is not to gain any meaningful control of any business enterprise. This type of investment may be regarded as more volatile and short-term in nature than the direct investment referred to above.

Other investment is a residual category of investment which includes financial transactions not covered under direct and portfolio investment. It consists mainly of trade credit associated with imports and exports.

Once these categories of investment have been added to or subtracted from the amount by which the balance of payments is in deficit (–) or in surplus (+), if the balance is a surplus, this is the rand equivalent of the amount of forex accumulated over the period owing to the inflows having exceeded the outflows.

On the other hand, if the balance turned out to be a deficit (–), the amount of the total deficit is the rand equivalent of the amount by which South Africa's gold and foreign reserves had to be depleted in order to finance those outflows not matched by inflows. During 2014 there was a surplus to the tune of R155 809 million on the financial account.

Unrecorded transactions are basically a recording of all the errors and omissions that might occur when compiling individual transactions of the balance of payment.

Table 10.6 South Africa's balance of payments, 2014

Current account	
Merchandise exports	941 171
Net gold exports	62 655
Service receipts	182 814
Income receipts	82 235
Less: Merchandise imports	1 072 464
Less: Payments for services	184 828
Less: Income payments	183 779
Current transfers	-34 448
Balance on current account	-206 644
Capital transfer account (net receipts +)	***236***
Financial account	
Direct investment	-13 297
Portfolio investment	49 494
Financial derivatives	16 409
Other investment	119 805
Reserve assets	-16 602
Balance on financial account	***155 809***
Unrecorded transactions	50 599

Source: South African Reserve Bank Quarterly Bulletin (2015)

10.5.3 The link between exchange rates, the balance of payments and economic growth in South Africa

A discussion of exchange rates must take into account their impact on the items in the balance of payments and vice versa. After all, exchange rates are prices, and in order for South Africans to import vehicles from, say, Japan, it is not only the yen price that determines the quantity demanded, but also the rand price of the yen. According to the law of demand, the higher the ***rand*** price of the ***yen,*** the lower the quantity demanded of yen will be (and therefore fewer cars are demanded too, *ceteris paribus*). We can see that the rand ***depreciation*** against foreign currencies leads to a decline in imports, but the opposite effect applies to exports: the Japanese demand for South African platinum exports depends, among other things on the ***yen*** price of the ***rand***. In our example above, the rand price of yen was

high – but this is another way of saying that the yen price of the rand is low, and thus favourable for Japanese importers. The lower the yen price of the rand, the higher the quantity will be of rand (and therefore platinum) demanded.

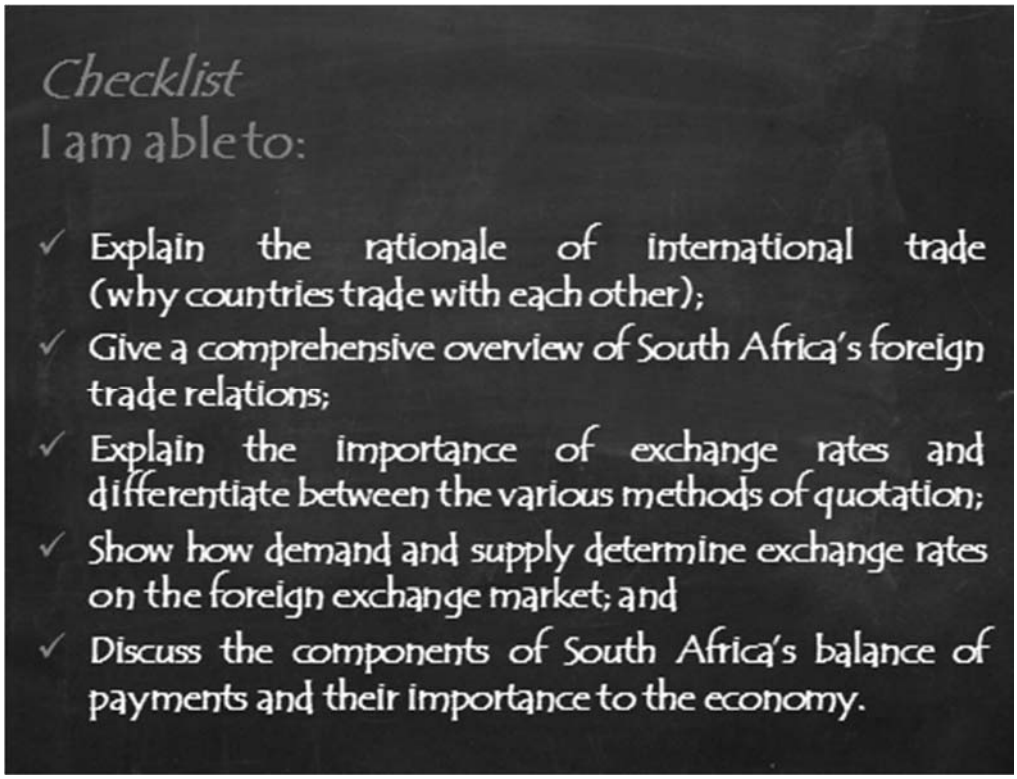
We can see from the above discussion that a depreciation of the rand curtails imports, but stimulates exports, thereby improving the balance on the current account (by reducing a deficit or by increasing a surplus). A similar result is observed in the financial account: a depreciation of the rand makes investment opportunities in South Africa appear cheap to foreigners, while the high price of forex deters South Africans from investing or lending funds abroad.

The opposite effects will appear should the rand ***appreciate*** in value in terms of foreign currencies. Imports will rise; exports will become less competitive on international markets, and thus fall. The effect on the financial account would be to encourage South African investment in foreign shares/companies/bonds, at the same time as diminishing foreign interest in (expensive) South African investment opportunities. A rand appreciation would thus tend to harm the balance of payments (by increasing a deficit or by reducing a surplus).

There are other economic variables that affect exchange rates and the balance of payments. It is hoped that South Africa's present policy of an accelerated and shared growth initiative to put the economy on a higher growth path will lead to the desired effect. Historically, high levels of economic growth in South Africa have been associated with a subsequent increase in expenditure, and therefore increased imports. This is because South Africa is an open economy, reliant on imports of machinery and consumer goods. Increases in imports during a period of economic upswing may not be accompanied by a corresponding increase in exports from South Africa, since local industries may have their time cut out just supplying the expanding local markets with their products.

The result is a deterioration in the balance of payments – a vanishing of the all-important trade surplus – and upward pressure on the rand prices of the various foreign currencies concerned: the yen, the euro, the pound sterling and the US dollar, and so on. This is because the excess demand for imports causes the demand curves for the respective foreign currency units to shift to the right. Once the rand depreciates in this way, it feeds into consumer and producer price inflation: imported goods become more expensive because of the depreciation of the rand. The expansionary momentum of the economy runs into higher prices and may stop altogether before it has got going properly.

The processes described above have led South African economists to speak of a "balance of payments constraint". By this they mean the inability of the South African economy to grow fast without soon leading to a deficit on the balance of payments and a depreciation of the rand. The subsequent monetary policy action of raising interest rates is aimed at curtailing the demand for consumer credit and therefore consumption spending, part of which is used to purchase imports. Unfortunately, investment spending is also hurt by the exchange rate depreciation and by the rise in interest rates. The result is that just as the South African economy gets up and running, balance of payments problems appear and the corrective policies to deal with them tend to stop the recovery of the economy in its tracks.



Learning activity: Learning Unit 10

True/False questions

Indicate whether each of the following statements is ***TRUE (T)*** or ***FALSE (F).***

	T	F
1. South African citizens would be better off economically if the country did not engage in international trade at all.		
Anna can knit 4 jerseys or sew 8 dresses per week, while Joan can knit 3 jerseys or sew 4 dresses per week.		
2. Anna has an absolute advantage in knitting jerseys.		
3. Anna has a comparative advantage in knitting jerseys.		
4. Joan should specialise in knitting jerseys, while Anna should specialise in sewing dresses.		
5. All economic activities taking place within the borders of a country are recorded in the balance of payments.		
6. The balance of payments is a summary record of a country's transactions with the rest of the world during a particular period.		
7. The flow of goods between South Africa and the rest of the world is recorded in the current account of the South African balance of payments, while the flow of services is recorded in the financial account.		
8. Exports create a supply of foreign exchange, while imports constitute a demand for foreign exchange.		
9. An increase in South African imports from the United States will give rise to an appreciation of the rand against the US dollar.		
10. A fall in the value of the rand against the Japanese yen is described as a depreciation of the rand against the yen.		

Review questions

1. An increase in exports increases the _____ for foreign exchange and the _____ curve for foreign exchange shifts to the _____.
2. An increase in imports increases the _____ for foreign exchange and the _____ curve for foreign exchange shifts to the _____.
3. An increase in the demand for foreign exchange leads to a (rise/fall) in the rand exchange rate and the rand (appreciates/depreciates).
4. An increase in the supply of foreign exchange leads to a (rise/fall) in the rand exchange rate and the rand (appreciates/depreciates).
5. Consider the rand/dollar exchange rate. Assume that the exchange rate is currently quoted as R11.50 to the US dollar.
   - 5.1 How many US cents would be required to buy R1.00?
   - 5.2 If you bought an economics textbook for $45 over the internet, how much would you have to pay in rand terms? (Ignore shipping costs etc.)
   - 5.3 If the exchange rate were to change to R11.80 to the dollar, which currency has appreciated and which has depreciated?
   - 5.4 How much will the textbook (still $45) cost you now in rand terms?
   - 5.5 Explain how a change in the exchange rate results in “winners” and “losers”.
6. Consider the following information.

Merchandise exports	300
Net gold exports	80
Merchandise imports	350
Service receipts	150
Service payments	200
Income receipts	90
Income payments	120
(Net) current transfers	-30
Capital transfer account	0
Balance of financial account	150
Unrecorded transactions	0

   - 6.1 Calculate the trade balance.
   - 6.2 Calculate the balance on the current account.
   - 6.3 Calculate the change in (net) reserves, given the information above.
   - 6.4 Of which three sub-accounts does the financial account consist?

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