MO 001/3/2017

Foundation Economics

FEC1501

Semesters 1 & 2

IMPORTANT INFORMATION:

This document contains important information about your module.

.

Department of Economics

BAR CODE

Printed and distributed by the
University of South Africa
Muckleneuk, Pretoria

Compiled by the Department of Economics

FEC1501/3/2017

CONTENTS

The Economic Toolkit 1

Study instruction

Study this learning unit 1.

Purpose of learning unit

The purpose of this learning unit is to introduce you to a number of important basic economic concepts in order to lay the foundation for further study.

Main outcomes of learning unit

Once you have worked through this learning unit, you should be able to describe and understand the following key concepts:

- the basic economic problem
- factors of production
- opportunity cost
- microeconomics versus macroeconomics
- macroeconomic objectives
- gross domestic product (GDP)
- double counting
- real versus nominal values
- shortcomings of GDP

To conclude the learning unit you will learn the basic skills of drawing and reading a graph.

1.1 INTRODUCTION

Before we can study the basic principles of management it is important to know how firms originated and how they fit into the overall economic environment of a country. Because business enterprises or firms are very much a part of the solution to the basic economic problem, it is important for us as managers (or future managers) to know how they contribute to the solution of the problem.

Everyone probably has a vague idea about the subject or contents of economics. When Minister Pravin Gordhan delivers his annual budget in parliament the state of the economy is discussed by everyone who pays taxes. Furthermore, the newspapers, radio and television regularly provide information on the stock market, the gold price, the rand–dollar exchange rate, the rate of inflation, the balance of payments, strikes, unemployment and many other aspects of economics, and some of these concepts should be a great deal clearer by the end of this course.

Moreover, we all participate in economic life daily as consumers (i.e. as buyers of goods and services) and often as employees. The subject of this module is therefore neither unknown nor foreign. This study guide, however, provides us with a more formal and scientific approach to these familiar concepts.

1.2 THE BASIC ECONOMIC PROBLEM

The basic economic problem seeks to find answers to the following questions:

(1) **What** should be produced in the economy?
(2) **How** should these goods and services be produced?
(3) **For whom** should the various goods and services be produced?

If you think carefully about them, these questions are really 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 would be solved. Let's look at a few practical examples concerning the problem of housing in South Africa:

What? 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 more important than providing houses for the needy? Do we know how much more food could be produced if we built fewer houses?

How? If we decide to build houses, should we build them by making use of unskilled labour (which is in excess supply in South Africa) or should we rather use sophisticated building techniques requiring large capital outlay, which is scarce in South Africa?

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

1.2.1 Scarcity

These are the questions that need to be answered by the decision makers in the economy. 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. More formally, we can state that scarcity exists when the means are insufficient to satisfy the wants of a person or the needs of the community at large.

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

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.** In this sense economics may also be described as the science of choice.

1.2.2 Unlimited wants versus 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 of the world. This is because people's wants are continually expanding and changing. Once their basic human needs (e.g. food, water, clothing and shelter) have been satisfied, there will be a growing desire for more luxurious items such as cars, fridges, stoves and many of the goods regarded as essential in highly developed countries. We must carefully distinguish between wants and needs. **Wants** are unlimited human desires for goods and services. **Needs** are necessities which are essential for survival such as food, water, shelter, and suchlike.

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.

1.2.3 Factors of production

In contrast to the unlimited wants that people have, the means or resources with which the wants can be satisfied 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
- **manmade resources** like machines, equipment and tools

Because these "economic resources" are available in limited quantities, the number 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 classified into four main factors of production. The four **factors of production** are the following:

(1) **Labour,** which refers to all intellectual, physical or other human productive effort. Labour therefore refers not only to manual labour, but includes the services of those who follow a profession (e.g. doctor, lawyer, teacher).

(2) **Capital goods,** are the goods used to produce other goods. These include the entire range of durable equipment from hammers, saws and other simple tools to machines and computers. If economists refer to capital they mean "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 in this module.) In the same way, an economist will differentiate between a **financial investment** (where an individual saves in a bank or buys bonds) and **real investment** (where money is used to secure capital goods and equipment).

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

(4) **The entrepreneur** (from the French word *entreprendre* which means "to undertake"), who combines natural resources, labour and capital in the production process. Without the vision of the entrepreneur, labour and 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. The entrepreneur is also responsible for taking non-routine decisions in the management of the enterprise.

Capable, energetic and imaginative entrepreneurs are perhaps the most valuable of all productive resources. The scarcity of this fourth factor of production is evident from the very attributes of successful entrepreneurship.

1.2.4 Choice and opportunity cost

From the preceding section it is evident that 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. You will have to be satisfied with having **less** of one thing if you want **more** of another. If, for example, you decide to buy a car, your holiday (or something else) falls victim to this decision. And 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 owing to scarcity – every business has to decide between various alternatives. They have 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 on, say, **reconstruction and development projects**. It strives to provide houses, electricity, running water, free health services and jobs to all needy 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 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 Mandise spends R30 on a movie ticket, the accountant and most other people would calculate the total cost of the movie as R30. The economist, however, would also measure the cost of the movie in terms of what she could have bought instead (e.g. a hamburger and chips or a few beers). In addition the economist might also want to look at the opportunity cost of the time she spent at the movies. Instead of going to the movies she could have studied for a very important test!

1.3 THE MIRACLE OF THE MARKET ECONOMY

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

Apart from the millions that live there, thousands travel to and from this metropolitan beehive of activity every day. All these people must be able to buy food, obtain transport, find accommodation and have access to hundreds of other 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 the above questions is simply that **nobody** is responsible.

Yes, the answer to all these questions is that no single authority or organisation is responsible for the smooth functioning of the economic system. What in fact happens is that all the millions of actions by consumers, producers and businesses are directed and coordinated by a system of markets and the prices that are established on 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. The process may be summed up 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 **market** and **prices**. What magical qualities do these two concepts possess to perform such a seemingly impossible task? Let's look at the specific roles they perform more closely.

1.3.1 Markets

Every good, service or factor of production which can be traded has a market. 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. When a person speaks of a market most people assume it to be a visible concrete market such as a specific building, for example the municipal fresh produce market in Pretoria. The market is not necessarily a specific place or building; it may also be invisible/abstract as in the case of the black market or 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 still perform the essential ingredient of a market quite well: **bringing together buyers and sellers so that the price and quantity of the good or service can be established.**

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 are the value of products in terms of money. 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. But what signal does this price send out to consumers and producers of the product? In the first place the level of the price established on the market gives an indication to prospective producers of the viability of producing the product. Any movement in the price of a product reflects changes in the underlying supply and demand conditions. A decrease in price is normally associated with either a lack of demand or a condition of excess supply. Producers are warned against expanding their production while 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 supply of and demand for a product, we refer to it as **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 either cause a glut 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 one another but **negotiate** on a price. Competition takes place among buyers on the one hand and among sellers on the other. In learning unit 4 a more formal explanation of the interaction between supply and demand will be given, which will further explain the concept of market equilibrium.

1.4 COMMON MARKET FAILURES

Monopolies, oligopolies and poorly designed property rights all lead to what economists like to call *market failures* – situations where markets deliver socially non-optimal outcomes. Two other common causes of market failure are asymmetric information and public goods:

- *Asymmetric information* refers to situations in which the buyer knows more than the seller about the quality of the goods being negotiated, or alternatively the seller knows more than the buyer. Because of the uneven playing field between the two parties and the suspicions it creates, a lot of potentially beneficial economic transactions never get completed.
- *Public goods* refer to goods or services that are impossible to provide to just one person; if you provide them to one person, you have to provide them to everybody. (Think of a fireworks display, for example.) The problem is that most people try to get the benefit without paying for it.

1.5 MACROECONOMICS VERSUS MICROECONOMICS

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**.

Macroeconomics looks at the economy as an organic whole, concentrating on economy-wide factors such as interest rates, inflation and unemployment. Macroeconomics also encompasses the study of economic growth and how governments use monetary and fiscal policy to try to moderate the harm caused by recessions.

Microeconomics focuses on individual people and individual businesses. Microeconomics explains how individuals behave when faced with decisions about where to spend their money or how to invest their savings, and how profit-maximising firms behave both individually and when they are competing against each other in the markets.

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

Here the prefix "macro" is derived from a Geek word which means **large**. Once more, it should be clear that the environment described as the economic environment, is approached from a macroeconomic perspective.

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

The prefix "micro" is derived from a Greek word which means **small**. Microeconomics is thus not concerned with the big picture or the economy as a whole, but concentrates on decisions of individual consumers or firms. Because the emphasis in microeconomics is mainly on the **prices** of goods and services, it is also known as **price theory.**

Underlying both macroeconomics and microeconomics are some basic principles such as scarcity and diminishing returns.

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. In so doing the effect of a sudden decrease in the supply of potatoes on the price of potatoes can be analysed 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.

1.6 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. In so doing different facets of the economy can be identified 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 of a country into the contributions by sectors such as agriculture, mining and manufacturing to name but a few. 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,** the number of markets can be limited 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, the government in a market economy is expected to strive to achieve certain macroeconomic objectives. The field of study of macroeconomics is therefore heavily involved in 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, for example 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:

(1) **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 moral humiliation suffered by those who were previously employed and who are now no longer able to support their families. 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. In most of the learning units that follow, it will also be acknowledged as a central theme.

(2) **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 to be one of the most important aims of macroeconomic policymakers. Rising prices are not a problem in themselves, but their undesirable effects on certain sectors and groups are viewed as being undesirable.

(3) **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 in a position to pay for necessary imports. Policy must therefore ensure that the balance of payments (a statement of all transactions with foreigner parties) is in equilibrium and that the exchange rate (the value of the currency against foreign currencies) remains relatively stable as a result of this.

(4) **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 as being a separate aim 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 to 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.

Besides these traditional policy objectives which we have identified, it is obvious that every country will have certain characteristics of its own that will pose special challenges for policymakers. South Africa has no shortage of such unique circumstances. You need think only of 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 this commodity plays in the South African economy; the agricultural sector, which because of climatic conditions has always demanded special treatment; and lastly, certain aspects of South Africa's political and community problems, such as the unequal distribution of income, which still poses a huge problem despite the political reforms that have taken place. The inequality of income distribution even among the so-called previously disadvantaged community has reached socially unacceptable levels. It is probably fair to say that in South Africa's case we could add a **fifth** macroeconomic objective to the four traditional objectives above, namely, an **equitable distribution of income**.

1.7 THE MEASUREMENT OF PRODUCTION

1.7.1 The importance of national accounts

It is obvious that the various objectives identified above are meaningless unless there is some 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 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. Unfortunately, less information is available on the level of **employment** in South Africa. In other countries, such as the USA, which have reliable unemployment figures, 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, the statistics are incomplete as they include only the registered unemployed.

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 the 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 taking 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 policy which can encourage the macroeconomic objectives mentioned above. The most comprehensive macroeconomic measure of total production (and therefore economic activity) is 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.

1.7.2 Gross domestic product

The GDP may be defined as follows:

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 named "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 arises from 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.

1.7.3 Double counting and how to avoid it

The next concept in the definition of the GDP to be discussed is the meaning of **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 (i.e. using it 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 buy my car as a motorist, 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**. The difference between final and intermediate goods may be explained by means of a simple example:

(1) Suppose a farmer produces 1 000 bags of wheat which he sells to a miller at R10 per bag.
(2) The miller processes the wheat into flour, which he then sells to a baker for R12 500.
(3) After baking bread with the flour, the baker sells the bread to a shop for R18 000.
(4) The shop subsequently sells the bread to final consumers for R21 000.

These transactions may be summarised as follows:

	Value of sales R	Value added R
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, for instance, 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.

1.7.4 Three methods to calculate gross domestic product

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

(1) By only counting 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**. In SU 3 which deals with the economic circuit, we will 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 in the above table and yields the same result as in (a), namely, R21 000. This method is known as the **production method**.

(3) It is interesting to note that there is a very important **equality** of national income accounts. 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.

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 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 primarily concerns 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.

1.8 REAL VERSUS NOMINAL VALUES

In the above discussion, reference was continually made to the "value" of all final goods and services produced in a particular year. We have not, however, 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's 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 2005 prices were used to calculate the nominal GDP in 2005, whereas 2006 prices are applicable when measuring the nominal GDP in 2006. 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 (1) as a result of an increase in real production of 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 2005 and 2006, the GDP in each of these years has to be valued in terms of 2005 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. Table 1.1, depicting the South African GDP in terms of current (nominal) and constant (real) values, serves as an example.

TABLE 1.1: THE GDP AT CURRENT (NOMINAL) AND CONSTANT (REAL) PRICES. AND THE IMPLICIT GDP DEFLATOR 2005 – 2010

Year	GDP at current prices (R million) (1)	GDP at constant 2005 prices (R million) (2)	Implicit GDP Deflator 2000 = 100 (3)
2005	1 571 082	1 571 082	100,00
2006	1 767 422	1 659 122	106,53
2007	2 016 165	1 751 499	115,11
2008	2 274 139	1 814 134	125,36
2009	2 395 967	1 783 617	134,33
2010	2 664 269	1 834 435	145,24

Source: Statistics SA (2011)

(1) 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 the GDP. The increase in GDP from 2005 to 2010 was mainly due to price increases over this period.

(2) In the **second column** GDP is expressed in real (or constant) prices. The prices which prevailed in 2005 were used to calculate the value of production in all six years shown in the table. 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 (R62 635 m) with the relatively large increase in nominal terms (R257 974 m).

(3) 2005 prices were used to calculate real GDP. You will notice that the value of real and nominal GDP was the same in 2005. This must be so because the same prices were used in both calculations. 2005 was thus used as the **base year** for the calculations.

(4) 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 it appears that the rate of inflation (according to this measure – the implicit GDP deflator) was 6, 53% in 2006 (an increase from 100, 0 to 106, and 53).

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

Calculation of economic growth

How do we use column 2 to calculate South Africa's economic growth? The economic growth for 2006 can, for example, be calculated by comparing the increase in real GDP between 2005 and 2006:

(1659 122-1571 082)/1571 082
=88 040/1571 082
=0.056
As a percentage multiply by 100
=5.6%

If current prices were used, the growth rate would have been 12, 50%. The difference between 5, 60% and 12, 50% was entirely due to the price increases that took place during 2006.

1.9 THE COMPOSITION OF THE GDP

So far we have only studied the basic methods of calculating the GDP. No reference has been made to the types of products which comprise the GDP. Just as 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. Here we will concentrate only on the **origin of the production** and the **total expenditure components**.

1.9.1 Origin of the GDP

In the calculation of the GDP, we almost automatically take 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 1.2 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, as opposed to 2010 when the contribution declined to only 12% in favour of the tertiary and to a lesser extent to the secondary sector. These developments are in line with what we 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.

The manufacturing sector has increased in importance and is today responsible for more than 15% of total production.

The ever-increasing importance of the financial sector was particularly evident during the 1990s when its contribution increased from 14% in 1990 to 21% in 2010.

TABLE 1.2: ORIGIN OF SOUTH AFRICA'S GDP

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

Source: South African Reserve Bank (various issues)

1.9.2 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. With the simple circular-flow diagram in learning unit 3, and in the discussion of the calculation of the GDP, it is clear that the expenditure on the GDP necessarily 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. Regarding the former, we distinguish between **consumer expenditure** and **capital expenditure** and, regarding the latter, it is sometimes desirable to deal with the following groupings or sectors individually: the private, the government and the external sectors. In the light of this dual distinction the national

accounts identify the following components:

TABLE 1.3: EXPENDITURE ON GDP IN 2010

	Current prices	Constant 2005 prices	Current prices (%)	Constant 2005 prices (%)
Final consumption expenditure				
- Households (C)	1 575 642	1 184 538	59,17	64,58
- Government (G)	573 540	383 321	21,54	20,9
Gross capital formation (I)				
- Gross fixed capital formation	521 613	361 999	19,59	19,74
- Change in inventories	-8561	-3826	-0,32	-0,21
Residual item	4 896	4 282	0,18	0,23
Gross domestic expenditure (GDE)	**2 667 130**	**1 930 314**	**100,17**	**105,24**
Exports of goods and services (X)	728 621	422 097	27,36	23,01
Less: imports of goods and services (Z)	732 994	518 119	27,53	28,25
Expenditure on GDP (2010)	**2 662 757**	**1 834 292**	**100**	**100**

Source: South African Reserve Bank (2011)

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 (59, 17% at current prices and 64, 58% at constant 2005 prices). 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. This expenditure is identified as **investment** in economics. Investment in capital goods is therefore expenditure on goods which are used to produce other goods and services. Since we are concerned here with the GDP, no provision is made for capital consumption (i.e. depreciation). Final consumption expenditure of the general government constitutes 21, 54% of the GDP at current prices and 20, 9% at constant 2005 prices. 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 three items 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 statement 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, have to 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 63% of the GDP, are 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:

GDP	=	C + I + G + (X – Z)	
and GDP	=	GDE + (X – Z)	
if GDP	>	GDE	(> means "greater than")
then (X - Z) >	0 or X >	Z	
if GDP	<	GDE	(< means "smaller than")
then (X – Z)	<	GDE	
or X	<	Z	

From table 1.3 it is evident that imports (Z) exceeded exports (X). This meant that GDE was greater than GDP. In 2006, South Africans spent more than they were producing domestically. As we will see in learning unit 7, this also implies that we were running a deficit on our trade balance.

1.10 SHORTCOMINGS OF THE GDP

So much has been said about what the GDP is supposed to measure and how the GDP itself can be measured and applied, that 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 not, however, regarded as a major problem. A far more serious criticism that can be made against 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 housewives. 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.

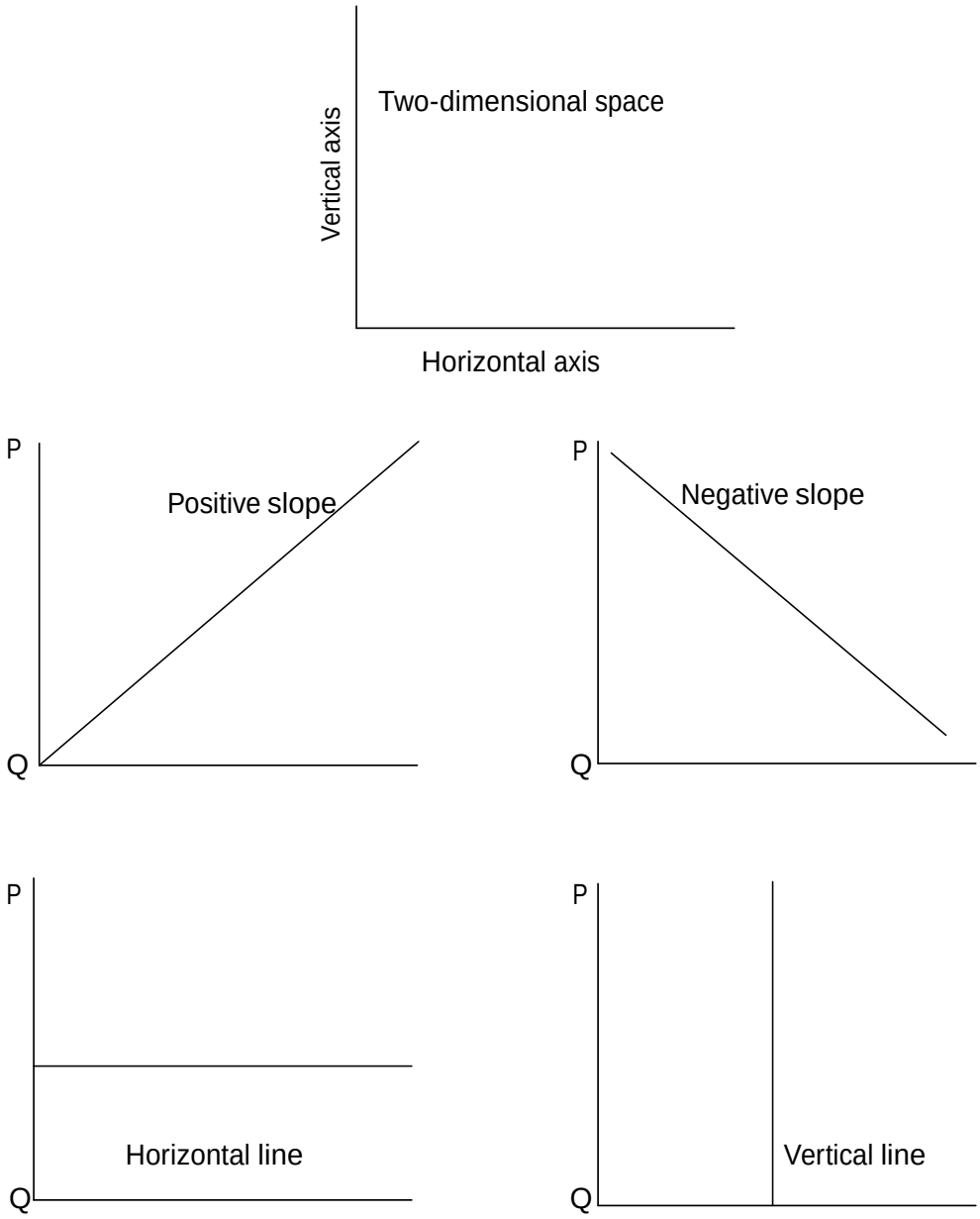
Closely related to the above problem is the large number of transactions which do go through the market but are never recorded anywhere and thus cannot be included in the measurement of the GDP. Examples of such transactions are the wages of many gardeners, repairs done at home; lift clubs, as well as 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 currently 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 had the effect that certain negative elements can lead 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 endeavoured to determine the impact of factors such as leisure time, pollution, the inconvenience of overpopulated cities, and suchlike in terms of money and to add or subtract it from the GDP. Unfortunately, the problems involved in establishing such a measure were so complex and extensive that these attempts 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.

1.11 UNDERSTANDING ECONOMIC GRAPHS



Economists often use graphs or diagrams to explain and visualise the economic model or event we are dealing with. This chapter requires you to be competent in interpreting the relevant "pictures" and to 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.

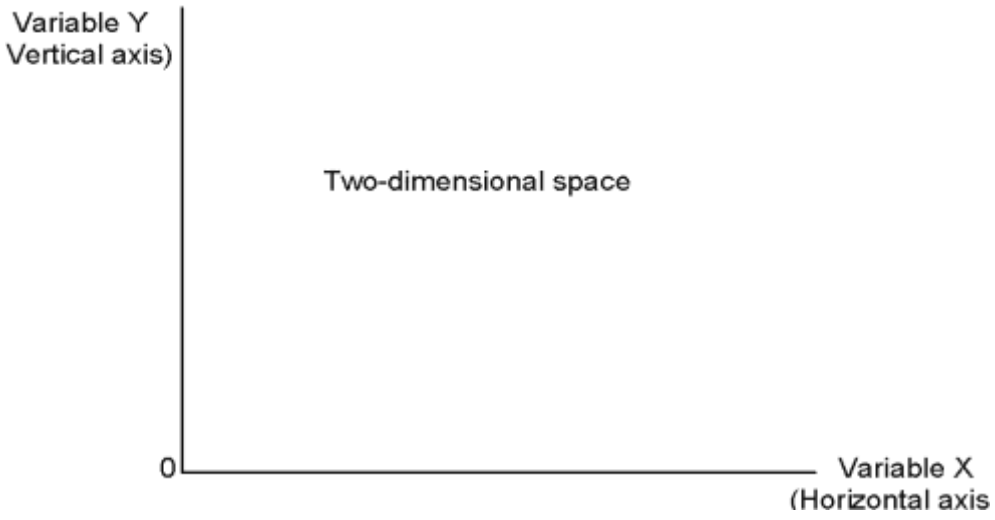
In economics we are usually concerned with the relationship between two or more variables. A considerable component of your studies will be concerned with establishing how a change in one economic variable will influence one or more other variables. Typical examples of the relationships we study in economics are the following:

- How does a change in the price of a product influence the quantity demanded of such a 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 this section of the learning unit we will show you how the relationship between two variables may be presented in graph form.

1.11.1 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 two-dimensional space. For this we need two lines (also called axes) on which to measure the values of each variable. In figure 1.1 both axes start from the same point of origin (0) and are drawn horizontally and vertically. On the horizontal axis the different values of X are measured and on the vertical axis the values of Y are measured.



To explain 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 1.4 gives the production figures for gold mining in South Africa between 2002 and 2009. The amounts show a decreasing trend (i.e. mine production of gold in kilograms has decreased since 2002).

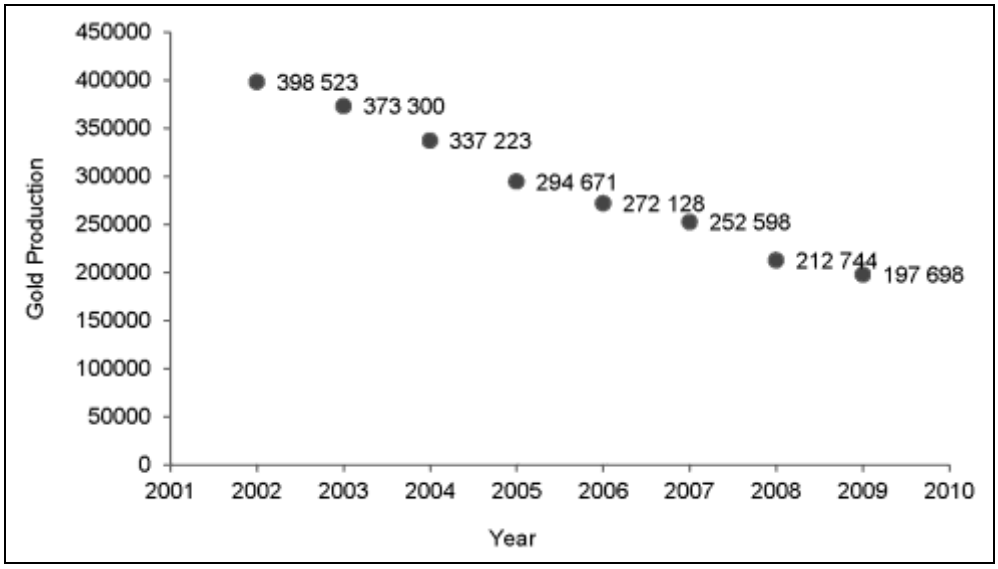
By plotting the information contained in the table on a two-dimensional graph, we are able to gain a much better idea of the production pattern in the sector. In figure 1.1 gold mine production is measured on the vertical axis and the different years are marked on the horizontal axis. Each year's production 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, the value of production for 2002 (398 523 kg) is obtained by measuring a vertical distance of 398 523 kg from the horizontal axis. This is done for each year's production. For example, a value of 337 223 kg corresponds with the year 2004, 252 598 kg with 2007 and 197 698 with 2009 and so on.

TABLE 1.4: GOLD MINE PRODUCTION IN SOUTH AFRICA 2002–2009

Year	Production (kilograms)
2002	398 523
2003	373 300
2004	337 223
2005	294 671
2006	272 128
2007	252 598
2008	212 744
2009	197 698

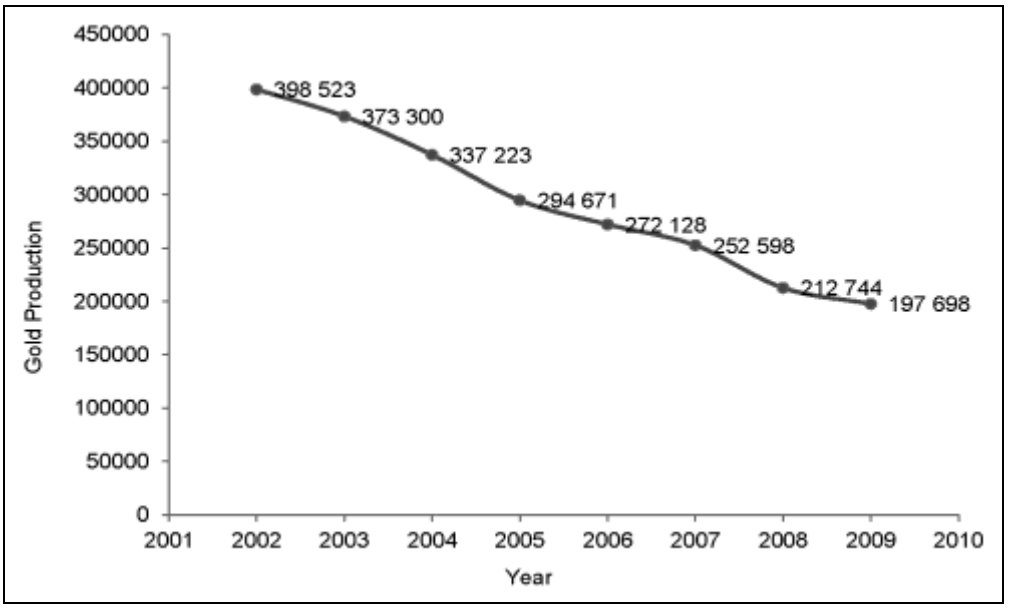
Source: USGS (2010)

Figure 1.1: Plotting the data from Table 1.4



A graph or line is then obtained by connecting all the dots in figure 1.1. The result of this process is shown in figure 1.2 where the continuous line represents gold mine production for the eight-year period. From figure 1.2 you can immediately see that gold mine production in South Africa is continuing to decrease. As we have already indicated, this type of graph is called a time-series graph because time is measured on one axis.

Figure 1.2: Gold mine production in South Africa 2002–2009



1.11.2 Other Types of Graphs

Time-series graphs are not the only type of graph we use in economics. By using graphs the relationship between two economic variables can be presented in a very meaningful way. 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, i.e. when one goes up, the other goes down
- variables that are not related to one another in any way

These relationships will now be explained in greater detail by using practical examples.

1.11.2.1 Variables with a positive relationship

If two variables move together in the same direction we say there is a **positive** or a **direct relationship** between them. An example of a positive relationship is that between speed and distance travelled. The faster your **speed,** the greater the **distance** you can travel in five hours. This is illustrated in figure 1.3 where a straight line is drawn to show the relationship between speed and distance travelled in eight hours. 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 made**. Note that the line in figure 1.4 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

fewer loaves of bread are produced per day, even with increased number of bakers. In other words, the **slope** of the curve becomes less steep as more bakers are employed. Too much bread can even reduce production. It is important to note that the **slope** or **gradient** of the curve in figure 1.4 is positive because the relationship between the two variables is positive.

Figure 1.3: Example of a linear positive (direct) relationship

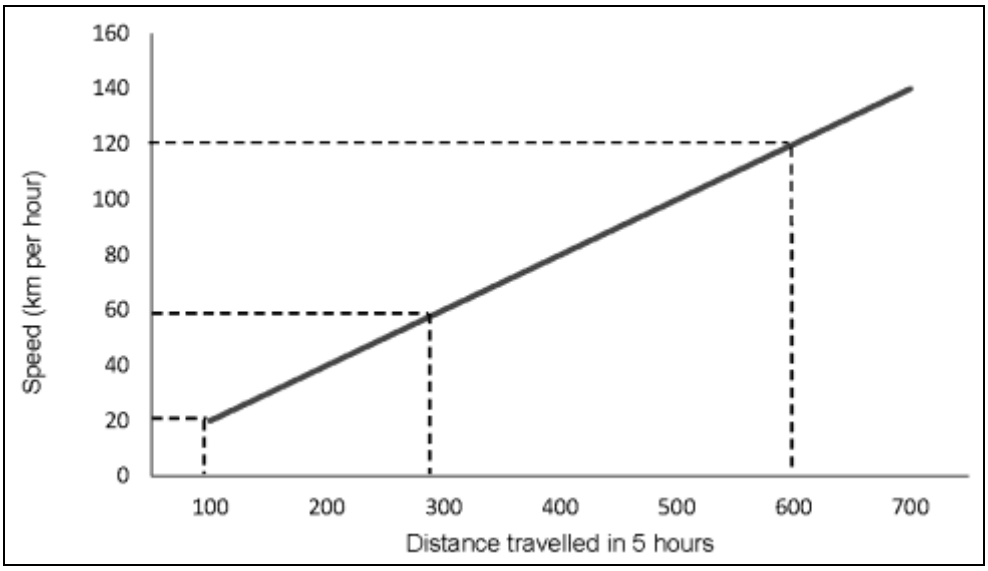
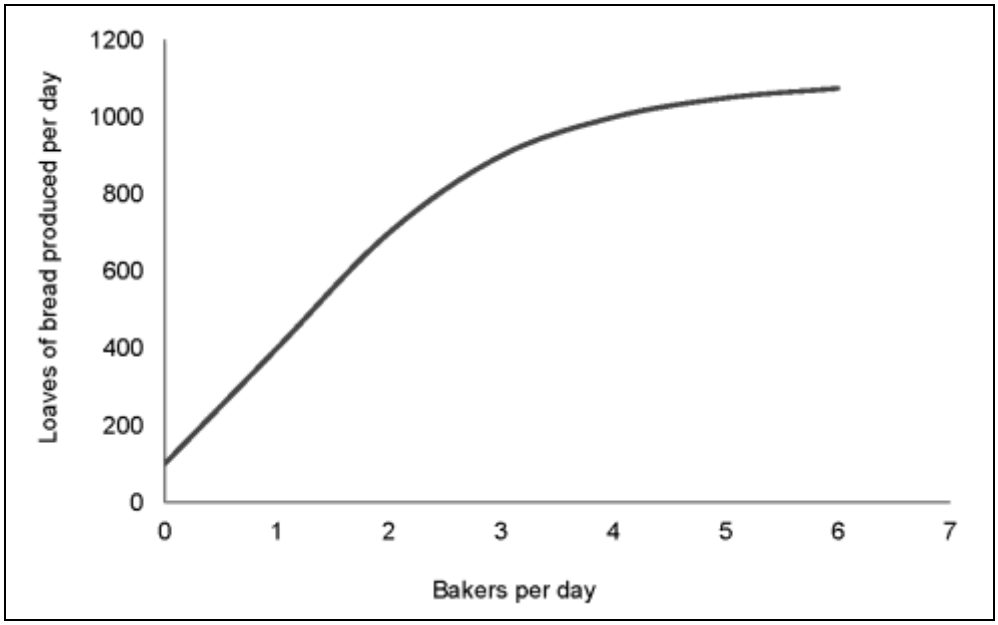


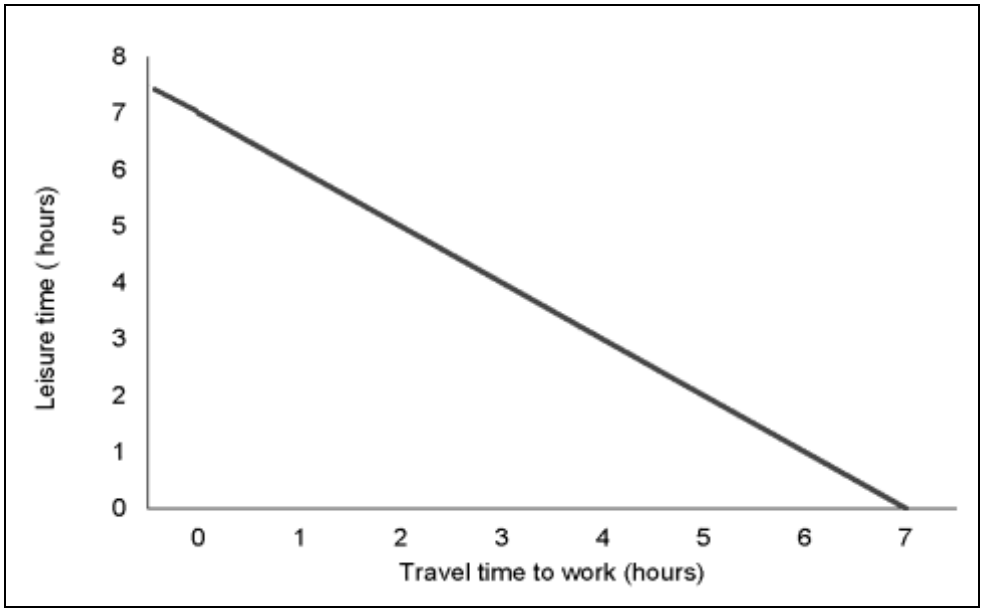
Figure 1.4: Example of a non-linear positive (direct) relationship



11.2.2 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 you spend travelling to work and back and the leisure time at your disposal. The more time spent on the road, the less leisure time you have. Here we can again assume a linear relationship between travelling time and leisure time as shown in figure 1.5. 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. There are many examples of these relationships in the real world.

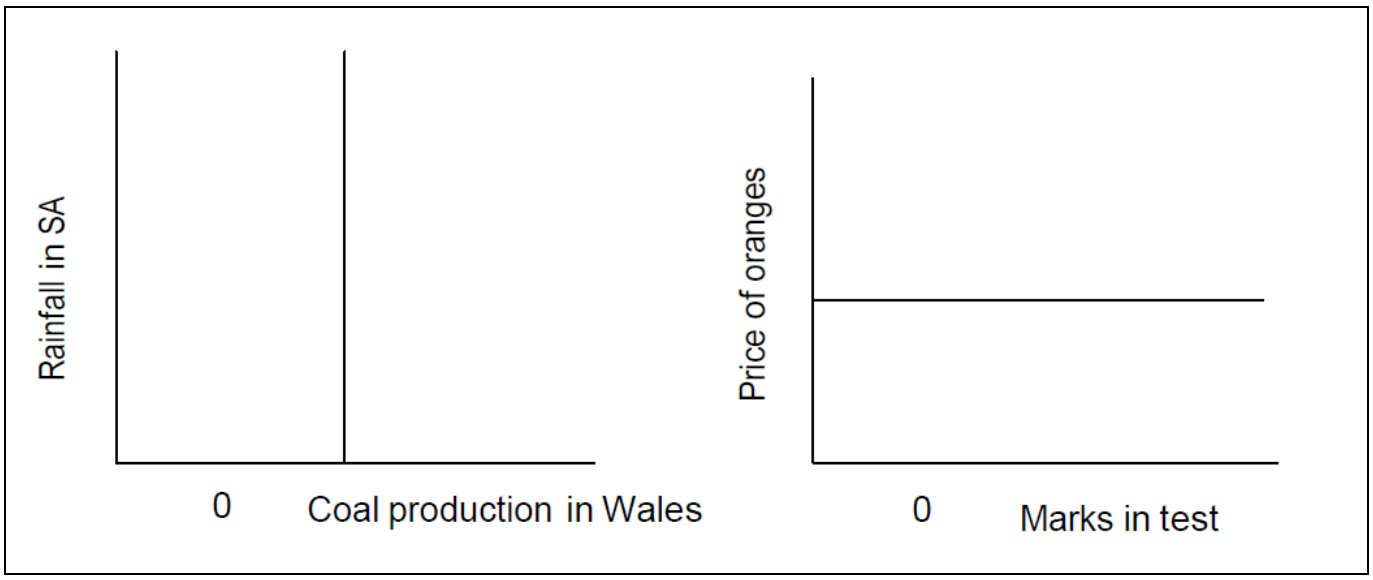
Figure 1.5: Example of a linear negative (inverse) relationship



1.11.2.3 Variables that are unrelated

There are also many things that are totally unrelated to one another. The price of tomatoes will have no influence on the number of times we go to church in a year or 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 1.6. Note that the non-relationship in these cases is depicted 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 variable does not influence the other variable at all.

Figure 1.6: Horizontal and vertical curves



Market types

2

Study instruction

Work through learning unit 2.

Purpose of learning unit

The purpose of this learning unit is to introduce the different types of markets encountered in a market economy and the different forms of economic structure possible for an economy.

Main outcomes of learning unit

Once you have worked through this learning unit, you should be able to describe and explain the following:

- command versus market economies
- the characteristics of perfect competition
- the characteristics of monopolies

2.1 INTRODUCTION

Before the different economic systems are discussed we need to briefly examine the production and the distribution problem:

1. *The production problem.* The scarcity of resources makes it impossible to produce all the goods people want. Firstly, 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 decide on the **quantities** to be produced. Next, it must decide **how** production is to take place because various techniques are possible: Is more labour (labour-intensive) or more capital (capital-intensive) going to be used in the production process? Then too it must decide **who** is going to produce what – the fact that people have different interests, abilities, and so forth, should be considered. Finally, it must decide **where** and **when** production should take place. The whole production problem must therefore be approached in an orderly fashion.

2. *The distribution problem.* Once the production problem has been solved, there still remains the problem of how the total production of goods and services is going to be distributed among the members and organisations in the community. In other words, the distribution problem must also be solved in an orderly fashion. Should the goods be distributed equally or should they be assigned on the basis of 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 way. Communities must provide an economic order to answer the questions and resolve the 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 grouped into two types, namely the command economy and the market economy.

2.1.1 The command economy

In the command economy all decisions about the **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 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 actual 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 a type of market mechanism in certain sectors, which meant 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.

2.1.2 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. Such an economy is motivated by the **self-interest** of individuals and is regulated by competition.

To be able to function, the market mechanism depends on each individual acting in accordance with what is to his or her own advantage, in other words being motivated by self-interest. The buyer who seeks to buy cheaply, the man who tries to sell at the highest price, the businesswoman who attempts to maximise her 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 ways in which governments intervene in the market economy are dealt with in learning unit 8 and we will not pursue the matter further at this stage.

In conclusion it may be said 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.

2.2 FORMS OF MARKET

As explained in SU1, in economics we are interested in finding ways and means to ensure that our scarce resources are used efficiently in order to produce those goods and services that satisfy our needs and wants. In a market economy, firms (also called producers) are responsible for the production of goods and services. Their behaviour is therefore an important determinant of the efficient use of our scarce resources.

An important factor that influences how producers behave is which market structure they find themselves in. A producer in a strong competitive environment will behave differently from a producer that operates in a less competitive environment.

Firms in a market economy aim to maximise profits, the difference between revenue and costs. There are various types of market structure. In this course we will cover the two extreme forms. At the one extreme firms operate under conditions of perfect competition and at the other extreme the structure is monopolistic.

2.2.1 Perfect competition

A central economic problem studied in economics is how to allocate our scarce resources in such a way that maximum satisfaction is achieved. This requires that efficient use is made of our resources. The two concepts of efficiency that we work with in economics are allocative efficiency and technical efficiency.

Technical or productive efficiency occurs when the market produces the maximum quantity goods and services from a given set of resources. This is important since resources are scarce and must be used in the best possible way.

Allocative efficiency occurs when the market is producing the optimal mix of goods and services desired by consumers. In other words we want not only to produce goods efficiently, but also to produce the right kind of goods and services.

Under perfect competition technical efficiency is ensured by the competition between firms. Firms are forced to produce at the minimum cost of production. Those firms that make inefficient use of resources will have a higher cost of production and will be making losses, and will eventually be pushed out of the market.

Under perfect competition, allocative efficiency is reached through the forces of demand and supply. When households desire more of a product and have the ability to purchase it the demand for the good will increase. An increase in the demand leads to a higher price. As the price of the goods increases existing firms will earn an economic profit. This economic profit will attract other suppliers into the market and, as more suppliers enter the market, the economic profits will start to disappear. Resources are now allocated efficiently.

There are a number of specific characteristics of the perfect competitive market.

a. Many buyers and sellers

For a perfectly competitive market to exist there must be many buyers and sellers (producers) of a specific product. The products must be identical or homogeneous (similar). This will ensure that there is sufficient competition, so that no single producer or buyer can influence or fix the price of the product.

When there are many sellers or producers of a specific product, the share of each individual seller or producer is so small that it cannot influence the market price. Each seller or producer is a price taker and it regards the market price as given. As you know, the market price is determined by the interaction of the market demand and market supply.

If a producer or seller tries to charge a price above the market price, customers will know that they can get a better price from someone else. This seller or producer will be left without any customers.

Take a single maize farmer in South Africa. The individual farmer's output of maize is small compared with the total amount of maize produced in the country. Thus the individual maize farmer cannot influence the maize price by producing either more or less maize. The farmer is a price taker because the price of maize is determined by the supply of and demand for maize in the market (or industry) as a whole.

Similarly, there must be many buyers so that no individual buyer is big enough to influence the price. If there are many buyers and sellers, competition exists and the market determines the equilibrium price and quantity of a specific product. Whenever an excess demand or excess supply exists in this market, the price will respond in the appropriate way to ensure that equilibrium is reached again.

b. Homogeneous product

Another condition for a perfectly competitive market is that the products should be homogeneous (similar) or identical. This is important, for if a seller or producer can distinguish its product from its competitors, and thereby limit competition, it would be able to sell its product at a higher price without losing all its customers. With homogeneous products there is no reason for buyers to prefer the product of one seller to the product of another seller. This ensures that sellers and buyers compete with one another in terms of the price of the product. Examples of homogeneous products are agricultural products, metals, electricity and water.

c. Perfect information

Perfect information implies that all market participants (buyers and sellers) have complete and correct information about market conditions. For example, buyers know what the market price of a product is and will know if a supplier charges a higher price than the market price. Some economists believe that many markets will experience increased competition as a result of the availability of information on the internet.

d. No collusion

Collusion occurs when sellers or buyers enter into an agreement, arrangement or understanding to limit competition in order to gain market power so that they can influence the market price of the product. In a perfectly competitive market, each buyer and seller acts independently of the other and no collusion occurs. In South Africa collusive practices are illegal according to the Competition Act 1998.

e. Freedom of entry and exit

Under perfect competition, buyers and sellers are completely free to enter or leave a market. There are no barriers to entry in the form of legal, financial, technological, physical or other restrictions that inhibit the free movement of buyers, sellers and producers. This means that new firms can enter the market to compete with existing firms. New firms tend to enter the market when existing firms are making high profits. The ability of firms to enter and exit a market freely helps to ensure that efficient use is made of our scarce resources.

f. Mobility of the factors of production

Under perfect competition the factors of production such as labour, capital and entrepreneurship can easily move from one geographical area to the next and from one industry to the next.

g. Unregulated market

An unregulated market means that the government does not interfere in the markets. Decisions are left to individual sellers or producers and buyers.

2.2.2 Monopoly

A monopoly is the opposite of perfect competition. A monopoly exists when there is only one seller of a good or service for which there are no close substitutes and it is not possible for any firm to enter the market. The firm that supplies the good or service is known as a monopolist or a monopolistic firm.

As is the case in the perfectly competitive market, so too specific characteristics define a monopoly:

1. There is only one seller of the product. This single firm is therefore responsible for the output of the industry. When this happens the market is referred to as a monopolistic market.

2. The good or service is unique and there are no close substitutes. This condition is rarely met in the real world since most products have some kind of substitute. A substitute for electricity might be gas, a substitute for beer might be wine, and a substitute for rail transport might be road transport.

3. There are barriers to entry. These are caused by patents and other forms of intellectual property rights, control over resources, government regulations and decreasing costs. A natural monopoly may exist because of cost factors, which happens when the market is only big enough for one efficient firm. An artificial monopoly exists when potential competitors are prevented from entering a market. This might be because of patent rights or government regulation.

4. The monopolist is regarded as a price maker since it is able to influence the market price by changing the quantity it supplies to the market.

Flow of Funds

3

Study instructions

Study this study unit 3.

Purpose of the learning unit

The purpose of this learning unit is to introduce you to the use of models in economics and to explain the flow of funds model.

Main outcomes of learning unit

Once you have worked through this study unit you will be able to describe and explain the following:

- what a model is
- what a model is used for
- how the circular flow model or flow of funds model can be used to explain the role of different participants in the economy and how funds flow in the economy
- what the uses of the circular flow model or flow of funds model are
- what the limitations of the circular flow model or flow of funds model are

3.1 INTRODUCTION

To understand how the economy operates in the real world we need to examine and measure how all the different units in the economy operate together. Because the economy is so large it is very difficult to identify each and every participant in the economy individually and measure their performance. To help us to understand how all the different individual parts work together we use models. Let's first make sure we understand what a model is.

What is a model?

A model is a simplified version of the real world.

Models can represent concepts, events, relationships, structures or systems found in the real world.

A model can be a verbal description, a graphical explanation, a mathematical account or a physical representation of an aspect of reality.

The reasons for using a model can include

- to help us to understand reality by removing unnecessary components
- to explain and predict events on the basis of past observations
- to help us to make decisions by creating different scenarios (e.g. what will happen when the earth's temperature rises by 2 degrees Celsius?)

A model contains only the features that are essential to help us to do the above.

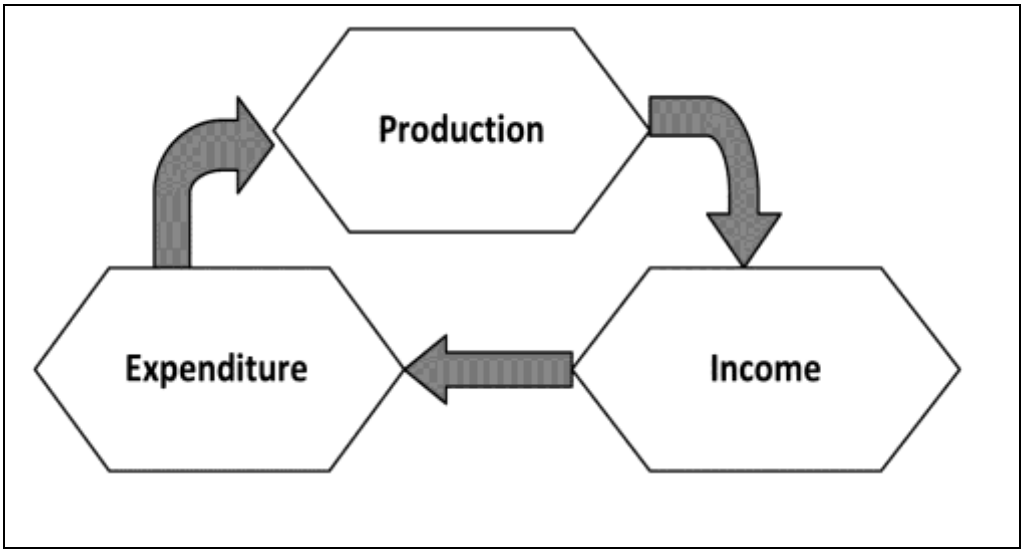
In economics we also use models to explain how the real world works. In **macroeconomics,** where we study the domestic economy as one big unit, we want to understand how the level of expenditure, production and income in the economy is determined. One model that we can use to explain is the **circular flow model** or **flow of funds** model. In this study unit we shall use this model to explain how funds flow through the economy and how these variables are determined.

We first use this flow of funds model to do the following:

- explain the different participants or decision makers in the economy
- explain the different relationships between these participants
- explain how expenditure, production and income is determined in the economy

The flow of funds model that we will look at in this study unit is a **circular** flow model. This means that money that is paid by one party is received by another party, as shown in figure 3.1. Money that is spent on **production** is received as i**ncome** by the persons responsible for the production. That income is then used for **expenditure** (i.e. to buy the goods and services that were produced).

Figure 3.1: Flow of funds



3.2 DEVELOPING THE MODEL

We have seen that when a community is faced with the problem of scarcity it has to make choices. Decisions are taken by individuals. However, we cannot include all individuals in a model. That would be too complex. Therefore we combine the decision makers in the economy into different groups. We call this process a**ggregation** --- this is the process of combining smaller parts into a bigger whole.

The three most important decision maker groups in an economy are the following:

1. **Households** are groups of individuals living together as a decision-making unit. The most obvious example of a household is the family living together in a home. It could, however, also be a single person living in a room or a group of friends sharing a house. The important element of a household is that it operates as a single decision-making unit.

2. **Firms** are organisations responsible for the production and distribution of economic goods. These firms can be sole proprietorships, partnerships, close corporations or companies. Their main function is the processing of factors of production into goods and services which can satisfy wants and needs.

3. **Governments** can take on many different forms. In democracies these governments are elected by the majority of the citizens. In other instances they are self-appointed rulers who took control by means of military power. The functions that governments mostly 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, law and order.
    - They **control** certain elements of the economy in order to bring about nationally desired economic objectives.

3.2.1 The role of households in the flow of funds model

Households provide factors of production to the firms and receive income in return for providing these factors of production. The factors of production are the following:

- *Natural resources.* These are the gifts of nature and include things like land, water, vegetation, animal life, marine life, wind, sunshine and much more. Some of this belongs to the households. Households offer these natural resources to the firms on the **production factor market** and receive **rent** in return from the firms.
- *Labour.* Households offer their physical and mental abilities on the production factor market and are employed by the firms to produce goods. In return for the labour households receive **salaries** or **wages** from firms.
- *Capital.* This includes all the manufactured resources that are used in the production process. This is sometimes also called investment goods and can include machines, tools and buildings. Households receive **interest** from the firms for the use of capital by firms.
- *Entrepreneurship.* The entrepreneur is the person who takes the initiative in the production process and puts all the factors of production together to produce. Entrepreneurs receive **profit** for their efforts.

Households receive income from the firms for providing the different factors of production to the firms. In the model we aggregate all the different individual markets for factors of production into one market which we call the **market for factors of production.**

We use the symbol **Y** to indicate **total income** in the economy. Part of the income that households earn has to be paid to the government in the form of **taxes**. We use the symbol **T** to indicate tax. The amount of income that households have available to spend is therefore equal to income minus taxes. We call this **disposable income** and use the symbol $\mathbf{Y_d}$ to depict this. We can use the following equation to represent this:

$$\mathbf{Y_d = Y - T}$$

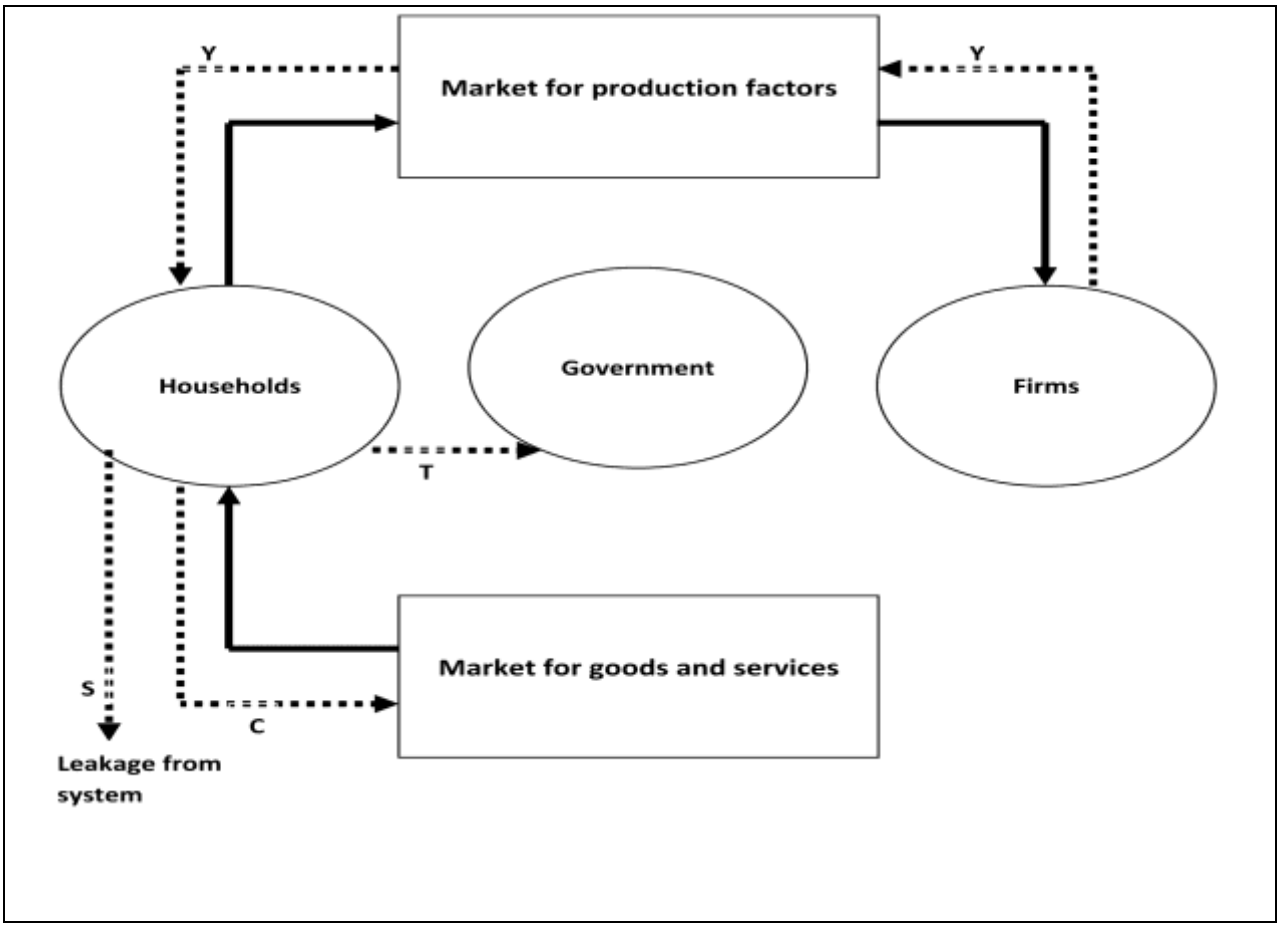
Households can use their disposable income to spend on goods or services or they can save their income. All the different markets for individual goods and services are combined in one market in our model and we call this the **market for goods and services**. The combined expenditure of all the households together on goods and services together is called **consumption expenditure.** We use the symbol **C** to indicate consumption expenditure. The symbol **S** is used to indicate the part of income that is **saved**. Therefore we can say that

$$\mathbf{Y_d = C + S}$$

Money that is saved by households is a **leakage** out of the system. We will not discuss savings further in this study unit but savings are very important as this is the way in which households put away funds for consumption in the future (e.g. to buy a house in the future, pay for children's education and for retirement).

We show this graphically in figure 3.2. The dashed lines (broken lines) represent the **flow of funds** in the economy while the solid lines represent the flow of **real goods and services** in the economy. You have to make sure that you can explain every component in the figure.

Figure 3.2: Leakages from the system

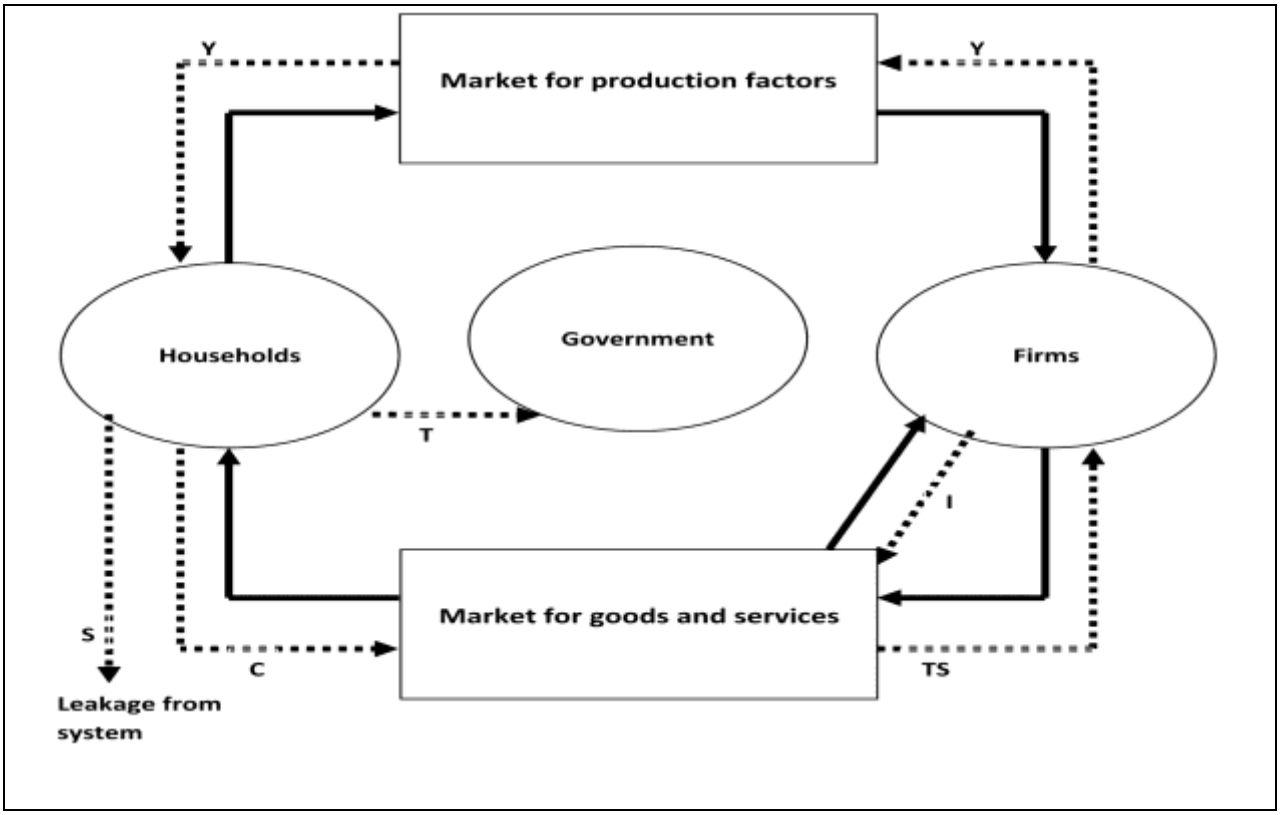


3.2.2 The role of firms in the flow of funds model

Firms are the decision makers who decide which factors of production to employ and what to produce. When firms employ the factors of production to produce goods and services they pay these factors of production. We call this the income of the factors of production and, as mentioned previously, we use the symbol Y to depict this income. Firms then produce the goods and services that are offered for sale on the market for goods and services. They therefore receive the money that is spent in the market for goods and services. We call this **total spending** and the symbol used to depict it is **TS**.

To produce the goods and services, firms also have to purchase certain goods. We call these **investment goods**. This will include machinery and intermediate goods that are used in the production process. Intermediary goods are goods that are used in the production process, for example flour that is used to bake bread. Firms purchase this on the market for goods and services. There is a flow of goods and services from the market for goods and services to the firms and a flow of money from the firms to the market for goods and services. We call this **investment by the firms** and the symbol used to depict it is **I**.

Figure 3.3: Model with savings



3.2.3 The role of the government in the flow of funds model

You already know that the government receives taxes from the households. The government uses the money received in the form of taxes in two ways:

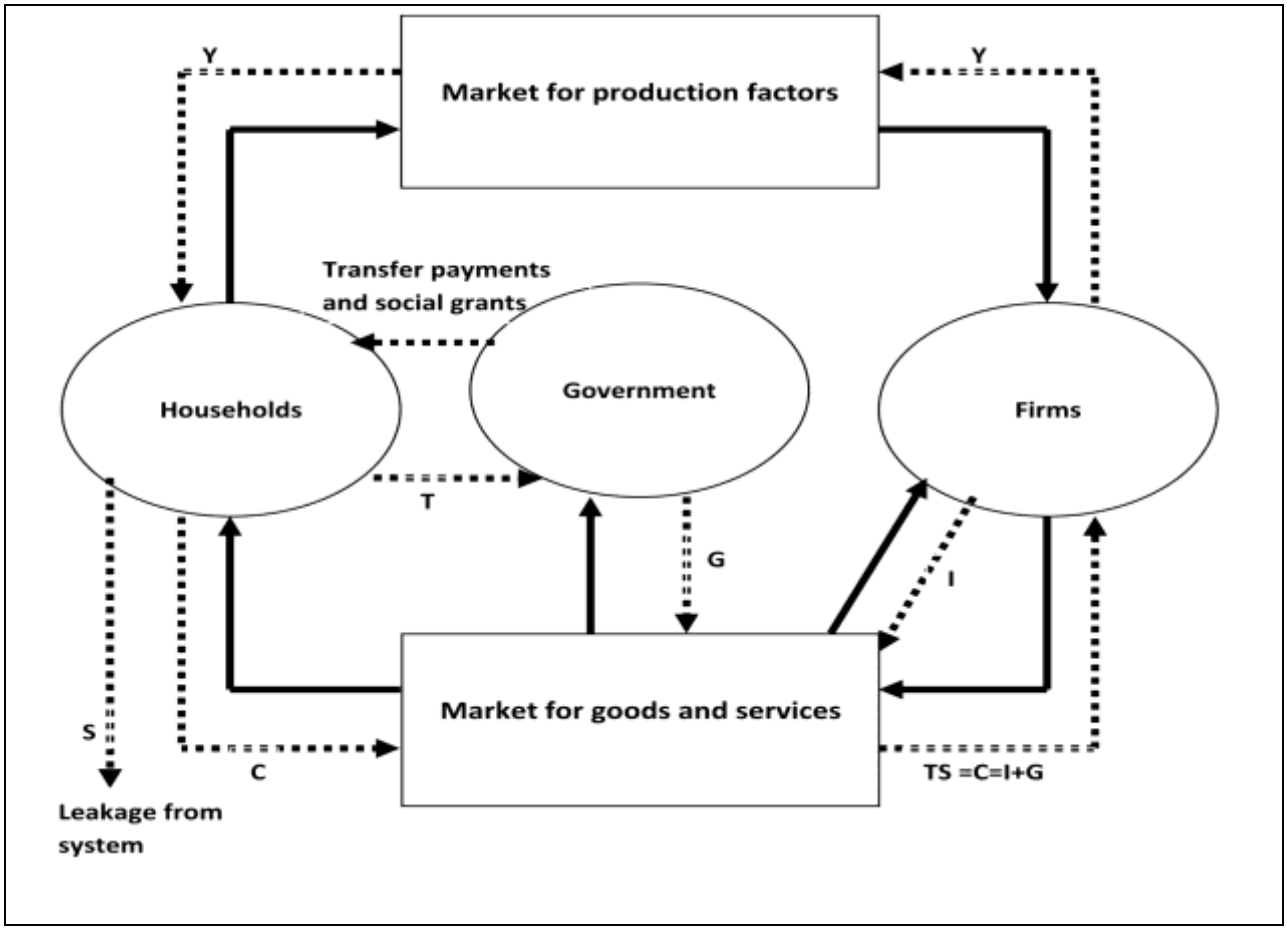
1. The government pays **pensions and social grants** to households who are not earning an income. This is shown in the model in figure 3.4 as a flow of funds from the government to the households. This will form part of the disposable income of households (Y_d).
2. The government is responsible for delivering several goods and services in the country and these also have to be purchased on the market for goods and services. We call this **government expenditure,** which is depicted by the symbol **G**.

The total spending on the goods and services market will therefore consist of consumption expenditure by the households (C), investment spending by the firms (I) and government expenditure (G). This is the amount that firms will receive for the goods and the services that they deliver to the goods and services market. We can use the following equation to show what total spending (TS) consists of:

$$TS = C + I + G$$

Figure 3.4 now contains the full flow of funds model as we have discussed it so far. You can see how the income that is earned on the market for factors of production flows back to the market for goods and services, and is received again by the firms. This is a continuous process that is always taking place in the economy. That is why this model is sometimes also called the **economic circuit.**

Figure 3.4: Complete model



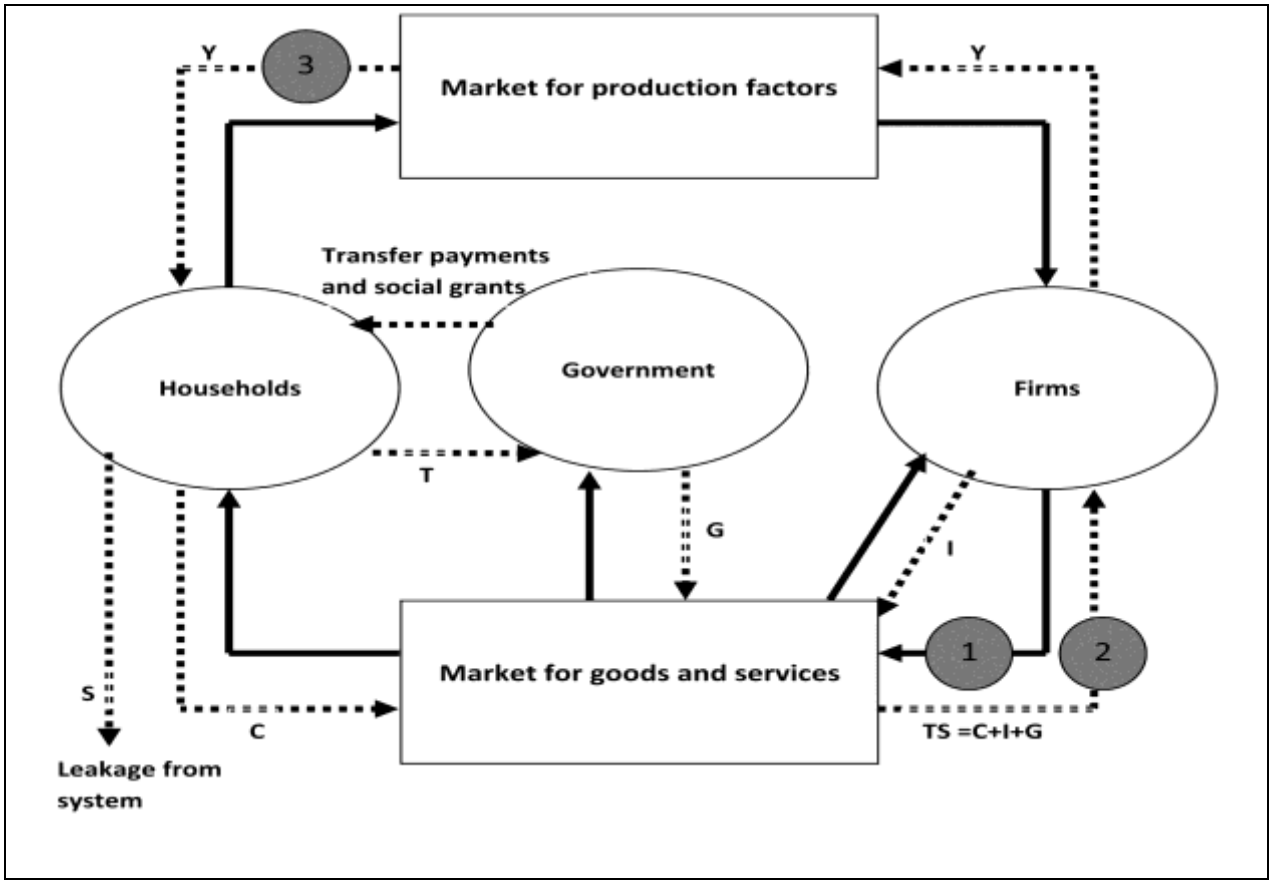
3.3 USES OF THE FLOW OF FUNDS MODEL

3.3.1 Measurement of economic magnitudes

In the introductory paragraph we mentioned that economics is about understanding how the economy operates in the real world and that we need to examine and measure how all the different units in the economy operate together. The circular model that we have now developed helps us to understand the role of different participants in the economy and how funds and goods and services flow through the economy. We can also use it to explain how certain macroeconomic magnitudes can be **measured:**

- Firstly, put a gate (1 in figure 3.5) in the goods and services flow just after the market for goods and services, add the prices of each good and service which flows through the gate in one year and the sum is the total value of all goods and services produced (i.e. the **total production of the economy**). This is sometimes also called the **gross domestic product** (**GDP**).
- Secondly, if a gate (2 in figure 3.5) is placed in the money stream just after the goods market, then the total amount of money which flows through in the period of one year represents the **total expenditure of the economy**. This is sometimes called the **gross domestic expenditure** (**GDE**).
- Thirdly, a gate can be placed in the money stream just after the market for factors of production; the sum of the remuneration paid to all the factors of production in one year (i.e. the sum of all wages, interest, rent and profit) is the **total income earned in the economy**. This is sometimes called the **gross domestic income** (**GDI**).

Figure 3.5



The following table shows the gross domestic product of South Africa from 2002 to 2012. This is therefore the value of the total production of goods and services in the South African economy for each of the years. You will be able to find this data on the South African Reserve Bank's website (see information on the source below the table for the exact website address). Column A shows the GDP for each of the years measured at the market prices prevalent during that year. However, as you know, prices are not constant. Therefore it is difficult to say whether the increase in GDP at market prices from 2002 to 2003 is due to an increase in the production of goods and services or whether it was due to an increase in prices. Therefore the GDP is also measured at constant prices. In column B the GDP at constant 2005 prices is shown. This means that the prices of goods and services prevalent in 2005 are used to measure the value of goods and services that were produced in South Africa for each of the years. Now it is clear that the increase in production from 2002 to 2003 really indicates an increase in the amount of goods and services that were produced. The GDP at current market prices is called **nominal GDP** and the GDP at constant prices is called **real GDP**. In study unit 8 you will learn that only an increase in real GDP represents **economic growth**. The increase in GDP that is due to an increase in prices is due to **inflation**. Inflation refers to an increase in the general price level in the economy.

TABLE 3.1 SOUTH AFRICAN GDP 2002 TO 2012

Year	A Gross domestic product at market prices (nominal GDP) R	B Gross domestic product at constant 2005 prices (real GDP) R
2002	1 171 086 000 000	1 386 435 000 000
2003	1 272 537 000 000	1 427 322 000 000
2004	1 415 273 000 000	1 492 330 000 000
2005	1 571 082 000 000	1 571 082 000 000
2006	1 767 422 000 000	1 659 121 000 000
2007	2 016 185 000 000	1 751 165 000 000
2008	2 256 485 000 000	1 814 594 000 000
2009	2 406 401 000 000	1 786 897 000 000
2010	2 659 366 000 000	1 842 052 000 000
2011	2 917 539 000 000	1 905 736 000 000
2012	3 155 195 000 000	1 954 303 000 000

Source: http://www.resbank.co.za/Research/Statistics/Pages/OnlineDownloadFacility.aspx, Series KBP6006J, KBP6006Y (as on 15/07/2013).

3.3.2 Explanation and prediction

This model can be used to explain how goods and services flow through the economy and how funds flow through the economy. It can also be used to explain the role of different groups of participants in the economy.

We can also use it to predict how certain changes may affect the economy. Let's say that there is an increase in the tax rate so that households have to pay more taxes. How will this affect the rest of the economy?

If taxes increase it means that consumers will have less disposable income (Y_d) available. This will mean that they will have to decrease their expenditure on consumption goods (C) or that they will have to save less. Demand for consumption goods on the market for goods and services may therefore decrease, which firms will have to take note of when they make their production decisions.

As the government will receive more funds due to the increase in tax, government expenditure (G) may increase. Firms will have to take this into account when making production decisions as well. It may therefore be worthwhile for firms to divert resources away from production of consumer goods to production of goods and services purchased by the government.

However, if the government decides to use the extra money received from higher taxes to pay more towards pensions and social grants, total consumption expenditure by households may not be affected at all. Now the firms will have to look at the consumption by the different types of households. Households that pay taxes are generally households that fall into a higher income group, while households that receive transfer payments (such as pensions and child grants) from the government usually fall into a lower income group. Consumers that belong to different income groups have different expenditure patterns and firms will have to change their production decisions to allow for this.

3.4 LIMITATIONS OF THE MODEL

The model represented in figure 3.4 is a **simplified** version of the real world. As explained in section 3.3.2 it may be necessary to **differentiate** between different types of consumers in the household sector. The fact that the market for factors of production is **aggregated** into one market may also limit the way in which we can understand how changes in the price or supply of one particular production factor may affect the economy. For example, this model can't be used to analyse the effect of an increase in the wage of platinum mine workers on the economy. Therefore, although aggregation helps to make the model simpler and therefore helps us to understand the flow of funds through the economy, we have to be aware of the limitations that this process brings about.

As we stated earlier, various markets and participants have not been included in the circular flow model. Our simplified model does not make provision for the following:

- The **foreign sector** (i.e. rest of the world) is an important participant that is 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 study unit 7.

- 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 3.4, we could also provide 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 study unit 6.

3.5 CONCLUSION

In this study unit you were introduced to the use of models in economics. Similar to the way in which models are used in chemistry, engineering and many other aspects of life, economists use models to provide a simplified representation of the real word. Models are used to assist us to understand and explain the relationship between different participants in the real world and to predict the result of certain changes. They may therefore be used as aids when we have to make certain decisions.

In this study unit we introduced you to a very simple but very useful model of the economy, namely the flow of funds model or the economic circuit model. As you learn more about the economy in this module and in future studies that you may enroll for, you will learn about many other models that are also used to explain the economy and certain economic phenomena. If you become an economist one day, you may even build your own models. What will remain the same, however, is the definition of a model and what it can be used for.

Demand, Supply and Prices

4

Study instructions

Study this study unit 4
Do all the activities in the learning unit 4

Purpose of the learning unit

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

Main outcomes of learning unit

Once you have worked through this learning unit, you should be able to

- describe in words, with the help of an equation (symbols), schedules (tables) and figures (graphs), the demand for goods and services
- describe in words, with the help an equation, schedules and figures, the supply of goods and services
- describe in words, schedules and figures the determination of prices through the forces of demand and supply

4.1 INTRODUCTION

In the mixed market system in which we find ourselves, it is through markets that we solve the economics problems of what to produce, how to produce it and for whom to produce it.

As you will be aware from your everyday life, in order to obtain a good or service, whether it is food, cold drinks, a haircut, a television set, the services of a medical doctor, you must be able and prepared to pay the price for these goods or services.

In a market economy prices rule. Therefore, to understand the economy you need to understand why prices are important and also how prices are determined in the economy. And this is what the section on demand, supply and prices is all about.

In this learning unit and the next we will construct an economic model that captures the fundamental principles and forces that lie behind demand and supply in order to formulate a theory that explains the determination of prices in a market economy.

With this model that you will eventually be able to

- **explain** how prices are determined in a market
- **explain** what causes prices to change
- **predict** how prices might change in the future
- **evaluate** possible policy actions to improve the functioning of the market

4.2 THE DEMAND FOR GOODS AND SERVICES

Purpose of this part of the study unit

In this part of the learning unit we will take a closer look at the factors that influence the demand for goods or services. We are also going to present these demand factors with the help of words, an equation (symbols), schedules (tables) and figures (graphs).

It is in this part of the unit that we will start building our economic model by capturing the forces that determine the demand for goods and services.

Section outcomes

Once you have worked through this part of the learning unit, you should be able to

- explain the meaning of demand
- identify factors that determine the demand for goods
- explain the law of demand in words and with the help of an equation (symbols), schedules (tables) and figures (graphs)
- identify non-price factors of demand
- explain the impact of non-price factors on demand in words and with the help of schedules and figures
- distinguish between a change in quantity demanded (movement along a demand curve) and a change in demand (shift in a demand curve)

Economics in action

Read through the following and answer the questions:

LONDON — The global food system will remain "vulnerable" in the years to come as a growing population boosts demand for crops and climate change makes weather disruption more frequent, according to a World Bank report.

The world will need to produce 70% more food by 2050 to feed a global population expected to grow to more than 9 billion from 7 billion now, the United Nations' Rome-based Food and Agriculture Organisation (FAO) estimates. The three biggest annual gains in food prices in the past 20 years have occurred since 2007, with the FAO's food price index of 55 items climbing to a record in February 2011.
"Although we are having some good crops, we continue to expand our consumption, so our ability to replenish stocks is challenged," Marc Sadler, practice leader at the agriculture and environmental services unit of the World Bank, said on Thursday. "Demand continues to grow and a lot of that has been driven by emerging, new middle-income consumers who change their dietary patterns."

Global demand will continue growing as increasingly wealthy consumers in developing economies eat more meat. The world's food-import bill is expected to remain stable this year as cheaper sugar and cooking oils compensate for higher dairy, fish and meat costs, according to the FAO.
http://www.bdlive.co.za/world/2013/06/28/global-food-order-under-threat

Questions:

1. How much more food must the world produce to feed the population by 2050?
2. Name three factors that influence the demand for food in the world.
3. What do you think will happen to the price of food in the future?

4.2.1 The meaning of demand

The demand for a good or service can be defined as the following:

> **Demand is the quantities of a good or service that potential buyers are willing and able to purchase during a certain period**

According to this definition of the demand there are three conditions that must be met to be part of the demand for a good or service:

1. **Potential buyers** – People must want, be able and intend to purchase it.
2. **Ability** – People must have the necessary purchasing power.
3. **Willing** – People must be willing to pay for it.

Ability to pay

An important factor that determines whether you can afford to buy goods and services in order to satisfy your wants and needs is your ability to pay for them.

This ability to pay for goods and services in turn depends on your income. The higher the income of a person or household, the more goods and services they can afford to buy.

In economics we would say that they have the necessary **purchasing power**.

To be part of the demand for an Aston Martin you must be willing and able to purchase it.

So, if you plan to sell a good or a service you must be sure that people not only want it but also have the ability to pay for it. If people want a good or service but do not have the ability to pay for it, they are not part of the demand for it. For instance, only those people who want a car and are willing and able to pay for it, create the demand for cars.

Needs and wants differ from demand

It is therefore important that the demand for a good or service should be clearly distinguished from needs and wants.

In learning unit 1 you saw that needs and wants are unlimited desires or wishes people have for goods and services. In contrast to this, the quantity that people demand of a certain good is the amount they actually are able to and plan to buy during a certain period of time.

.

Just because we have needs and wants does not mean we are part of the demand for the goods and services that we need and want.

Needs and wants differ from demand. To be part of demand you must be willing and able to purchase the good or the service in question.

Unlike needs and wants, the demand for a good or service has to be backed up by purchasing power (buying power, income). Without purchasing power, there can be no demand. Therefore, the amount we demand reflects a decision as to which needs and wants we intend to satisfy given our limited purchasing power, since we cannot satisfy all our needs and wants.

Willingness to pay

Willingness to pay is also important. Even if you want the good or service and have the ability to pay, but you are not willing to pay for it, then you also are not part of the demand for it.

Intention to purchase

Lastly, it is important to remember that demand is an expression of the intention to purchase goods or services. It does not tell us what the consumers will actually do.

In the rest of the learning unit we will use the symbol **Qd** to indicate the quantities of a good or service demanded.	**Qd is the symbol for quantity demanded**

✍ Activity 4.1

Do activity 4.1 in the workbook.

4.2.2 Factors that determine the demand for goods

Each of us is a consumer of goods and services. Each day we require certain goods and services to stay alive and we consume goods and services to satisfy some of our needs and wants. The amount of any particular good or service we plan to buy depends on many diverse factors.

While there are many factors that influence demand for goods and services, economists have identified the following as the most important:

- **tastes and preferences** – represented by the symbol T
- **income** – represented by the symbol Y
- **the price of the product** – represented by the symbol Px
- **number of potential buyers** – represented by the symbol N
- **the price of related goods** – represented by the symbol Pg substitutes complements
- **and other factors such as -** the weather expected prices

With the above information it is now possible to write a demand equation with the help of symbols:

$$\mathbf{Qd = f(T, Y, Px, N, Pg, ...)}$$

In other words, the above equation states that the quantity demanded of a goods or service is a function of taste and preferences, income, price of the goods or service, the number of potential buyers and the price of related goods and other factors (this is what the three dots ... represent). The other factors are things such as the weather, expected price, and so forth.

✍ Activity 4.2

Do activity 4.2 in the workbook

4.2.3 Law of demand

Surely all the above factors will all have an impact on the demand for a good or service, but the most important is probably the price of the good or service (Px). Although all the other factors, such as our income (Y) and the prices of related goods (Pg), play a very important role in our demand for a specific product, they can never overshadow the price of the good or service itself (Px). In the light of this we have to ask what the relationship is between the quantity demanded and the price of a good or service.

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

With words

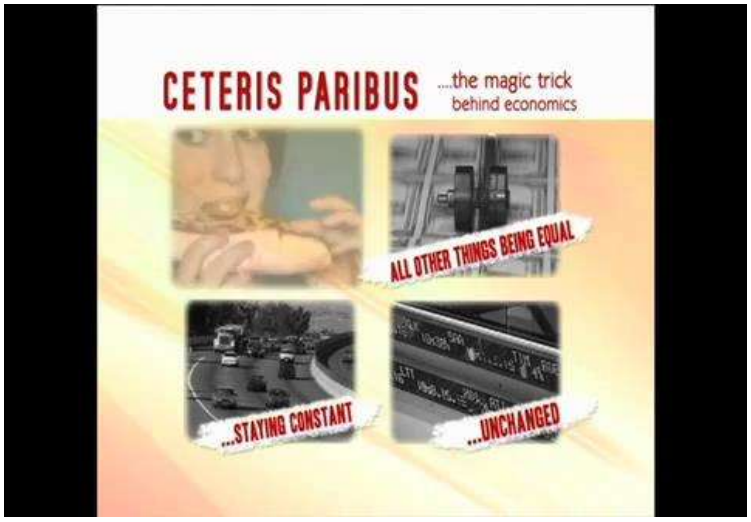
In words, the law of demand can be explained as follows:

The higher the price of a good or service (all other things remaining the same), the lower the quantity demanded; or the lower the price of a good or service (all other things remaining the same), the greater the quantity demanded.

To analyse the impact of a change in the price of a good or service on the quantity demanded for it, we need to keep all the other factors we have listed (income, preferences, weather, etc) the same by assuming that they are unchanged. This is related to the ceteris paribus assumption.

Ceteris paribus

The 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.



Ceteris paribus – all other things being equal – staying constant – unchanged

Law of demand in symbols

In symbols, the law of demand can be represented as follows:

Px↑ → Qd↓ If the price of a good or service increases the quantity demanded decreases.
Px↓ → Qd↑ If the price of a good or service decreases the quantity demanded increases.

This is known as an inverse or negative relationship.

A negative or inverse relationship refers to the fact that as the one variable (in this case price) goes down the other variable goes up (in this case the quantity demanded).

The opposite is also true. If the one variable (in this case price) goes up, the other variable goes down (in this case the quantity demanded).

A negative of inverse relationship

✍ Activity 4.3

Do activity 4.3 in the workbook

The law of demand as a schedule

The law of demand is demonstrated with using a schedule. We will use the demand for fried chicken pieces as an example.

From the above description of the law of demand we know that if the price of fried chicken pieces increases the quantity of fried chicken pieces demanded will decrease and if the price of fried chicken pieces decreases the quantity of fried chicken pieces demanded will increase.

The table on the right is a hypothetical demand schedule for fried chicken pieces.

Column 2 shows different prices for fried chicken pieces.

Column 3 shows the quantity of fried chicken pieces that will be demanded at each price during a particular week.

According to this table – given that all the other factors that influence demand stay the same – at a price of R7 per fried chicken piece, the quantity demanded will be 2 pieces. If the price of fried chicken pieces decreases to R6, the quantity demanded will be 4 pieces; at a price of R5, the quantity demanded will be 6 pieces, and so on.

TABLE 4.1: DEMAND SCHEDULE

1	2	3
	Price of fried chicken per piece (rand)	Quantity of fried chicken pieces demanded (per week)
A	7	2
B	6	4
C	5	6
D	4	8
E	3	10
F	2	12
G	1	14

Can you see how the quantity demanded increases as the price of a fried chicken piece decreases? And how the quantity demanded decreases as the price increases.	

Activity 4.4

Do activity 4.4 in the workbook

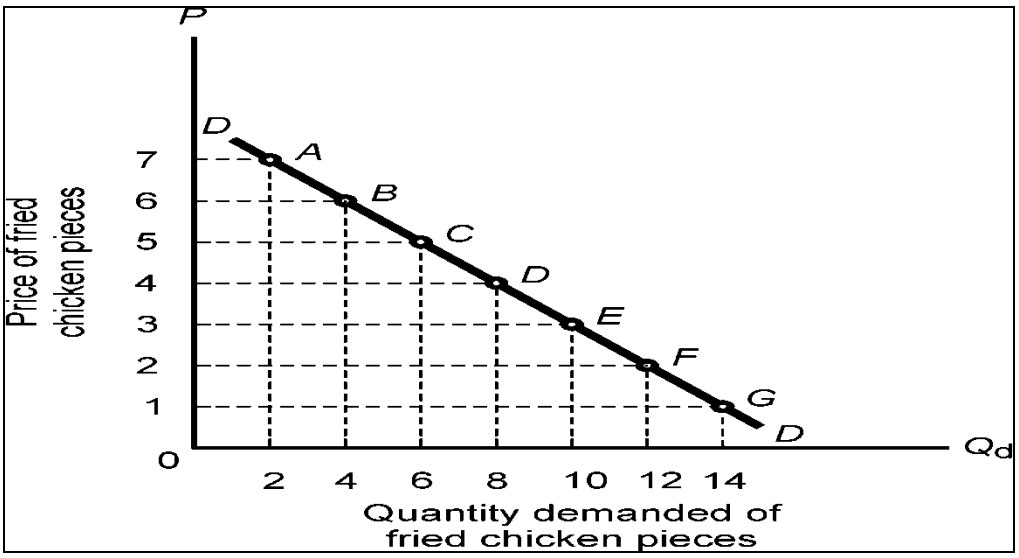
The law of demand as a graph

It is also possible to demonstrate the law of demand by using a graph. We will use the data in table 4.1 to draw a demand curve.

The following graph shows two axes, namely, the vertical axis and the horizontal axis. The vertical axis shows the price (P) of a product or service, for example fried chicken pieces, and is labelled "Price of fried chicken piece". It starts at zero and there are seven price intervals (1, 2, 3, 4, 5, 6 and 7).

The horizontal axis measures the quantity demanded (Qd), and is labelled "Quantity demanded of fried chicken pieces (per week)". There are seven quantity intervals (2, 4, 6, 8, 10, 12 and 14).

Figure 4.1: Demand curve for fried chicken pieces



Point A in table 4.1 corresponds to a price (P) of R7 and a quantity (Qd) of 2 pieces of fried chicken, as can be read off from the vertical and horizontal axes respectively.

To draw point B, we obtain the point which represents a price of R6 and a quantity of 4. To draw point C we obtain the point which represents a price of R5 and a quantity of 6. Points D, E, F and G are obtained in the same way. By connecting these points we obtain a line, shown as DD. And this then is our demand curve for fried chicken pieces.

Look carefully at the demand curve in figure 4.2. Can you see how the demand curve is labelled DD?

The demand curve shows how many pieces of fried chicken potential buyers plan (or intend) to buy at each price.

Slope of the demand curve

An important property of a demand curve is that it slopes downwards from left to right. This reflects the inverse or negative relationship between the price and the quantity demanded.

In our example, as the price of fried chicken pieces decreases, the quantity demanded increases. Therefore, a downward movement along the demand curve takes place.

As the price of fried chicken pieces increases, the quantity demanded decreases. Therefore, an upward movement along the demand curve takes place.

Figure 4.2 Downward movement along a demand curve

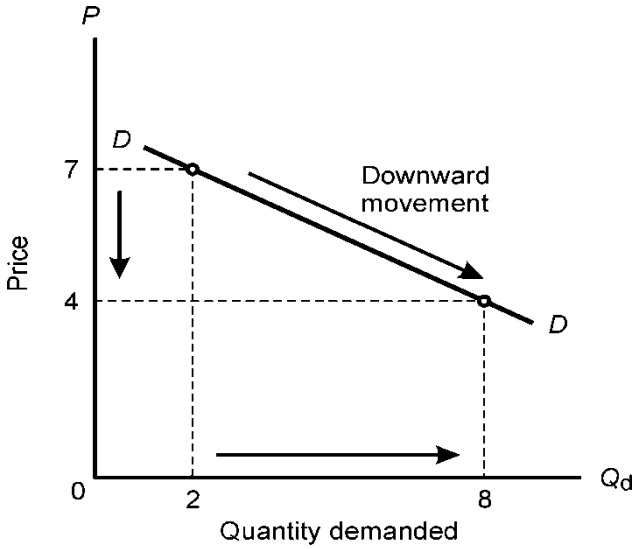
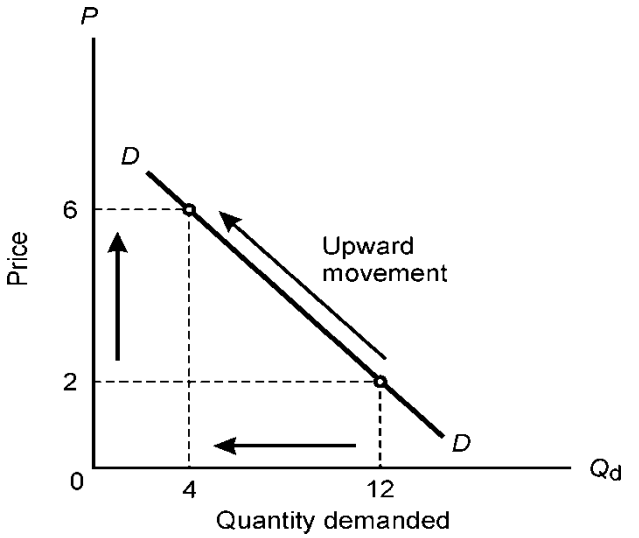


Figure 4.3 Upward movement along a demand curve



This representation illustrates the law of demand which, in fact, applies to all goods – potatoes, meat, pizzas, hamburgers and also services such as those of hairstylists, medical practitioners and architects.

✍ Activity 4.5

Do activity 4.5 in the workbook

4.3 NON-PRICE FACTORS OF DEMAND

So far we have established a negative relationship between the price of a good and the quantity demanded of that good. This relationship is represented by the demand schedule and the downward sloping shape of the demand curve.

As you know it is not only the price of the product that influences the demand for it. There are also other factors called the non-price determinants. These are things such as tastes and preferences, income, number of potential buyers and the price of related goods.

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

An increase in income

Assume an increase in the income of households in South Africa. How will this influence the demand for fried chicken pieces? 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 thus expect to see an increase in the demand for fried chicken pieces if income of households increase.

Such an increase in the demand for fried chicken pieces can also result if a substitute product like chicken burgers has become more expensive, or the size of the South African population has increased significantly, or simply because people's preferences have changed in favour of fried chicken pieces.

The result of all these possible influences is that more fried chicken pieces will be bought at each price.

Let's see what happens to our demand schedule and demand curve for fried chicken if the level of income increases.

Table 4.2: Increase in demand

Look at the demand table on the right to see how an increase in income will affect the demand for fried chicken pieces.

Can you see how at **each price** the demand for fried chicken pieces is higher?

At a price of R7 the quantity demanded is now 16 pieces instead of 12 pieces; at a price of R6 the quantity demanded is now 22 pieces instead of 18 pieces; at a price of R5 the quantity demanded is now 28 pieces instead of 24 pieces, and so on.

Price of fried chicken per piece (rand)	Quantity of fried chicken pieces demanded (per week)	Quantity of fried chicken pieces demanded after an increase in income (per week)
7	12	16
6	18	22
5	24	28
4	32	34
3	36	40
2	42	46
1	48	52

From the above we can conclude that if the income of a household increases, its demand for goods and services will increase. The opposite is also true. If the income of a household decreases, its demand for goods and services will decrease.

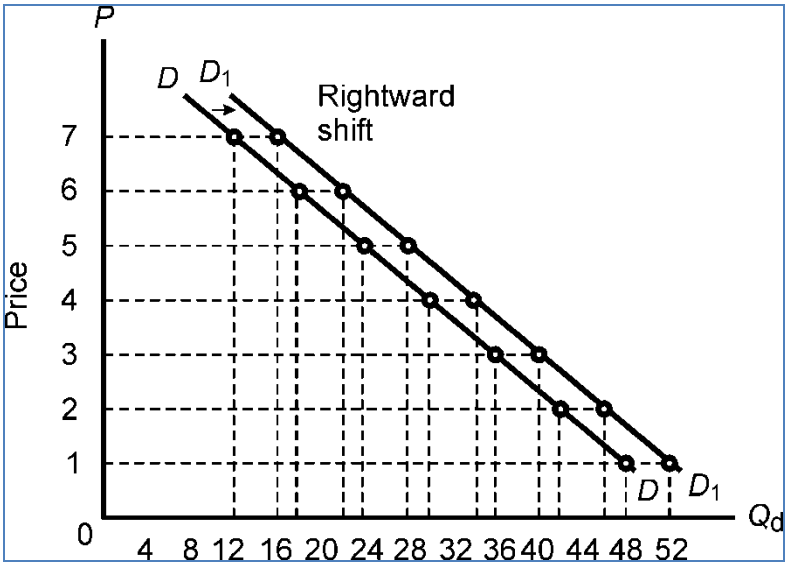
Change in income and the demand curve

Let's see what happens to our demand curve for fried chicken pieces if income increases.

From table 4.2 we know that at each price a higher quantity of fried chicken pieces will be demanded if income increases. We now have a new demand curve to indicate the demand for fried chicken pieces at this higher income level. This new demand curve is to the right of the initial demand curve and a rightward shift of the demand curve for fried chicken pieces has occurred.

At R7 per piece the quantity of fried chicken pieces demanded is now 16 pieces.
At R6 per piece the quantity of fried chicken pieces demanded is now 22 pieces.
At R5 per piece the quantity of fried chicken pieces demanded is now 28 pieces.
At R4 per piece the quantity of fried chicken pieces demanded is now 34 pieces.
At R3 per piece the quantity of fried chicken pieces demanded is now 40 pieces.
At R2 per piece the quantity of fried chicken pieces demanded is now 46 pieces.
At R1 per piece the quantity of fried chicken pieces demanded is now 52 pieces.

Figure 4.4: Increase in income



At each price the quantity demanded is higher. This is shown by a rightward shift of the whole demand curve DD to the new demand curve D_1D_1.

The situation illustrated in figure 4.4 is called an **increase in demand** or a shift to the right of a demand curve. Similarly, any decrease in demand (a fall in the income of households) will result in a shift to the left in the demand curve. This implies that at each price fewer fried chicken pieces will be demanded than before.

✍ Activity 4.6

Do activity 4.6 in the workbook

Change in quantity demanded versus a change in demand

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

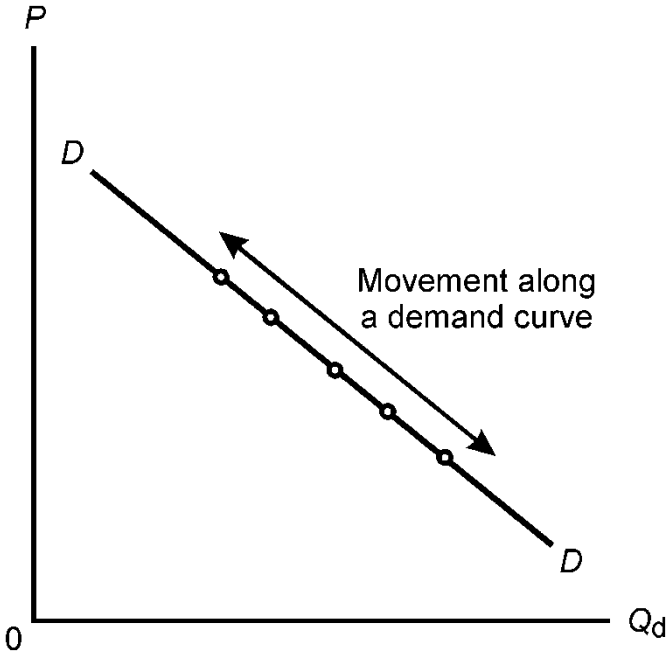
A change in quantity demanded

Any change in the price of the product will cause a movement along the demand curve to the new price.

If the price decreases, a higher quantity will be demanded of the product (moving down along the demand curve). In figure 4.5 this is shown by a movement from point A to point B to point C, and so forth on DD. 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.

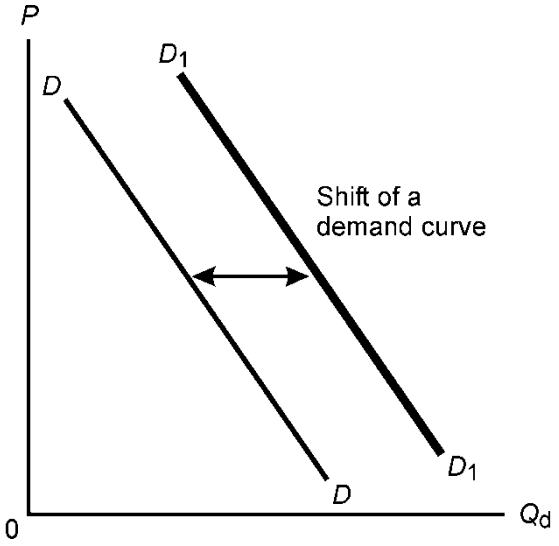
A movement along the demand curve as a result of price changes is referred to as an increase/decrease in the **quantity demanded** but does not signify any change in demand as such because there was no shift in the demand curve itself.

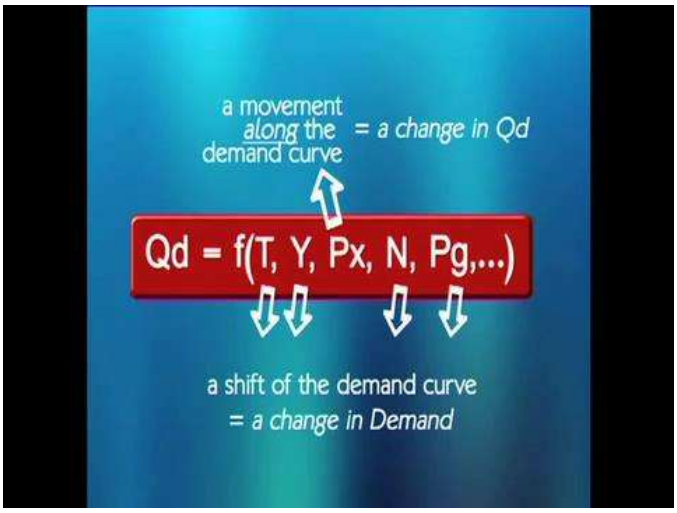
Figure 4.5: Movement along a demand curve: change in quantity demanded



A change in **any** of the other factors (income, price of substitutes, preferences, population, etc) will lead to a shift in the demand curve itself. This is referred to as a **change in the demand** for the product. The shift in the demand curve can be either to the left or the right, depending on the circumstances. A shift to the right (fig 4.6) means an increase in demand, whereas a shift to the left implies a decrease in demand.

Figure 4.6: Shift of a demand curve – change in demand





A change in the price causes a movement along the demand curve while a change in any non-price factor shifts the demand curve

Using our demand equation we can show that if the price of a good or service changes then the quantity demanded changes and is represented as a movement along the demand curve. A change in any of the non-price factors is a change in demand and is represented as a shift in the position of the demand curve.

✍ Activity 4.7

Do activity 4.7 in the workbook

Tastes and preferences

What happens when the tastes and preferences of households change? Our attitudes towards goods and services is determined by our tastes and preferences. Some goods we like more than others.

What do you think will happen to the demand for fried chicken pieces by the Dlamini family if Mr Dlamini, acting on the advice of his doctor, decides to buy less fried chicken per week? How will this affect the demand curve for fried chicken pieces?
Will this cause a rightward or a leftward shift or a movement along the demand curve?

If people's tastes and preferences change, the demand for the good and service will change and the position of the demand curve will shift. A lower preference for a good or service means less of the good will be demanded at each price and the position of the demand curve will shift to the left.

Look at the demand schedule on the right to see how a change in tastes and preferences will affect the demand for fried chicken pieces.

Can you see how at **each price** the demand for fried chicken pieces is now lower? At a price of R7 the quantity demanded is 6 pieces instead of 12 pieces; at a price of R6 the quantity demanded is 12 pieces instead of 18; at a price of R5 the quantity demanded is 18 pieces instead of 24 pieces; and so on.

There is now a lower demand for fried chicken pieces.

TABLE 4.3 DECREASE IN TASTES AND PREFERENCES

Price of fried chicken per piece (rand)	Quantity of fried chicken pieces demanded (per week)	Quantity of fried chicken pieces demanded after the change in preferences (per week)
7	12	6
6	18	12
5	24	18
4	32	24
3	36	32
2	42	36
1	48	42

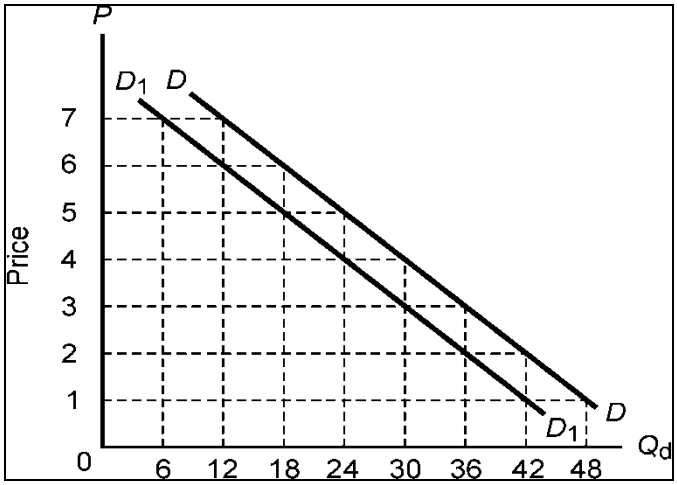
Let's see what happens to our demand curve for fried chicken pieces, DD, if the demand for fried chicken pieces decreases.

From table 4.3 we know that at each price a lower quantity of fried chicken pieces will be demanded. There is, therefore, a new demand curve for fried chicken pieces. This new demand curve is positioned to the left of the previous demand curve and, therefore, a leftward shift has occurred in the demand curve for fried chicken pieces.

Look at the new demand curve D_1D_1 in figure.

Can you see that
at R7 per piece the quantity of fried chicken pieces demanded is now 6 pieces at R6 per piece the quantity of fried chicken pieces demanded is now 12 pieces at R5 per piece the quantity of fried chicken pieces demanded is now 18 pieces at R4 per piece the quantity of fried chicken pieces demanded is now 24 pieces at R3 per piece the quantity of fried chicken pieces demanded is now 32 pieces at R2 per piece the quantity of fried chicken pieces demanded is now 36 pieces
at R1 per piece the quantity of fried chicken pieces demanded is now 42 pieces

Figure 4.7: Decrease in tastes and preferences



At each price the quantity demanded is lower. This is shown by a leftward shift of the whole demand curve DD to the new demand curve D_1D_1.

✍ Activity 4.8

Do activity 4.8 in the workbook

Related goods

There are two kinds of related goods, namely, substitutes and complements. These will influence the demand for a good or service.

Substitutes

A substitute is a good that can be used in the place of another good without lessening a consumer's level of satisfaction. For example, butter and margarine are substitutes, beef and mutton are substitutes, tea and coffee are substitutes, rice and wheat, cold drinks and fruit juice, hamburgers and hot dogs and so on are all substitutes.

Can you think of any other substitutes?

The Dlamini family likes fried chicken, but they also like chicken burgers. So, sometimes, instead of buying fried chicken, they buy chicken burgers. Thus, for the family, chicken burgers are a substitute for fried chicken.

What do you think will happen to the Dlamini's demand for fried chicken pieces if chicken burgers are suddenly sold at a much lower price?

If the price of hamburgers suddenly decreases, the Dlamini family will probably plan to eat more chicken burgers and fewer fried chicken pieces per week. They will therefore demand fewer fried chicken pieces than before.

In other words, if the price of a substitute good (chicken burgers) decreases, the demand for the other good (fried chicken pieces) usually decreases. In this case the demand curve for fried chicken pieces decreases and shifts to the left.

✍ Activity 4.9

Do activity 4.9 in the workbook

Complements

Complements are goods that are often used jointly (together), for example fish and chips, pap and meat, motor cars and petrol, coffee and milk, flashlights and batteries, DVD machines and DVDs, cell phone and airtime, and so forth.

According to the law of demand, a decrease in the price of a good, for example a cell phone, will increase the quantity of the good demanded. As more cell phones are demanded and bought, people will also demand more airtime. In other words, if the price of a good decreases, the demand for the joint good will increase.

If, for instance, due to the decrease in the price of cell phones, Mr Dlamini buys cell phones for his children, their demand for airtime will also increase because the children will also want to send sms's and make phone calls. Consequently, their demand curve for airtime will shift to the right to indicate that the demand for airtime has increased.

However, when the price of a product increases, less of it is used and therefore the demand for the complement decreases and the demand curve for it shifts to the left.

✍ Activity 4.10

Do activity 4.10 in the workbook

Number of potential buyers, expected prices and the weather

Another non-price factor that we need to consider is how the number of potential buyers affects the demand for a good or service.

What do you think will happen to the demand for fried chicken pieces it there are more potential buyers for fried chicken pieces? This might happen because there is an increase in the population for instance. The answer is that the demand for fried chicken pieces will increase and the demand curve will shift to the right, indicating that at every price a higher quantity is demanded.

And if there are fewer potential buyers? Then the demand for fried chicken pieces will decrease and the demand curve for fried chicken pieces will shift to the left, indicating that at each price a lower quantity is demanded.

If households expect the price of something to increase in the future, they will tend to increase their demand before the price increase. In South Africa, the petrol price usually changes on the first Wednesday of each month. If the new price is higher, households will try to fill up their cars with petrol before the implementation of the price increase. There is therefore an increase in the demand for petrol

before the expected increase in the price.

A change in the weather also influences the demand for goods and services. During the summer there is a higher demand for ice cream and cold drinks. During cold winters the demand for electricity increases because homes and offices are heated.

✍ Activity 4.11

Do activity 4.11in the workbook

Concepts

Ceteris paribus means all other things being equal or unchanged.
Complements are goods that are used together**.**
A **change in demand** takes place when any of the non-price factors of demand change.
A **change in quantit**y demand takes place when the price change.
Demand for a good or service consists of the amount of goods people are willing and able to buy.
A **demand curve** shows the relationship between the price and quantity of a good or service demanded.
The **law of demand** tells us that as the price of a good or service increases the quantity demanded decreases and as the price decreases the quantity demanded increases.
A **negative or inverse** relationship indicates that as one variable increases the other variable decreases.
Non-price factors of demand are factors other than the price of the good or service that influence the demand for it.
Purchasing power refers to the ability to purchase a good or service.
Related goods are substitutes and complements.
Substitutes are goods that can be used in the place of another good**.**

4.4 THE SUPPLY OF GOODS AND SERVICES

Purpose of this part of the learning unit

The purpose of the part of the learning unit is to take a closer look at the factors that influence the supply of a good or service. We are also going to present these supply factors with the help of words, an equation (symbols), schedules (tables) and figures.

It is in this part of the unit that we will start building our economic model by capturing the forces that determine the supply of goods and services.

Section outcomes

Once you have worked through this part of the learning unit, you should be able to

- explain the meaning of supply
- identify factors that determine the supply of goods and services
- explain the law of supply in words and with the help of an equation (symbols), schedules (tables) and figures (graphs)
- identify non-price factors of supply
- explain the impact of non-price factors on supply in words and with the help of schedules and figures
- distinguish between a change in quantity supplied (movement along a supply curve) and a change in supply (shift in the position of a supply curve)

Economics in action

Read through the following and answer the questions:

Wheat and soybeans led commodities gains last year, and maize jumped to a record in August after the worst US drought since the 1930s left limited supplies. Frosts in Brazil helped cut the sugar cane crop in its main producing region for the first time in a decade in the 2011–12 season, data from industry group Unica showed.
Mr Sadler said disruptive weather events were increasing in frequency and amplitude. "The real challenge for agriculture is that the environment, the production system, the variables that surround us, are increasingly volatile.
"It will continue to be a challenge to raise agricultural productivity in a resilient way in the face of climate change and this is the reality we face."

Questions:

1. What supply factors are mentioned in the exerpt above?
2. How do you think these factors influenced supply?

4.4.1 The meaning of supply

The supply of a good or service can be defined as follows:

Supply is the quantities of a good or service that potential suppliers are willing and able to supply during a certain period.

In the rest of the learning unit we will use the symbol **Qs** to indicate the quantities of a good or service supplied.	**Qs is the symbol for quantity supplied**

4.4.2 Factors that influence supply

All businesses that supply goods and services have to make some difficult decisions about the kinds, amounts and prices of the goods and services they want to supply.

In a market system, businesses only supply goods and services that can make a profit. Likewise, a business will not supply a good or service that cannot make a profit.

Consequently, unprofitable goods and services are usually supplied by government or other non-profit enterprises. Can you think of an example?

Economists agree that the following factors are the main determinants of the supply of a good or service:

- the price of a good or service – represented by the symbol Px
- the prices of inputs (cost of production) – represented by the symbol Pc
- the prices of alternative goods and services – represented by the symbol Pg
- the technology needed to make the good – represented by the symbol T
- the number of suppliers – represented by the symbol N
- the weather
- expected prices

Apart from the price of the good or service and the number of suppliers, all the other factors are mainly concerned with the cost of production. The supply decision by a firm therefore depends on the cost of production and the profits that it can make by supplying the good or service.

With the above information it is now possible to write a supply equation with the help of symbols:

$$\mathbf{Qs = f(Px, Pc, Pg, T, N, ...)}$$

In words, the above equation means that the quantity supplied of a good or service is a function of the price of the good or service, the cost of production, technology, the price of related goods, the number of other firms and other factors. The other factors are things such as the weather, expected price, and so on.

✍ Activity 4.12

Do activity 4.12 in the workbook

4.4.3 Law of supply

A very important factor that influences how much of a good or service will be supplied to the market is the price of the good or service. Let's see how the price of fried chicken pieces influences the quantity supplied by a supplier of fried chicken pieces called Funky Chicken.

What do you think Funky Chicken will do if the price of fried chicken pieces increases? As the price of fried chicken increases, Funky Chicken will plan to supply a higher quantity of fried chicken pieces. This is because, by supplying a higher quantity at a higher price, they will be able to make a higher profit.

But what happens if the price of a fried chicken piece decreases? If the price of chicken pieces decreases, Funky Chicken will plan to supply a lower quantity. This is because, by supplying a higher quantity at a lower price, they will make a loss (and may even eventually go out of business).

In words

In words the law of supply can be described as follows:

The higher the price of a good or service (all other things remaining the same), the higher the quantity supplied or the lower the price of a good or service (all other things remaining the same), the lower the quantity supplied.

With symbols

Using the symbol P for the price of the product and the symbol Q_s for the quantity demanded, the law of demand can also be written as follows:

$Px\uparrow \rightarrow Q_s\uparrow$ An increase in the price of the product (P) causes an increase in the quantity supplied.

$Px\downarrow \rightarrow Qs\downarrow$ A decrease in the price causes a decrease in the quantity supplied.

This relationship between the price of a product and the quantity supplied is called a positive relationship. A positive relationship indicates that if one variable goes up (in this case the price of the product), the other variable will go up as well (in this case the quantity supplied of a product). It also implies that if one variable goes down (in this case the price of the product), the other variable will go down as well. They move in the same direction.

✍ Activity 4.13

Do activity 4.13 in the workbook

Law of supply as a schedule

Like the law of demand, the law of supply can be expressed using a supply schedule. A supply schedule is a table that indicates the quantity of a product supplied at each price.

The table on the right is a hypothetical supply schedule for fried chicken pieces.

The left-hand column shows different prices for fried chicken pieces.

The right-hand column shows the quantity of fried chicken pieces that will be supplied at each price during a particular week.

According to this table (given that all the other factors that influence supply stay the same), at a price of R7 per fried chicken piece, the quantity supplied will be 14 pieces. If the price of fried chicken pieces decreases to R6, the quantity supplied will be 12 pieces: at a price of R5, the quantity supplied will be 5 pieces, and so on.

Can you see how the quantity supplied decreases as the price of a fried chicken piece decreases? And how the quantity supplied increases if the price increases.

TABLE 4.4: SUPPLY SCHEDULE

	Price of fried chicken per piece (rand)	Quantity of fried chicken pieces demanded (per week)
A	7	14
B	6	12
C	5	10
D	4	8
E	3	6
F	2	4
G	1	2

This supply schedule then demonstrates the law of supply, showing that as the price increases the quantity supplied increases, and as the price decreases the quantity supplied decreases.

✍ Activity 4.14

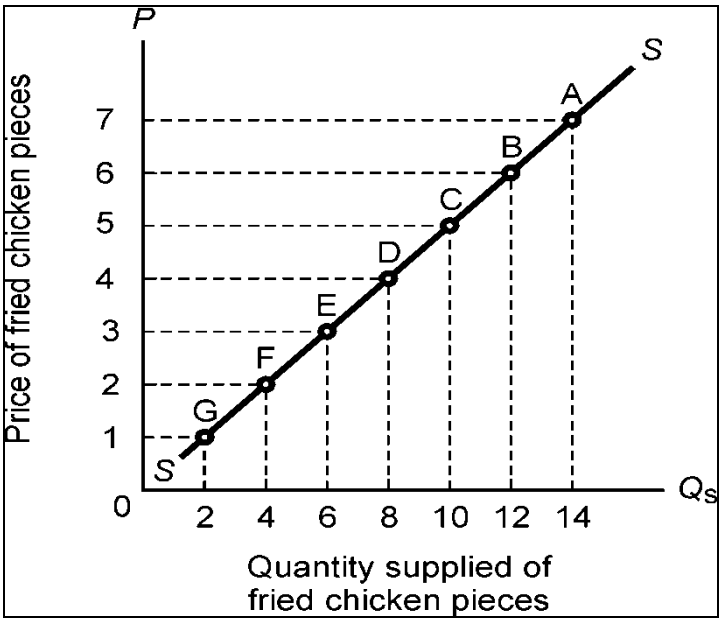
Do activity 4.14 in the workbook

Law of supply as a graph

It is also possible to demonstrate the law of supply using a graph. To do this, you will need to use the information in the supply schedule. Look at the following graph to see how the information in the above schedule is plotted as points; when the points are joined we have a supply curve.

The vertical axis shows the price (P) of a product or service, for example fried chicken pieces, and is labelled "Price of a fried chicken piece". The horizontal axis measures the quantity supplied (Qs), and is labelled "Quantity supplied of fried chicken pieces (per week)".

Figure 4.8 Supply curve



Point A in table 4.4 corresponds to a price (P) of R7 and a quantity (Qs) of 14 pieces of fried chicken, as can be read off from the vertical and horizontal axes respectively.

To draw point B, we obtain the point which represents a price of R6 and a quantity of 12. To draw point C, we obtain the point which represents a price of R5 and a quantity of 10. Points D, E, F and G are obtained in the same way. By connecting these points we obtain a line, which is shown as DD. And this then is our supply curve for fried chicken pieces. Look carefully at the supply curve above. Can you see how the supply curve is labeled SS? The supply curve shows how many pieces of fried chicken producers are planning to sell at each price. As you can see, the supply curve slopes upwards from left to right showing a positive relationship between the price and quantity supplied.

An upward movement along the supply curve takes place when the price of a fried chicken piece increases. A downward movement along the supply curve takes place when the price of a fried chicken piece decreases.

Figure 4.9: Upward movement along a supply curve

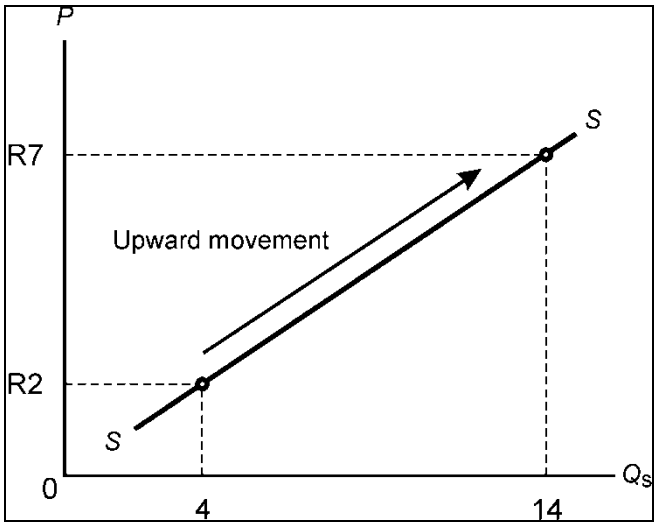
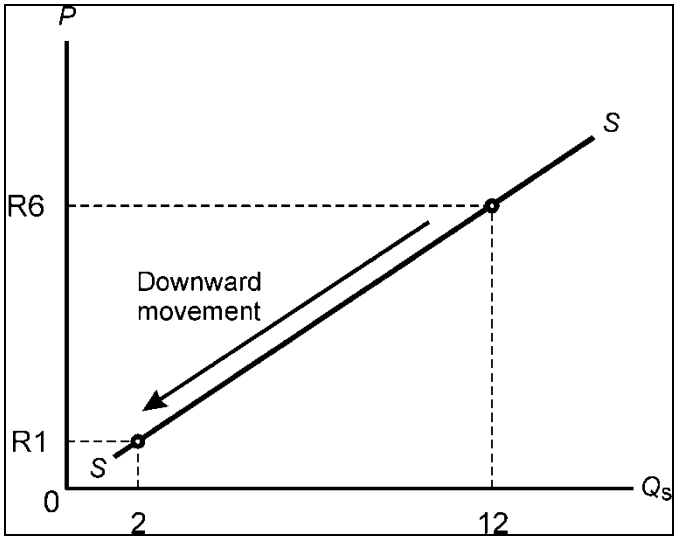


Figure 4.10: Downward movement along a supply curve



Activity 4.15

Do activity 4.15 in the workbook

4.4.4 Non-price factors of supply

Non-price factors are all those factors, apart from the price of the good, that influence the supply of the good. These are factors such as the price of inputs (cost of production), the prices of alternative goods, the technology needed to make the good and the number of suppliers.

The price of inputs (cost of production)

Things like land, capital, labour, and suchlike(which are called the factors of production) are needed to make products. However, businesses pay for these things and this payment forms part of the cost of production.

For example, the labour used in producing something is paid for through wages, and wages are calculated as part of a business's cost of production. A business will only be willing to supply a product to the market if it can cover its costs of production and make a profit.

The following are examples of the cost of production for fried chicken suppliers:

- the price of chickens bought from chicken farmers
- the price of oil used for frying
- the wages of employees
- the cost of electricity used to run the ovens
- the cost of rent for the building
- the interest that the supplier pays on capital
- the profit the supplier makes

Any increases in the price of inputs will affect a business's cost of production. For example, an increase in the wages that fried chicken suppliers pay for labour will increase the cost of producing fried chicken pieces. Fried chicken suppliers will therefore need to charge a higher price to supply the same quantity of fried chicken to the market as before.

This means that at each and every price, fried chicken suppliers will now supply a lower quantity than before. The supply of fried chicken pieces will thus decrease.

The relationship between the price of inputs and supply can be illustrated using a supply schedule.

Look at the supply table to the right to see how an increase in income will affect the demand for fried chicken pieces.

Can you see how at **each price** the supply of fried chicken pieces is lower?

At a price of R7 the quantity supplied is now 44 pieces instead of 48 pieces; at a price of R6 the quantity supplied is now 38 pieces instead of 42 pieces; at a price of R5 the quantity supplied is now 32 pieces instead of 36 pieces and so on.

TABLE 4.5: INCREASE IN COST OF PRODUCTION

Price of fried chicken per piece (Rand)	Quantity of fried chicken pieces supplied (per week)	Quantity of fried chicken pieces supplied after the cost of production increases (per week)
7	48	44
6	42	38
5	36	32
4	32	28
3	24	20
2	18	14
1	12	8

Let's see what happens to our supply curve for fried chicken pieces if the cost of production increases.

From the above table we know that at each price a lower quantity of fried chicken pieces will be supplied if the cost of production increases.

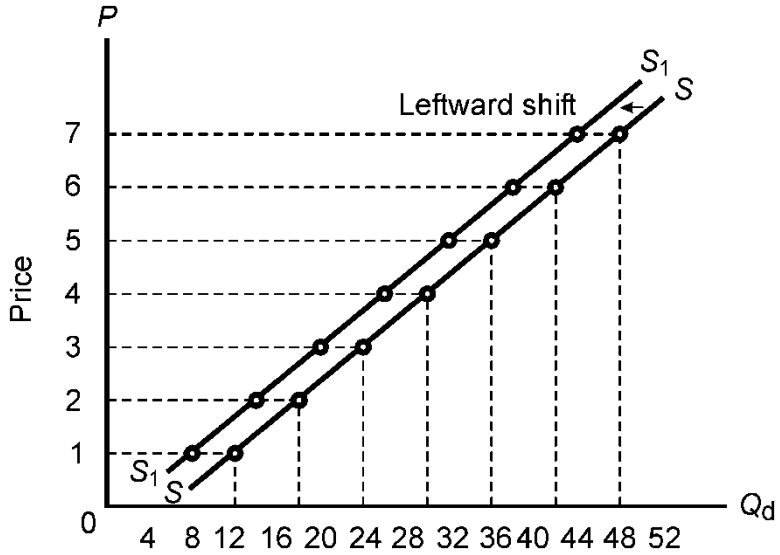
We now have a new supply curve to indicate the supply of fried chicken pieces at this higher cost of production. This new supply curve is positioned to the left of the initial supply curve and a leftward shift in the position of the supply curve for fried chicken pieces has occurred.

Look at the new supply curve S_2S_2 in the figure.

Can you see that:

at R7 per piece the quantity of fried chicken pieces supplied is now 44 pieces
at R6 per piece the quantity of fried chicken pieces supplied is now 38 pieces
at R5 per piece the quantity of fried chicken pieces supplied is now 32 pieces
at R4 per piece the quantity of fried chicken pieces supplied is now 28 pieces
at R3 per piece the quantity of fried chicken pieces supplied is now 20 pieces
at R2 per piece the quantity of fried chicken pieces supplied is now 14 pieces
at R1 per piece the quantity of fried chicken pieces supplied is now 18 pieces

Figure 4.11: Change in supply



At each price the quantity supplied is lower. This is shown by a leftward shift in the whole supply curve SS to the new supply curve S_2S_2.

Activity 4.16

Do activity 4.16 in the workbook

Technology

A technological advance that decreases the cost of production is an important factor that can influence the supply of a product. In this section you will take a closer look at the impact of technology on supply.

If, for instance, a new type of deep fryer is designed that uses less electricity and less oil to fry chicken pieces, it will mean that the cost of producing fried chicken pieces will be lower; that is, less electricity and less oil. Fried chicken producers will therefore be able to supply more fried chicken pieces than

before at the same price.

Using our supply curve for fried chicken pieces, the impact of technology is illustrated by a shift in the supply curve. Do you think this will cause a rightward or a leftward shift in the supply curve? Remember, a rightward shift shows that at every price the quantiy supplied of fried chicken pieces will be higher than before, and a leftward shift shows that the quantity supplied will be lower than before.

The prices of alternative products

Using many of the same resources, fried chicken producers can make and supply a range of products, for example chicken burgers or fried fish. The most important question that the fried chicken producers will have to ask themselves is which of these products they should supply in order to make the highest profit.

Another way that fried chicken producers can solve this problem is to say that, as a result of an increase in the price of alternative products, they can increase their profits by switching to produce the other products (chicken burgers) instead of continuing with their present line of business (fried chicken). This switch will cause a decrease in the supply of fried chicken. The supply curve for the current product will therefore shift to the left thus showing that supply has decreased.

✍ Activity 4.17

Do activity 4.17 in the workbook

The number of suppliers

If more businesses decide to produce fried chicken pieces, the quantity supplied to the market at each price will increase, and the supply curve will shift to the right. A decrease in the number of suppliers, on the other hand, will decrease the supply of fried chicken pieces and the supply curve will shift to the left.

The weather

Weather also plays an important role in the supply of certain goods, for example maize, meat and fresh produce. Whereas a drought will cause a decrease in the supply of these goods (the supply curve for the goods will shift to the left), good strong rains will lead to an increase in these goods (the supply curve will shift to the right).

✍ Activity 4.18

Do activity 4.18 in the workbook

Concepts

An **alternative product** is a product that can be produced in the place of another product.
A **change in quantity** supplied takes place if the price changes.
A **change in supply** takes place if any of the non-price factors of supply change.
The **law of supply** tells us that as the price of a good or service increases, the quantity supplied will increase and as the price decreases the quantity supplied will decrease.
Non-price factors of supply are factors other than the price that influence supply.
A **positive relationship** indicates that as one variable increases the other variable increases as well.

The **supply of a good or service** consists of the amount that suppliers are willing and able to supply.
A **supply curve** shows the relationship between the price and the quantity of a good or service supplied.

4.5 The determination of prices

Purpose of this part of the learning unit

The purpose of this section in to build a model to show how the forces of demand and supply determine price in a market.

Section outcomes

Once you have worked through this part of the learning unit, you should be able to

- explain what is meant by market equilibrium
- explain what is meant by excess demand and excess supply
- explain how market equilibrium is reached
- demonstrate market equilibrium with the help of schedules (tables)
- demonstrate market equilibrium with the help of figures (graphs)
- identify points of excess demand and excess supply

4.5.1 Meaning of market equilibrium

We now know what supply and demand curves look like, but when examining these curves on their own we still do not know precisely at what price fried chicken pieces will be traded on the market. We have merely analysed various hypothetical prices to see how consumers (as demanders) and producers (as suppliers) will react to them. Therefore, the exact prices at which transactions will be concluded have yet to be determined.

In a competitive market the price is set by the interaction of the forces of demand and supply and is set at such a level that the quantity demanded is equal to the quantity supplied. This is referred to as the equilibrium price and once the equilibrium price is reached we have market equilibrium. At this market equilibrium price the plans of the buyers match the plans of the sellers.

An equilibrium position indicates a position of rest, because the behaviour of both buyers and suppliers is unchanging (at rest). At an equilibrium price, buyers are able to purchase the quantity of a product that they plan to buy, and suppliers are supplying the amount of a product that they plan to supply.

✍ Activity 4.19

Do activity 4.19 in the workbook

4.5.2 Meaning of excess demand and excess supply

In order to explain how market equilibrium is reached, you need to understand what happens in the market if the price of a good is set at such a level that the plans of buyers and suppliers are different. This can occur when the price of a product is set at too high a level. When this happens, suppliers will supply a higher quantity of a product than buyers are prepared to buy. As a result, an excess supply or surplus of the product will exist on the market. In terms of fried chicken pieces, this means that the quantity of fried chicken pieces supplied is more that the quantity demanded.

In a surplus situation, even though buyers are still able to buy the quantity of a product that they wish to purchase, suppliers become frustrated because they cannot sell the quantity that they plan to sell at the given price. So, to get rid of their surplus, some suppliers start to change their behaviour – by offering a lower price to buyers. Soon other suppliers follow, and the price of the good or service will decrease. The price of the good will continue to decrease until the market reaches equilibrium (where quantity demanded is equal to the quantity supplied).

The opposite will occur when the price of a product is set at too low a level. In this situation, buyers will demand a higher quantity than suppliers are willing to or plan to supply. Thus, an excess demand or a shortage will be created in the market.

During a shortage, suppliers can sell the quantity of a product that they want to sell. Now buyers will become frustrated – they will not be able to get hold of the quantity of the product that they wish to purchase at this low price. So, to get hold of the product, some buyers will begin to change their behaviour – they will start offering to purchase the product at a higher price. So, the price of the product will begin to increase. This increase in the price of the product will continue until the market is again in equilibrium – where the quantity demanded is equal to the quantity supplied.

✍ Activity 4.20

Do activity 4.20 in the workbook

4.5.3 Market equilibrium, excess demand and excess supply schedules

Let's demonstrate all this with the help of market demand and supply schedules.

The following table gives the price, the market demand for and the market supply of fried chicken. In column 5 we indicate whether an excess demand, excess supply or market equilibrium exists and in column 6 whether there is upward pressure or downward pressure on prices and well as no pressure at all (neutral).

TABLE 4.6: MARKET EQUILIBRIUM

1	2	3	4	5	6
	Price	Quantity demanded	Quantity supplied	Position	Pressure on prices
A	5	200	1 800	Excess supply (1600)	Downward
B	4	600	1 400	Excess supply (800)	Downward
C	3	1 000	1 000	Equilibrium	Neutral
D	2	1 400	600	Excess demand (800)	Neutral
E	1	1 800	200	Excess demand (1 600)	Upward

Can situation A in table 4.6, where fried chicken pieces sell at a price of R5 per piece, prevail in the long run? The answer is a clear no. The reason is that at R5 the producers supply 1 800 pieces on the market, as can be seen from column 4. The quantity demanded by consumers will, however, only be 1 200 pieces, as indicated in column 3. There will thus be a surplus or excess supply in the market of 1 600 pieces. As large stocks of fried chicken pieces pile up, competing suppliers will be inclined to reduce their prices somewhat. Thus, as column 6 shows, there is downward pressure on the price and the price will tend to decrease – but will not fall to zero.

To explain the situation further, we now look at situation E, where the price is equal to only R1 per fried chicken piece. Can this price persist? Once again, the answer is no, since a comparison of columns 3 and 4 shows that at that price, quantity demanded (1 800) will exceed quantity supplied (200). There will be a shortage or excess demand of 1 600 pieces on the market and disappointed buyers who really want fried chicken pieces will tend to bid the price up. This puts upward pressure on prices and the price will tend to rise. 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 only be reached at situation C, where the price is R3 and the quantity demanded = the quantity supplied = 1 000. In economics we refer to this point as the market equilibrium. At this point none of the participants has any incentive to change their behaviour because they are totally content with the situation.

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 price is the only price that can persist in the long run. It is the price at which the quantity voluntarily supplied and the quantity voluntarily demanded are equal.

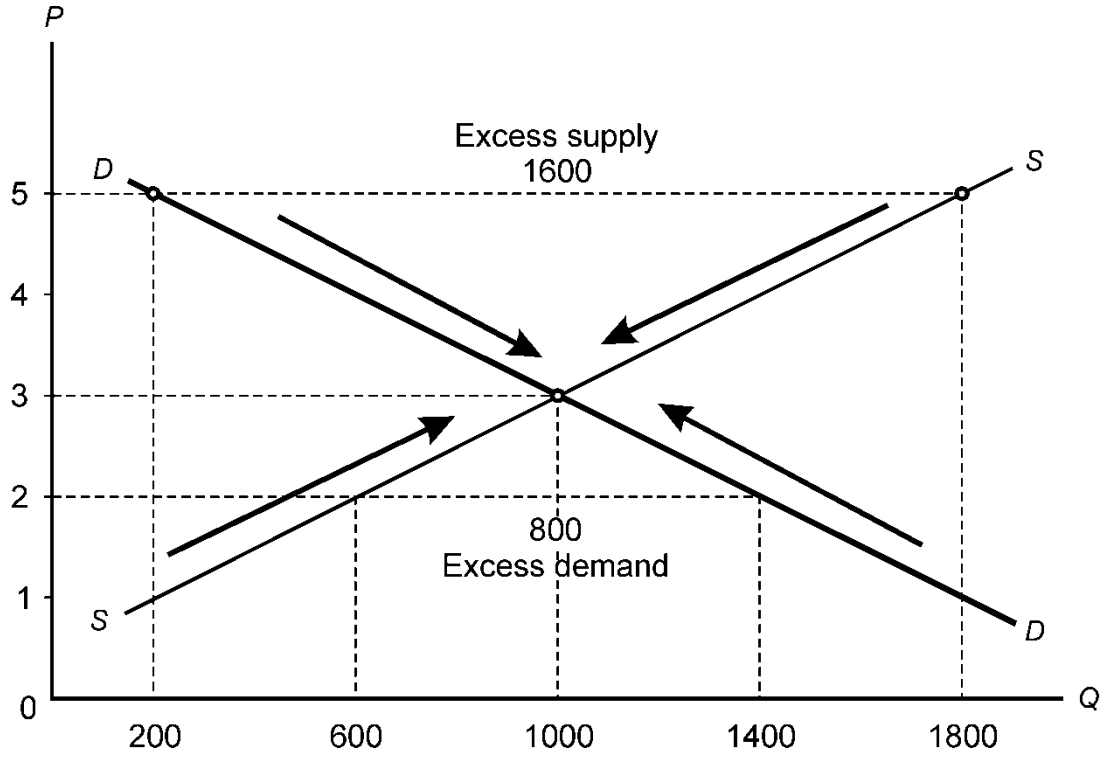
Activity 4.21

Do activity 4.21 in the workbook

4.5.4 Market equilibrium, excess demand and excess supply curves

Look at figure 4.12, which is based on table 4.6, and which represents the demand curve (DD) for fried chicken pieces, and the market curve (SS) for fried chicken pieces.

Figure 4.12: Market equilbrium, excess demand and excess supply



The market demand curve represents the plans of buyers and the supply curve the plans of the suppliers.

- Can you see where market equilibrium exists on the graph?
- Can you see how it is represented?

Market equilibrium occurs at a price of R3. It is represented by the intersection of the demand and supply curves.. This intersection tells you that, at a price of R3, the quantity demanded = quantity supplied = 1

000.

At any price above the equilibrium price, for example R5, an excess supply (surplus) will exist. Thus, at R5, the quantity supplied is 1 800 pieces, but the quantity demanded is 200. The excess supply is therefore 1 800 – 200 = 1 600. Look at the graph see how this is represented.

Because there is an excess supply or surplus, suppliers will start to lower their prices in order to get rid of their unsold stock. And as the price is lowered the quantity supplied will decrease and the quantity demanded increases. The excess supply therefore becomes less and less as the price falls. The arrows point downwards to show the direction in which the price will move because of the competition between **sellers**.

As long as an excess supply exists, the price of a good will go down. This, in turn, will increase the quantity demanded and decrease the quantity supplied of a product. So, the price of a product will continue to decrease until an equilibrium position is reached.

At this equilibrium price and quantity, the plans of buyers match the plans of suppliers.

Look at the graph again:

- Can you see where the equilibrium position is?
- What is the equilibrium price?
- What is the equilibrium quantity?

There will be an excess demand (shortage) at any price that is lower than the equilibrium price. For example, at R2, the quantity demanded is 1 800, the quantity supplied is 200, and the excess demand is 1 800 - 200 = 1 600.

As you know, an excess demand will force buyers to offer suppliers a higher price so that they can get some of the good.

As long as there is an excess demand, the price of the good will rise. This will cause a decrease in the quantity demanded and an increase in the quantity supplied. As the price increases, the excess demand become less and less. This trend will continue until a position is reached where the quantity demanded is equal to the quantity supplied – the equilibrium position. The arrows point upwards to show that the anxiousness of **buyers** to buy the product will put upward pressure on the price.

Can you see where this equilibrium occurs on the graph?

In summary, we can say that the market is in equilibrium when there are no forces causing a change, and that it will stay in this equilibrium position unless something causes it to move away from equilibrium. This means that even forces that create a movement away from equilibrium will put in motion other forces that will ensure that the market eventually reaches equilibrium again. So, in a competitive market, changes in the price of a product will ensure that it again returns to an equilibrium position.

✍ Activity 4.22

Do activity 4.22 in the workbook

Concepts

Excess demand is where the quantity demanded is greater that the quantity supplied. Is also known as a shortage.
Excess supply is where the quantity demanded is less than the quantity supplied. It is also known as a surplus.
Market equilibrium is where the quantity demanded is equal to the quantity supplied.

5 Changes in demand and supply

Study instructions

Work through learning unit 5.
Do the activities in learning unit 5.

Purpose of learning unit

In this learning unit we continue building our model of demand and supply to illustrate and explain how changes in demand and supply affect the equilibrium price and equilibrium quantity of a good and service.

Main outcomes of learning unit

Once you have worked through this learning unit, you should be able to:

- describe in words and with the aid of diagrams (graphs) the impact that a change in demand has on the equilibrium price and equilibrium quantity
- describe in words and with the aid of diagrams (graphs) the impact that a change in supply has on the equilibrium price and equilibrium quantity

5.1 INTRODUCTION

In learning unit 4, we studied the factors that influence the demand for goods and services and in particular how a change in the price affects the quantity demanded. We also did a similar study about the factors that influence the supply of goods and services and we paid particular attention to how a change in the price affects the quantity supplied. We ended the learning unit by combining demand and supply to show how a price is established through the interaction of the forces of demand and supply.

We also indicated that whenever an excess demand (or shortage) or an excess supply (surplus) exists in a market the price of the good or service will change to ensure that equilibrium, that is where the quantity demanded equals the quantity supplied, is reached. In the event of an excess demand (or shortage) the price will rise and in the event of an excess supply (or surplus) the price will fall.

In this learning unit we will pay attention to how markets react to changes. Changes are continually taking place in the world. For instance, the income of households' changes, their tastes and preferences for a product shift, the cost of production increases, new technologies are implemented and new resources are discovered.

Markets also react to these changes. It is most noticeable in changes in the price of the goods and services that we as a society produce and consume. Underlying these price changes are changes in the demand and the supply of the goods and services.
In this learning unit we will see how equilibrium is re-established in a market after a change in either demand or supply took place. You will notice that changes in price play a major role in re-establishing equilibrium.

Most people do not like price changes. However, they play an important role in the economy and, by watching prices, consumers and producers can learn a lot about what is happening and what is going to happen.

For instance, an increase in the price of red meat because of an increase in the income of households tells you red meat is now in shorter supply and that you as the consumer should cut back on your red meat consumption. But, for suppliers, an increase in the price of red meat might be an alert to produce more red meat as well as an incentive to do so.
We will start this section with a discussion of how changes in demand affect the market and then how changes in supply affect the market.

Do pre-knowledge activity 5.1 in the workbook

5.2 CHANGES IN DEMAND

Purpose of this section of the learning unit

The purpose of this section of the learning unit is to take a closer look at how a change in demand affects the equilibrium price and the equilibrium quantity.

Section outcomes

Once you have worked through this section of the learning unit, you should be able to:

- explain in words and with the aid of diagrams the impact of an increase in demand on the equilibrium price and equilibrium quantity
- explain in words and with the aid of diagrams the impact of a decrease in demand on the equilibrium price and equilibrium quantity

5.2.1 Increase in demand

A change in demand occurs when there is a change in any of the non-price determinants of demand. These are factors such as the tastes and preferences of households, income of households, price of alternative goods and number of potential buyers.

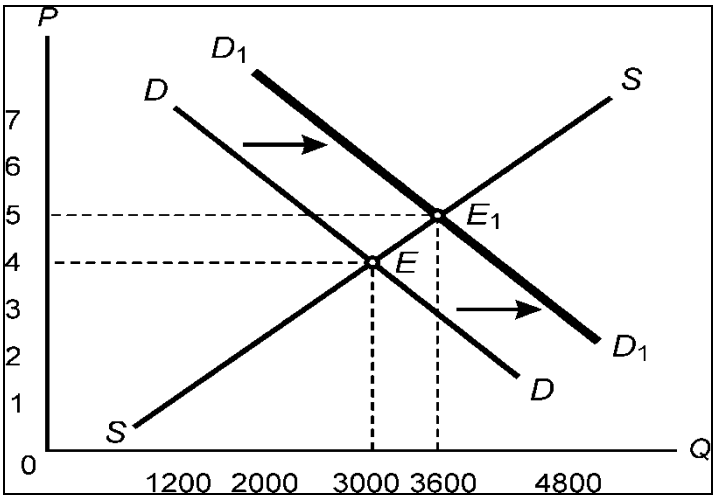
Any change in any of these non-price factors of demand will cause a shift of the demand curve. This is because at every price the quantity demanded will change.

To analyse the impact of a change in demand we will make use of our demand and supply curves for fried chicken pieces from learning unit 4.

Let's see what happens in this market if the income of households increases.

An increase in the income of households increases the demand for goods and services. This is represented by a rightward shift of the demand curve from DD to D1D1, as indicated in figure 5.1.

Figure 5.1: Increase in demand



What happens in the market is that the increase in demand leads to a higher price and a higher quantity demanded and supplied. We now have a new equilibrium position at point E1. Comparing point E1 with point E, you can see that the price increases from R4 to R5 and the equilibrium quantity increases from 3 000 to 3 600.

Let's see what caused this increase in the equilibrium price and equilibrium quantity.

We start at point E and then assume that demand increases. At the price of R4 the increase in demand causes an excess demand for the good. This excess demand then leads to an increase in the price and since the price is higher, suppliers respond by increasing the quantity supplied. This process continues until a point is reached where the quantity demanded is equal to the quantity supplied. In our graph this is at point E1.

The impact of an increase in the demand for a good or service can be summarised as follows:

An increase in the demand for a product
↓
Causes the demand curve to shift to the right.
↓
At the initial equilibrium price an excess demand (or shortage) develops on the market. In other words, the quantity demanded exceeds the quantity supplied.
↓
The excess demand causes the price of the product to increase.
↓

The increase in the price continues until a new equilibrium is reached. At this new equilibrium the price, quantity demanded and the quantity supplied are higher compared to the equilibrium position before the increase in demand.

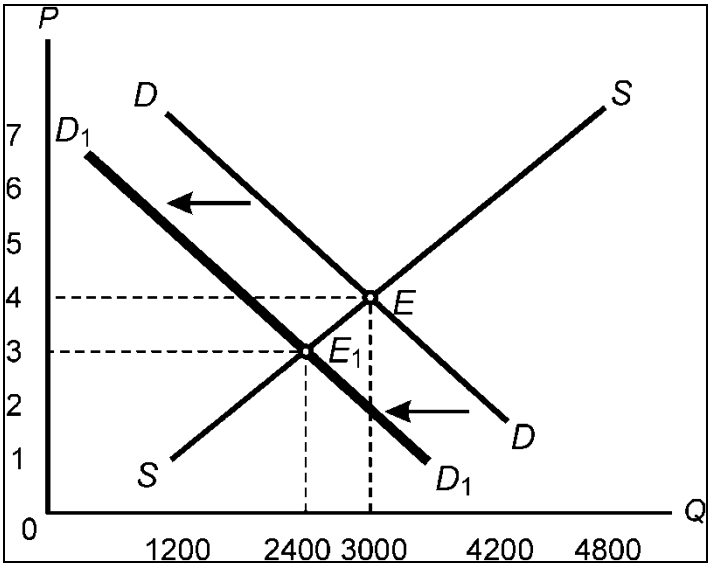
Note how an increase in demand leads to an increase in the equilibrium price as well as an increase in the equilibrium quantity demanded and supplied.

Do activity 5.1 in the workbook

5.2.2 Decrease in demand

A decrease in the demand for fried chicken pieces caused by, for instance, a decrease in the number of potential buyers is represented by a leftward shift of the demand curve DD to a new demand curve D1D1, as indicated in figure 5.2.

Figure 5.2: Decrease in demand



What happens in the market is that the decrease in demand leads to a lower price and a lower quantity demanded and supplied. We now have a new equilibrium position at point E1. Comparing point E1 with point E, you can see that the price decreases from R4 to R3 and the equilibrium quantity decreases from 3 000 to 2 400.

Let's see what caused this decrease in the equilibrium price and quantity.

We start at point E and then assume that demand decreases. At the price of R4 the decrease in demand causes an excess supply for the good. The quantity supplied exceeds the quantity demanded. This excess supply then leads to a decrease in the price as suppliers compete with one another to sell their product.

This process of a decrease in the price continues until a point is reached where the quantity demanded is equal to the quantity supplied. In our graph this is at point E1, where not only the equilibrium price is lower but also the equilibrium quantity demanded and supplied.

The impact of a decrease in the demand for a good or service can be summarised as follows:

A decrease in the demand for a product
↓
causes the demand curve to shift to the left.
↓
At the initial equilibrium price an excess supply (or surplus) develops on the market. In other words, the quantity supplied exceeds the quantity demanded.
↓
The excess supply causes the price of the product to decrease.
↓
At the new equilibrium, the price, the quantity demanded and the quantity supplied are lower compared to the equilibrium position before the decrease in demand.

Do activity 5.2 in the workbook

5.3 CHANGES IN SUPPLY

Purpose of this section of the learning unit

The purpose of this section of the learning unit is to take a closer look at how a change in supply affects the equilibrium price and the equilibrium quantity.

Section outcomes

Once you have worked through this section of the learning unit, you should be able to:

- explain in words and with the aid of diagrams the impact of a decrease in supply on the equilibrium price and equilibrium quantity
- explain in words and with the aid of diagrams the impact of an increase in supply on the equilibrium price and equilibrium quantity

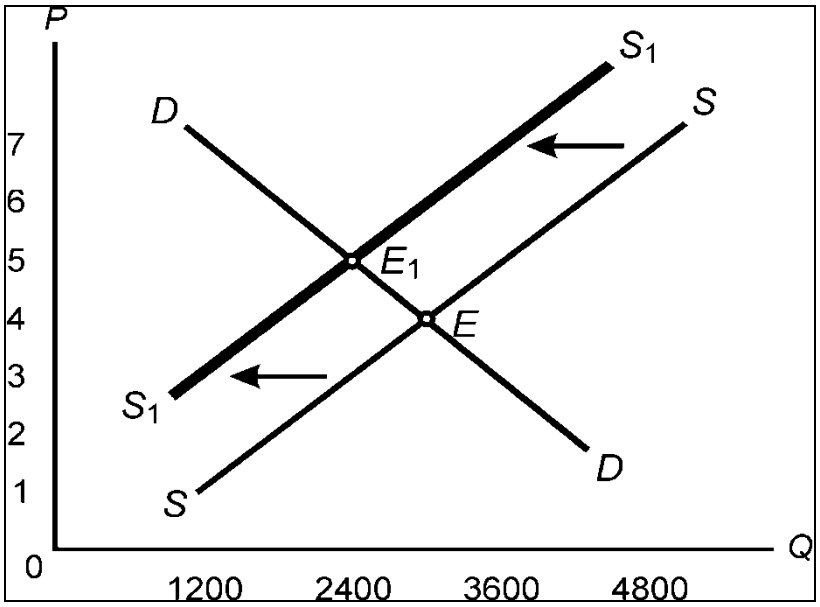
5.3.1 Decrease in supply

A change in supply occurs when there is a change in any of the non-price determinants of supply. These are factors such as prices of inputs (cost of production), change in technology, the weather and prices of alternative products.

Any change in any of these non-price factors of supply will cause a shift in the supply curve. This is because at every price the quantity supplied will change.

An increase in the cost of production decreases the supply of goods and services. This is represented by a leftward shift of the supply curve from SS to S1S1, as indicated in figure 5.3.

Figure 5.3: Decrease in supply



What happens in the market is that the decrease in supply led to a higher price and a lower quantity demanded and supplied. We now have a new equilibrium position at point E1. Comparing point E1 with point E you can see that the equilibrium price increases from R4 to R5 and the equilibrium quantity decreases from 3 000 to 2 400.

Let's see what caused this increase in the equilibrium price and decrease in equilibrium quantity.

We start at point E and then assume that supply decreases. At a price of R4 the decrease in supply causes an excess demand for the good. This excess demand then leads to an increase in the price and, since the price is higher, less is demanded. This process continues until a point is reached where the quantity demanded is equal to the quantity supplied. In our graph this is at point E1.

To summarise:

A decrease in the supply of a product
↓
causes the supply curve to shift to the left.
↓
At the initial equilibrium price an excess demand (or shortage) develops on the market. In other words, the quantity demanded exceeds the quantity supplied.
↓
The excess demand causes the price of the product to increase.
↓

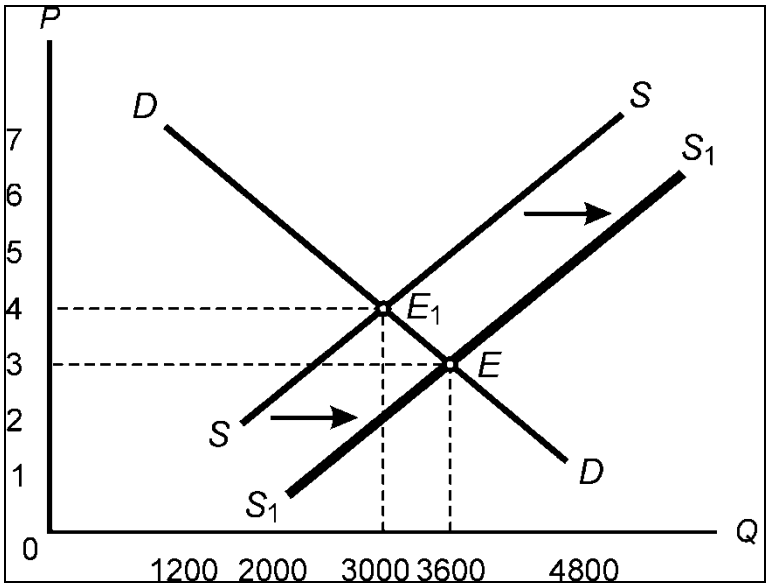
At the new equilibrium, the price is higher and the quantity demanded and supplied are lower, compared to the equilibrium position before the decrease in supply.

Do activity 5.3 in the workbook.

5.3.2 Increase in supply

A change in technology that increases productivity increases the supply of goods and services. This is represented by a rightward shift of the supply curve from SS to S1S1, as indicated in figure 5.4.

Figure 5.4: Increase in supply



What happens in the market is that the increase in supply led to a lower price and a higher quantity demanded and supplied. We now have a new equilibrium position at point E1. Comparing point E1 with point E you can see that the price decreases from R4 to R3 and the equilibrium quantity increases from 3 000 to 3 600.

Let's see what caused this decrease in the equilibrium price and increase in equilibrium quantity.

We start at point E and then assume that supply increases. At a price of R4 the increase in supply causes an excess supply for the good. This excess supply then leads to a decrease in the price and since the price is lower, a higher quantity demanded. This process continues until a point is reached where the quantity demanded is again equal to the quantity supplied. In our graph this is at point E1.

To summarise the impact of an increase in supply:

An increase in the supply of a product
↓
causes the supply curve to shift to the right.
↓
At the initial price an excess supply (or surplus) develops on the market. In other words, the quantity supplied exceeds the quantity demanded.
↓
The excess supply causes the price of the product to decrease.
↓

The decrease in the price of the product causes an increase in the quantity demanded and a decrease in the quantity supplied.
↓
At the new equilibrium the price is lower and the quantity demanded and the quantity supplied are higher, compared to the equilibrium position before the increase in supply.

5.4 PRICE AS AN ALLOCATIVE MECHANISM

Next time you go to the supermarket, observe how people go about deciding whether or not to buy a product – usually they will take a look at the price and then decide whether or not to buy. Some people will decide to buy and some will not.

Something important has happened here. The market has decided who gets the product and who doesn't. The market is in the process of allocating our resources. A type of rationing has occurred and the economic problem of what to produce, and for whom to produce, has been answered.

So, what problem are we talking about, and why is it necessary for things to be rationed?

Well, unfortunately, there is not an unlimited supply of most of the goods we want on a daily basis. It is a sad fact of life that most of the things we need and want in life are scarce goods.

Scarce goods are goods that are desirable but limited in quantity, such as meat, chocolates, magazines, milk, cold drinks, and medical care. To obtain any of these scarce goods you must pay the going price. If you are unable or unwilling to pay, you cannot have the good and are therefore excluded from obtaining the benefit from using it. That can seem unfair – indeed it is tough for people with limited means to fulfill their consumer needs.

So why subject ourselves to this harsh and seemingly unfair system? Well, simply because the alternatives are even worse.

For instance, you can decide to distribute these scarce products randomly, by throwing them out of an airplane. What happens then is that while some people will get what they do want, others will get something they don't want, and some will still be left with nothing. Not a very fair or efficient system either!

Or we can try to distribute on a first-come, first-served basis. But then you will have to live with the fist fights, the short tempers, the jostling, the resources wasted by having to wait in long queues and the bribery, and you'll still end up with some people getting something and others nothing.

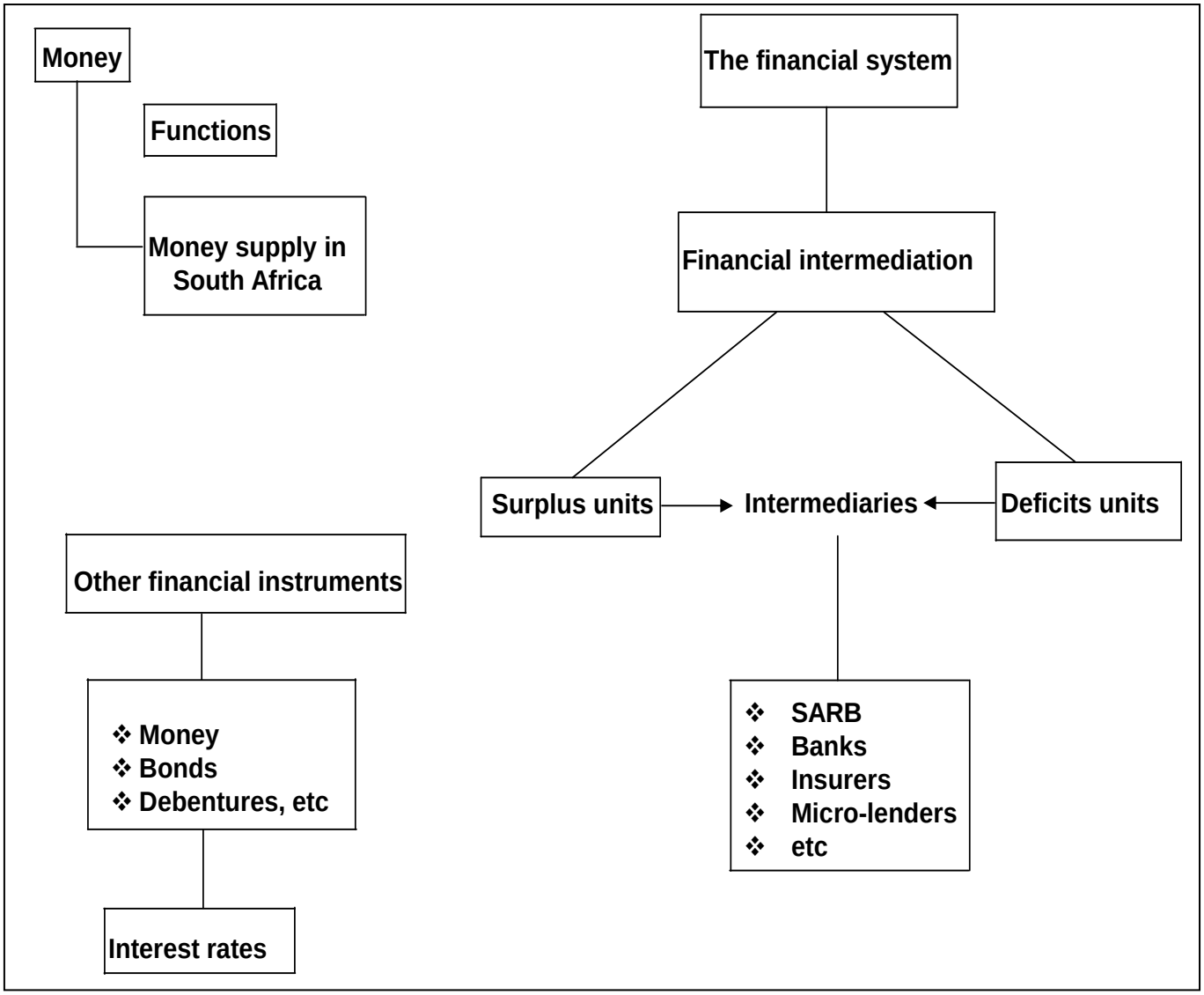
Even if you are able to solve the problem of who gets what without using prices as a rationing mechanism, you are still left with the question of how and by whom the production of these scarce goods is to take place.

In the market system this is left to firms. As long as they are in competition with one another, they will be forced to make efficient use of our resources. Inefficiency will be punished by bankruptcy and the market, therefore, regulates itself.

6

The Financial Sector

MIND MAP OF THE FINANCIAL SECTOR



Study instruction

Study this learning unit 6.

Purpose of learning unit

The purpose of this learning unit is to introduce you to the financial sector of the economy.

Main outcomes of learning unit

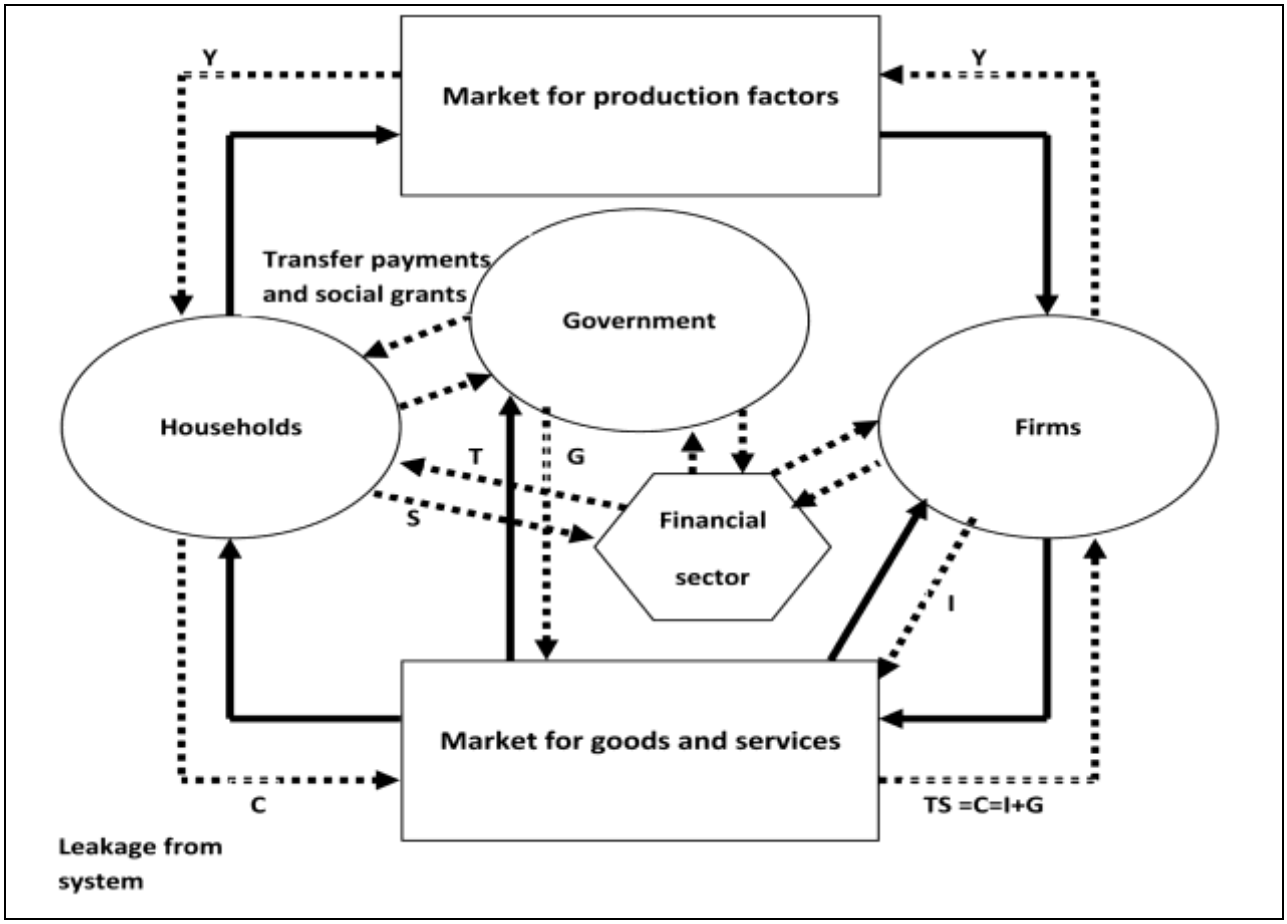
Once you have worked through this learning unit you will be able to describe and explain the following:

- what money is and the role and functions of money in the economy
- different measures of the money supply used in South Africa
- how concepts such as wealth and income are related to money
- what the equation of exchange is
- what an economic theory is and how it can be used
- the different components that the financial sector consists of
- the role of financial intermediaries in the economy
- the role of the South African Reserve Bank in the economy
- what an interest rate is and why it is important in the economy

6.1 INTRODUCTION

In this learning unit you will learn more about the financial sector and its role in the economy. You will also learn about money and why it is important in the economy. In learning unit 3 you were introduced to the flow of funds model. We then showed saving as a leakage out of the model and we also indicated that one of the limitations of the model was that we did not include the financial sector in the model. In figure 6.1 we show the same model but we now include the financial sector in the model.

Figure 6.1: The flow of funds model incorporating the financial sector



The savings from the household sector flow to the financial sector. The financial sector includes different institutions such as banks, insurers, exchanges and investment institutions. You will also learn about some of these institutions in this learning unit.

As you can see there are flows from the household sector, from the government sector and from the firms to the financial sector, which will include all the savings or **surplus funds** from these three sectors. Surplus funds arise when the income of an economic unit exceeds the spending of that unit. However, there will also be **deficit units** in each of these sectors. An economic unit experiences a deficit when the spending of that unit exceeds the income. The financial sector therefore channels the surplus funds in the economy to the deficit units.

You will notice that all the flows to and from the financial sector are **money flows**. This is because the financial sector is not involved with real production. All real flows, however, also involve an opposite money flow; for example, when households purchase goods and services, they pay for these goods and services using money, which flows to the firms who are the suppliers of the goods and services. In this learning unit you will also learn about money and its role and functions in the economy.

6.2 THE ROLE AND FUNCTIONS OF MONEY

6.2.1 The functions of money

6.2.1.1 Money as a medium of exchange

Money is such an integral part of our daily lives that its significance is not always appreciated. Just how important money is can perhaps be understood by imagining an economy that functions without it. In such 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 no tailor can be found who happens to want wheat, the farmer will be obliged to exchange his wheat for something else that the tailor does require. The barter economy is therefore necessarily characterised by manifold 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, the money yielded by such a transaction can be used to buy clothes. Money therefore serves as a lubricant or intermediary to facilitate the process of exchange and to make it more efficient. This is the first and foremost function of money, namely its function as a medium of exchange.

In terms of this function money can be broadly defined as anything that is generally accepted as payment for goods and services or that is accepted in settlement of debt.

6.2.1.2 Money as a measure of value or an accounting unit

If money is to fulfill its role as a means of exchange, it follows that it must also fulfill the function of a **measure of value** or an **accounting unit**. It is precisely this function of money which enabled us to work with aggregate concepts such as the GDP. Money has made it possible to compare the relative value of different goods and services and to express this value in terms of a common accounting unit.

The function of money as a unit of account is closely related to its function as a medium of exchange. Obviously, what serves as a medium of exchange will necessarily also fulfil the function of an accounting unit. The accounting unit function can, however, be seen as secondary to the medium of exchange function.

6.2.1.3 Money as a store of value

A further function of money is as a store of value. Any society has a need to conserve wealth (or surplus production) in some form. The most common form of conserving wealth is money, since it 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.

Yet 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 her wealth in the form of money will soon realise that 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, or postage stamps. The store of value function, unlike the medium of exchange function, is therefore not unique to money.

6.2.2 Definitions of money

Through the ages, various goods have from time to time served as money. For example, beads, tea, cattle, silver and cigarettes (in modern prisoner-of-war camps) 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 current account with a bank.

The earliest form of money was **commodities**, where the intrinsic value of the commodity (the inherent value of the product itself) was equal to the exchange value assigned to it. Naturally, certain commodities were more suitable to be used as money than others. Properties such as **uniformity**, **durability, divisibility** and the ability to be **carried** (which is determined by size and weight) were not to be found in all commodities. 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 the more efficient coins made of various kinds of metal. Initially, iron and copper coins were very popular as money but soon lost their value because of their abundance. They were replaced by more scarce, more durable metals such as silver and gold.

Valuable commodities such as gold and silver have all the properties needed to fulfil the role of money:

- it can easily be shaped into uniform shapes (such as coins).
- it is easy to divide into smaller pieces (can be melted down and reshaped).
- it can last for a very long time.
- because the value is high you don't need a lot of gold or silver, which means these commodities are easy to carry.

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 such **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. Such money is called **fiduciary** or **credit money**.

The modern banknote which is in use today bears no relation 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 we are assured that goods and services can be obtained in exchange for banknotes, 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 are notes and coins issued by the South African Reserve Bank [SARB].) This means that such notes or coins cannot be refused if they are tendered in payment of a debt.

Today you can hold money in the form of cash (notes and coins) or you can hold it in a bank account. Such an account is called a demand deposit. If you hold an amount in a demand deposit you can use those funds as payment **for goods and services or in settlement of debt**. A balance in a demand deposit is therefore also regarded as money.

Banks also offer **fixed deposit accounts**. When you deposit money into a fixed deposit account you enter into a contract with the bank to leave your money in that account for a fixed term (e.g. 30 days, three months, or one year). In return for leaving your money in a fixed deposit, the bank pays **interest** on your account. Usually you will receive a higher interest rate if you agree to a longer fixed term. Because interest is earned on the amount held in a fixed deposit account, such a deposit is a better store of value. Money held in a demand deposit usually does not earn interest and will therefore lose value when prices increase because of inflation. If the interest rate that you earn on a fixed deposit is equal to or higher than the inflation rate, the value of your money will be maintained. Money held in a fixed deposit account is therefore a **better store of value**.

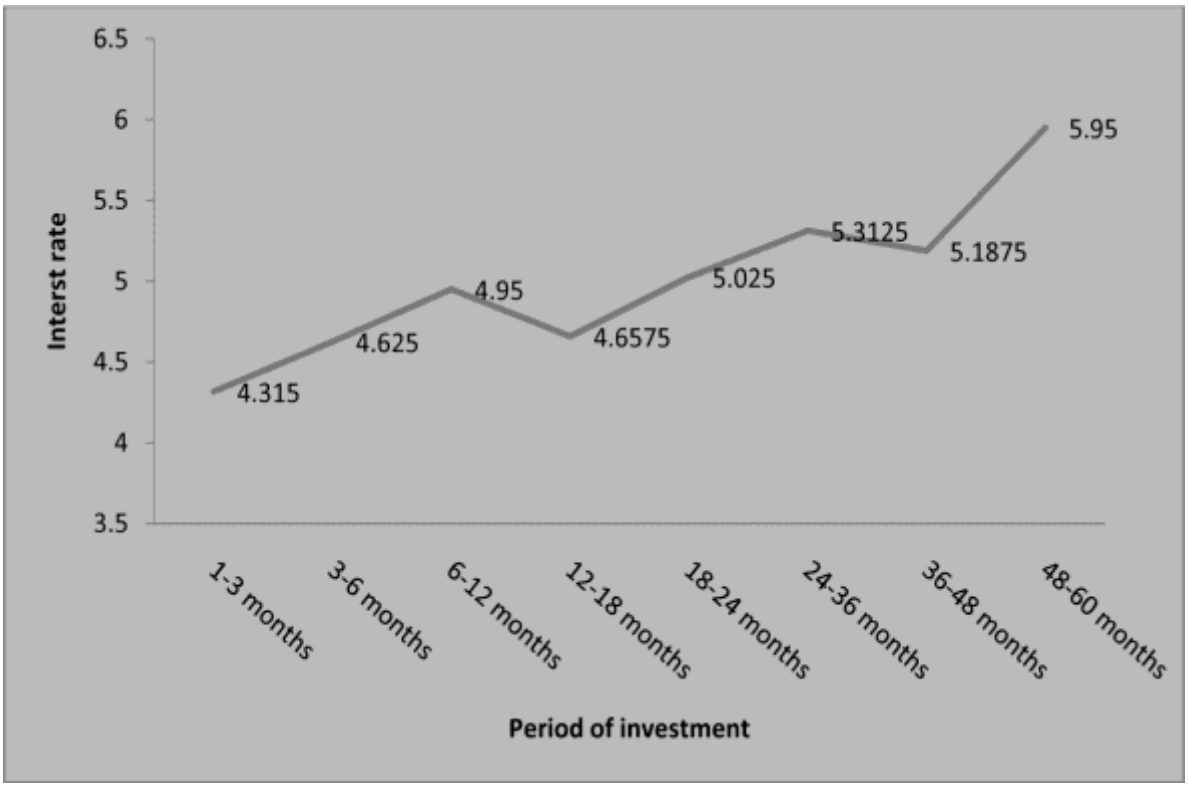
The following table provides information on the interest rates that different South African banks offered on deposits of R10 000 or more for different terms on 1 August 2013.

TABLE 6.1: INTEREST RATES ON FIXED DEPOSIT ACCOUNTS

	Bank A	Bank B	Bank C	Bank D	Average
1--3 months	3,50%	4,56%	4,60%	4,60%	4,315%
3--6 months	3,60%	5,00%	5,00%	4,90%	4,625%
6--12 months	3,95%	5,20%	5,60%	5,05%	4,950%
12--18 months	4,15%	4,43%	4,90%	5,15%	4,658%
18--24 months	4,35%	5,60%	4,80%	5,35%	5,025%
24--36 months	4,65%	6,00%	4,90%	5,70%	5,313%
36--48 months	4,85%	6,00%	4,90%	5,00%	5,188%
48--60 months	5,95%	6,00%	5,35%	6,50%	5,950%

The following figure shows the **relationship** between the term that you invest your funds for and the return on these funds.

Figure 6.2: Average interest rates offered by SA Banks on fixed deposits larger than R10 000 on 1 August 2013



As you can see, it is usually the case that the longer you plan to leave your money with the bank the higher the interest rate that the bank offers you will be. The interest rate that is shown is an annual interest rate; therefore it shows how much interest you will earn over a year. If you want to calculate the monthly interest you first have to calculate the annual interest and then divide this by 12 to determine the monthly interest.

For example, let's say you have R10 000 in a five-month fixed deposit account with Bank A. the interest rate on this account is 3,6%. Therefore the monthly interest that you can earn is calculated as follows:

(3, 6% x R10 000) / 12 = (3, 6/100 x R10 000) / 12 = R360 / 12 = R30

If you do not invest the R30 interest that you earn in your fixed deposit account you will earn R30 x 5 = R150 interest over the five-month period.

However, if you invest the interest that you earn every month in the fixed deposit account, you will also earn interest on the interest – we call this **compound interest**. This will mean that you will earn more interest. The following table illustrates this. You do not have to be able to do the calculations shown in table 6.2 but make sure that you are able to explain what compound interest is.

TABLE 6.2: COMPOUND INTEREST

	If interest is reinvested in account		If interest is not reinvested in account	
Month	**Amount in account**	**Interest earned for month**	**Amount in account**	**Interest earned for month**
1	10 000,00	50,00	10 000,00	50.00
2	10 050,00	50,25	10 000,00	50.00
3	10 100,25	50,50	10 000,00	50.00
4	10 150,75	50,75	10 000,00	50.00
5	10 201,51	51,01	10 000,00	50.00
6	10 252,51	51,26	10 000,00	50.00
7	10 303,78	51,52	10 000,00	50.00
8	10 355,29	51,78	10 000,00	50.00
9	10 407,07	52,04	10 000,00	50.00
10	10 459,11	52,30	10 000,00	50.00
11	10 511,40	52,56	10 000,00	50.00
12	10 563,96	52,82	10 000,00	50.00
13	10 616,78	53,08	10 000,00	50.00
14	10 669,86	53,35	10 000,00	50.00
15	10 723,21	53,62	10 000,00	50.00
16	10 776,83	53,88	10 000,00	50.00
17	10 830,71	54,15	10 000,00	50.00
18	10 884,87	54,42	10 000,00	50.00
19	10 939,29	54,70	10 000,00	50.00
20	10 993,99	54,97	10 000,00	50.00
21	11 048,96	55,24	10 000,00	50.00
22	11 104,20	55,52	10 000,00	50.00
23	11 159,72	55,80	10 000,00	50.00
24	11 215,52	56,08	10 000,00	50.00
25	11 271,60	56,36	10 000,00	50.00
26	11 327,96	56,64	10 000,00	50.00
27	11 384,60	56,92	10 000,00	50.00
28	11 441,52	57,21	10 000,00	50.00
29	11 498,73	57,49	10 000,00	50.00
30	11 556,22	57,78	10 000,00	50.00
31	11 614,00	58,07	10 000,00	50.00
32	11 672,07	58,36	10 000,00	50.00
33	11 730,43	58,65	10 000,00	50.00
34	11 789,08	58,95	10 000,00	50.00
35	11 848,03	59,24	10 000,00	50.00
36	11 907,27	59,54	10 000,00	50.00
Total interest earned		**1 966,81**		**1 800,00**

As you can see in the table if you put your interest into your fixed deposit account on a monthly basis, you will earn R166, 81 more interest over the 36-month period.

An amount that is held in a fixed deposit account is not as liquid as an amount that is held in a demand deposit account. This means that it is not immediately available to use for **payment**. You will first have to notify the bank to transfer the amount held in a fixed deposit account before it can be used as payment. However, because you will be earning interest, the value of your wealth will be increasing.

6.2.3 Measures of 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 identified in the previous sections.

6.2.3.1 The conventional measure (M1)

According to this measure, money is defined solely on the basis of its function 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. In South Africa these are

- coins and notes (in circulation outside the monetary sector), as well as
- all demand deposits (including deposits in current and transmission accounts) 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 thoroughly. As explained above, the concept of **demand deposits** refers to deposits (money which has been deposited) that can be withdrawn immediately in the form of cash or can be transferred immediately to another deposit through an electronic transaction. 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, it may be assumed that such deposits of the government and the foreign sector are not included. It appears, moreover, that 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 financial institutions obviously cannot be used in the money-goods flow, and is consequently excluded. A practical implication is that the cash in an automatic teller machine only becomes part of the money supply 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.

This definition of money can be written as an equation, as follows:

M	=	C + D
where M	=	money supply
C	=	cash (coins and notes in circulation outside the monetary sector)
D	=	demand deposits

Contrary to what may have been expected, D forms by far the largest part of the M1 measure of money. In South Africa the composition of M1 at the end of 2012 was as follows:

C	=	R81 042 million
D	=	R953 994 million
Total (M1)	=	R81 042 million + R953 994 million
	=	R1 035 036 million

About 92, 2% of M1 therefore consisted of demand deposits. Let's see how we calculate this:

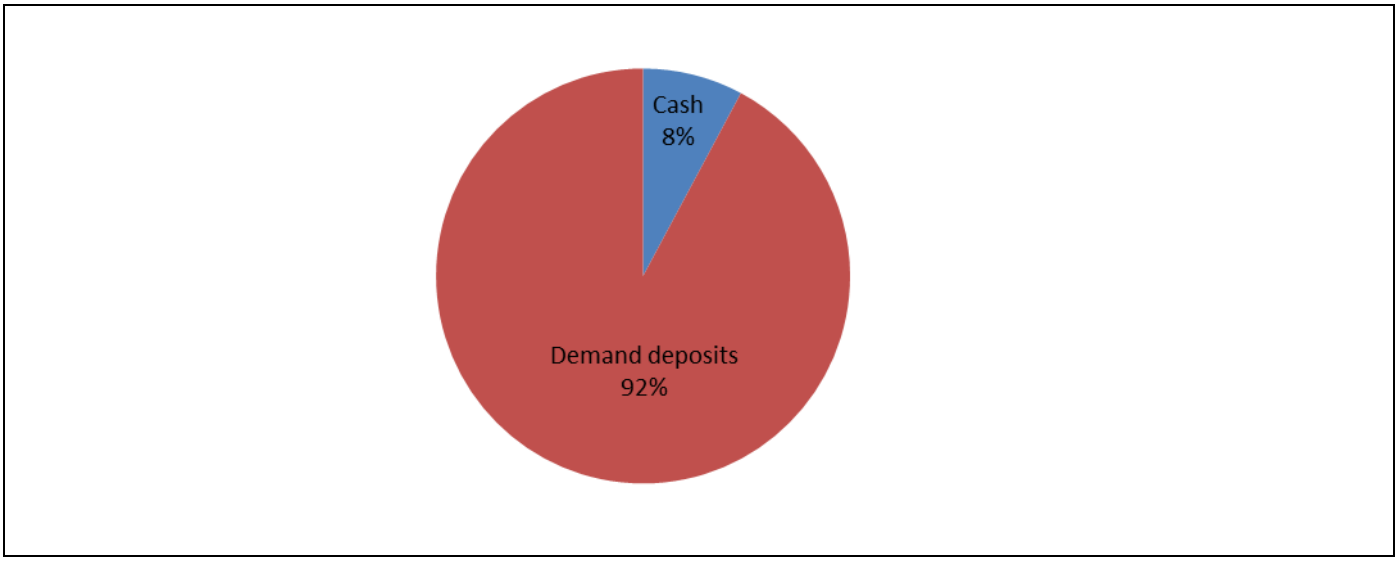
$$\frac{D}{M1} = \frac{R953\,994\,000\,000}{R1\,035\,036\,000\,000} \times \frac{100}{1} = 92{,}2\%$$

We can also calculate the percentage of M1 that consisted of cash:

$$\frac{C}{M1} = \frac{R81\,042\,000\,000}{R1\,035\,036\,000\,000} \times \frac{100}{1} = 7{,}8\%$$

Figure 6.3 shows graphically what total M1 consisted of.

Figure 6.3: Composition of M1



We choose a pie chart to show what M1 consists of as it is the best way to illustrate the sizes of the different components that make up a variable. Make sure that you are able to do the following:

- explain why we choose a pie chart
- can calculate the part of the circle that represents each component of M1

6.2.3.2 A broader definition of money (M2)

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

Short-term deposits refer to amounts placed in a fixed deposit account for 30 days or less. Medium-term deposits refer to amounts placed in a fixed deposit account for six months or less. As explained above, these short-term and medium-term deposits are not immediately available as a medium of exchange. They are deposits invested for a certain period and can only be withdrawn at considerable cost in the interim. Since the maturity of these deposits is not very long, they are very similar to M1 money and are known in South Africa as **quasi money**. Together with M1, this quasi money forms the M2 measure of money.

6.2.3.3 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. It is described as follows.

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 maturity 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 2012 the extent of the different measures of the money supply was as follows:

	R million
Coins and banknotes	81 042
Demand deposits	953 994
M1	1 035 036
Short-term and medium-term deposits	832 768
M2	**1 867 804**
Long-term deposits	504 390
M3	**2 372 194**

Source: *South African Reserve Bank Quarterly Bulletin* (June 2013)

6.2.4 Medium of exchange versus store of value function

Looking at the above three measures, it is clear that M1 is the only one that takes only the medium of exchange function as its point of departure. We put money into medium- and long-term deposits with a bank as we can earn higher interest rates on such deposits. However, these deposits are not immediately available as a medium of exchange. Therefore, as deposits with longer maturities (other than demand deposits) are added to the money supply, 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 becomes more important. It is evident that a deposit with a banking institution having a maturity of more than six months can hardly be regarded as an available means of payment today. Such a deposit is much closer in kind to the store of value function.

We can also say that deposits with longer term maturities are less **liquid**. The liquidity of an asset indicates how easily and quickly it can be converted into M1 money so that it can be used as a means of payment. Cash and demand deposits are very liquid, as these are immediately available for payment purposes, while deposits with longer maturities are less liquid as it will take longer to convert these into cash or demand deposits to become available for payment purposes. Fixed assets, such as land and buildings, are considered not to be liquid assets at all, as it may take a long time to sell such assets and convert their value into cash or demand deposits.

6.3 MONEY AND OTHER RELATED CONCEPTS

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 in companies or fixed assets, such as buildings and land. Nor is a person's income equivalent to the money he or she possesses. This confusion between the three concepts of money, wealth and income arises from the fact that all three can be expressed in terms of a particular monetary unit (e.g. rand, dollars, pounds).

Suppose that Mary owned the following assets on 1 December 2013:

Cash in her purse	R500
Balance on her current account with the bank	R3 000
Balance on 12-month fixed deposit	R5 000
Car R50 000	
Furniture and appliances	R25 000
Shares in her brother's IT business	R30 000
Total wealth	**R113 500**

If we look at Mary's assets we can see that she owned R8 500 M3 money, but that her total wealth is worth R113 500.

Mary earns the following amounts every month:

Salary R15 000	
Interest on 12-month fixed deposit	R33
Total income	**R15 033**

Her total monthly income is therefore R15 033.

Money supply and wealth are both stock concepts which can be measured at a particular point in time. As you can see in the example showing Mary's assets, wealth 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 year. In our example Mary earns R15 033 income per month.

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 R3 155 195 million in 2012, while the money in circulation during the same year only came to R1 035 106 million (M1). M1 as a percentage of the GDP therefore amounted to about 32, 81%. This seeming contradiction can easily be resolved if we explain the concept of velocity of circulation (V), which represents the number of times the money supply is circulated in a given period. This will therefore refer to the number of times the money supply circulated through the circular flow model in figure 6.1 above. 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. This can be explained by means of a practical example.

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.

6.4 THE EQUATION OF EXCHANGE

In learning unit 3 you learnt that the total value of goods and services produced in the economy (GDP) can be measured by placing a gate (number 2 in figure 3.5) in the circular flow diagram between the market for goods and services and the firms. We said that this total value of goods and services is calculated by multiplying the **quantity** of goods and services produced in the country with the **prices** of the goods and service., If we use the symbol **Y** to represent the quantity of goods and services and the symbol P to represent the prices of good and service we can say:

Nominal GDP = P x Y.

We have now also explained that **velocity of money** (**V**) represents the number of times that the **money supply** (**M**) circulated through the economy to pay for the goods and services produced in the economy. Therefore:

Nominal GDP = M x V.

Because both sides are equal to nominal GDP we can now say:

MV = PY

where

M = money supply.

V = velocity or circulation of money.

P = general price level.

Y = physical quantity of goods and services produced, also called real GDP, or real income.

This principle is known as the **equation of exchange.** As this equation will always be true in any economy it is called a **tautology**. A tautology is a statement that is always true, because of its form. As money is always used to conduct all the transactions that make up GDP or PY, the amount of money available in the economy (M) must circulate a certain number of times (V) to enable these transactions. Therefore the equation of exchange will always hold in any economy.

Economists have used this equation to develop **theories** about how the economy operates. A theory will always be based on certain **assumptions**. To prove that a theory is correct it first has to be **proved** or **validated**. If tests show that an economic theory is correct, the theory can be used to make **predictions** and **policy recommendations**. We will briefly explain the **monetarist** school of economic thought using

the equation of exchange as the point of departure.

6.4.1 The monetarist school of thought

The term "monetarist" refers to economists who believe that a certain school of economic thought is correct. Monetarists make the following assumptions about the economy:

- They assume that the velocity of money (V) is constant.
- They assume that the quantity of money in the economy (M) can be determined by the monetary authority, which is normally the central bank.
- They assume that the number of transactions in the economy (T) does not change over the short term.

If these assumptions are true, the equation of exchange can now be turned into a theory as follows:

$$M\bar{V} \Rightarrow P\bar{Y}$$

The short lines on top of the V and the Y indicate that these variables are **constant** and do not change in the short run. The direction of the arrow indicates that **causation** runs from left to right. This means that the variables on the left determine the variables of the right. Because it is assumed that both V and Y are constant, this will mean that the price level will be determined by the money supply in the economy. The equation of exchange has now been changed into a theory that explains how the price level is determined in the economy, which can be used to predict how the central bank can affect the price level.

To determine whether the theory is true, it will first be necessary to test the assumptions:

- Is the velocity of money, V, constant in the short run?
- Is the number of transactions in the economy, T, constant in the short run?
- Can the central bank determine the quantity of money, M, in the economy?

Only if it can be proved that these assumptions hold can this theory be useful to explain the level of prices in the economy and to predict how actions of the central bank will affect the price level.
This is a very simple theory but this does not mean that it is not useful. Economists are continually constructing theories to explain and predict economic phenomena. Persons who trade in shares will develop theories to try to predict changes in share prices. If a theory is correct it will help share traders to make a profit as they will be able to predict when share prices will increase or decrease.

The purpose of economic theory can therefore be summarised as follows:

- to **explain** economic phenomena
- to **predict** how economic variables will change in the future
- to provide an indication of the most appropriate policy action given a certain economic scenario (i.e. to **evaluate** possible policy actions)

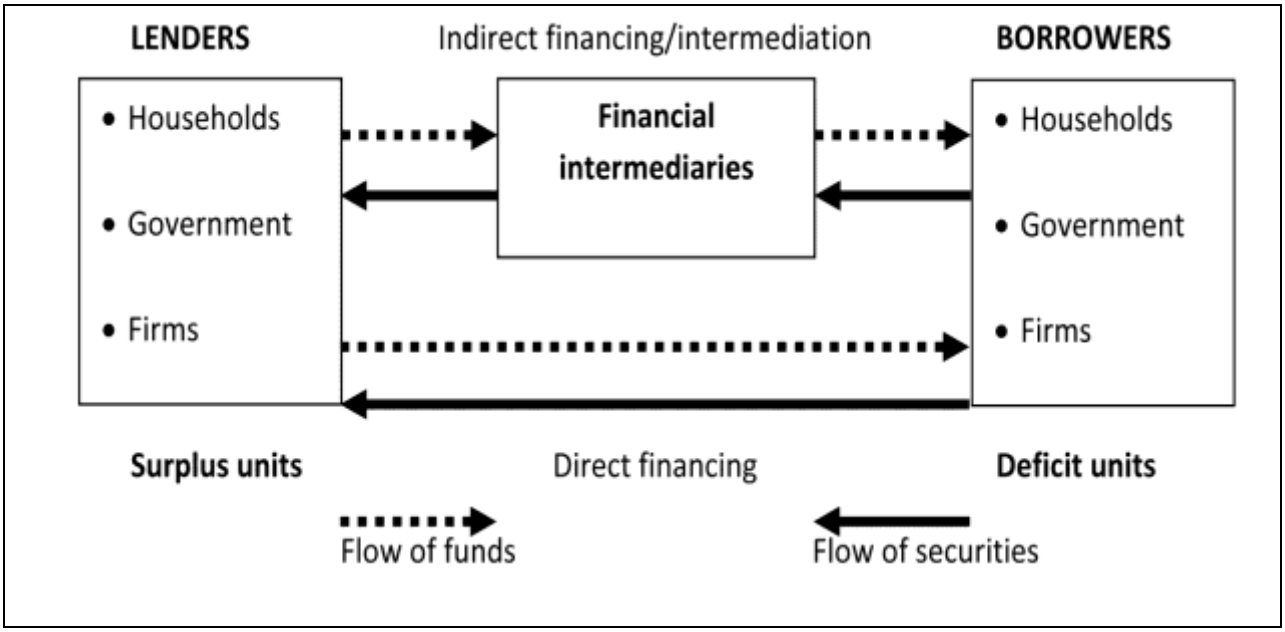
Note that there are several other schools of thought in economics and literally thousands of theories. We have merely demonstrated one theory that monetarists may believe is true to introduce you to the concepts of **schools of thought** and **theory.** When you continue with your studies in economics you will learn more about the different schools of thought, you will be introduced to different economic theories and you will learn to evaluate these critically.

If you become an economist one day your job will be to develop and use theories to explain things that are happening in the economy, to predict how economic variables may react to certain changes in the world and to evaluate decisions or policy actions.

6.5 COMPONENTS OF THE FINANCIAL SYSTEM

In figure 6.1 we show the financial system as one unit. In this section we look at the components of the financial system. We will use figure 6.4 to explain the financial system in more detail.

Figure 6.4: Direct and indirect financing



Funds flow from the **surplus units** in the economy to the deficit units. The dotted lines indicate the flow of funds, as shown previously in the flow of funds model. You will notice that the surplus units are similar to the different groups of participants in the economy that we had in the flow of funds model in learning unit 3, namely the households, the government and the firms. All of these can experience a financial surplus at some stage, which will mean that their income exceeds their expenditure during a particular period.

Funds flow to the **deficit units** in the economy. These are the households, government sections and firms that need funds to finance their deficit as their expenditure will exceed their income for a particular period. They therefore need to borrow funds to finance this deficit. That is why they are also called **borrowers**. The suppliers of funds or surplus units are called **lenders**.

The surplus units can lend funds directly to the deficit units. This is called **direct financing**. The surplus unit will require some proof that funds had been lent to the deficit unit. The deficit unit will issue a **security** to the surplus unit. The solid lines in figure 6.4 indicate the flow of the securities from the deficit unit which issues the security to the surplus unit that lends the funds to the deficit unit. The surplus unit will therefore now be the **holder** of the security. This means the security belongs to the surplus unit. This security is a legal document which may include the following:

- the amount that was lent to the deficit unit
- the amount that will be paid back to the holder of the security
- the interest that will be paid to the holder of the security
- the date(s) at which the owed amount and the interest will be paid to the holder of the security

Often, however, it may occur that deficit units will not be able to lend directly to the surplus units. That is because the needs of surplus units in the economy may differ from the needs of deficit units in the following ways:

- Surplus units would prefer to have quick access to their surplus funds when they need it, while deficit units would need to know that they can use the funds for a specific length of time (e.g. 10 years).
- Surplus units may be uncertain about the risk associated with lending funds to the deficit unit because the surplus unit does not understand the business that the deficit unit is involved in. We call this **information asymmetry**. Information asymmetry means that deficit units and surplus units do not have access to the same information.
- Surplus units may consist of many small amounts. This is especially true of households. A deficit unit may be a large corporation, such as Eskom, that needs billions of funds. It may therefore be necessary to aggregate many small surpluses to provide for the needs of one deficit unit.

Financial intermediaries exist to reconcile the different needs of surplus units and deficit units. We shall discuss the different kinds of financial intermediaries in section 6.5.1. When surplus units place their surplus funds with intermediaries who then channel these funds to the deficit units, we call the process **indirect lending** or **intermediation**.

6.5.1 Financial intermediaries

In any money economy we find a number of institutions specialising in financial transactions. These institutions are called financial intermediaries. There are many different types of financial intermediaries, 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.

It has been shown in practice that the vast majority of business transactions which involve a transfer of funds take place through the intervention of financial intermediaries (i.e. through indirect financing).

The financial intermediaries in South Africa can be divided into two main categories: firstly, we have the monetary authorities with the **South African Reserve Bank** as the most important, and secondly, the institutions of the **private sector**.

6.5.1.1 The South African Reserve Bank (SARB)

The SARB, established in1921, 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 as follows:

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

a Controller of note issues

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

b Bankers' bank

In its capacity as the bankers' bank, the SARB is responsible for supervising the banking system and making sure that banks adhere to regulations set to ensure that they act responsibly. The SARB handles the payment system in the country, called the SAMOS system (South African Multiple Option Settlement system). All payments between banks take place through the SAMOS system. Banks may also experience a financial deficit (when the amounts that one bank has to pay to another bank on a particular day exceeds the amount of funds the bank has received that day). When a bank experiences a financial deficit it may borrow from the SARB. The net deficit of all the banks added together on a particular day is called the money market deficit or the liquidity deficit of the banking sector. The SARB will lend funds to the banks to finance this deficit. The interest rate that banks pay on these funds is called the repo rate. Decisions regarding the repo rate form part of monetary policy, which is discussed next.

c Monetary policy

Monetary policy refers to a central bank's actions to influence the availability and cost of funds in the economy. The repo rate is a very important interest rate in the economy and affects the interest rate at which all funds may be borrowed in a country. When the SARB increases the repo rate, the interest rate charged by banks on loans to deficit units also increases, as well as the interest rate that they pay on fixed deposits. Decisions regarding the repo rate are determined by the objectives of the SARB. One of the most important objectives of the SARB is to keep the inflation rate low, in other words to ensure that the general price level in the country does not increase too much.

d Banker for the government

The Reserve Bank advises the central government about monetary and financial matters. The central government holds an account with the Reserve Bank, as well as with each of the large banks in the country. The SARB also assists and advises the government regarding the financing of a financial deficit.

e Custodian of gold and other foreign exchange reserves

Up to now we have not really discussed the foreign sector. You may be aware, however, that foreign currency (such as US dollar, European euro, Chinese yuan) may be needed to pay when we buy goods and services from suppliers in foreign countries and that domestic participants in the economy will receive such foreign currency when they sell goods and services to people or firms in foreign countries. 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.

6.5.1.2 Financial institutions of the private sector

South Africa has a plethora of different institutions operating in the financial markets. At one or other stage in our lives, some of us will have invested money at a **bank** or borrowed from a bank, taken out policies with 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. If you want to find out more about the different financial institutions you can consult the book *Understanding South African financial markets* (Van Wyk, Botha & Goodspeed 2012), which is listed in the bibliography at the end of the learning unit.

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
Microlenders

Microfinance institutions "have a role to play in expanding financial services in South Africa by providing a range of basic financial services in lower-income markets and in rural communities that have limited or no access to formal financial institutions" (Van Wyk et al 2012:84). Because lending to clients who earn low or no income and who often cannot provide proof of a fixed address or fixed assets represents higher risk, microfinance institutions usually charge much higher interest rates than normal bank clients will pay when borrowing from banks. In 2012, 23% of adult South Africans did not use any financial products offered by banks (FinScope 2012). A term which is often used to refer to this group of persons is "**unbanked**". There are several initiatives by the government and the private financial sector to provide financial services at reasonable fees to persons who are currently unbanked.

6.6 DIFFERENT INTEREST RATES AND MONETARY POLICY

6.6.1 What is an interest rate?

An interest rate is the cost of borrowing or the price that deficit units must pay for borrowing funds. It is usually expressed as a percentage per year.

There are many different interest rates in the economy. One of the most influential interest rates that we mentioned above in section 6.5.1.1 is the SARB's **repo rate**. This is the rate at which banks obtain funds from the Reserve Bank when they experience a shortage of funds. Other interest rates, such as the prime lending rate of banks, 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.

6.6.2 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 financial securities? 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. Individuals may also prefer not to save or buy any financial instruments, but to spend their money. 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. Monetary policy involves decisions concerning the level of the repo rate. The repo rate is very important in the economy as it determines the interest rate at which the banks are willing to provide loans to the private sector. The **prime overdraft rate** is, for example, the interest rate at which banks will lend money to their most valued customers. This prime overdraft rate and other lending rates will change in harmony with the **repo rate**. The interest rate that banks offer on deposits, such as the fixed deposit shown in table 6.1 above, is also affected by the level of the repo rate. The repo rate thus plays a key role in determining the level of all interest rates in the country. Table 6.2 gives an indication of how often the SARB has changed the repo rate during the last few years and how the banks' prime overdraft rate changed accordingly. Information about the repo rate can be found on the SARB's website (http://www.resbank.co.za). You can consult the *Monetary policy statements* of the SARB regarding the reasons for changing the repo rate or keeping it at the same level. These can be found on the same website (click on *Publications* and then click on *Monetary policy statements*).

TABLE 6.3: CHANGES IN THE REPO RATE AND PRIME OVERDRAFT RATE OF THE BANKS SINCE 2007

Date changed	Repurchase rate	Prime overdraft rate
07/12/2007	11%	14,5%
11/04/2008	11,5%	15%
13/06/2008	12%	15,5%
12/12/2008	11,5%	15%
06/02/2009	10,5%	14%
25/03/2009	9,5%	13%
04/05/2009	8,5%	12%
28/05/2009	7,5%	11%
13/08/2009	7%	10,5%
25/03/2010	6,5%	10%
09/09/2010	6%	9,5%
19/11/2010	5,5%	9%
20/07/2012	5%	8,5%

Source: *South African Reserve Bank Quarterly Bulletin* (June 2013)

We also have to distinguish between **short-term interest rates** and **long-term interest rates**. The level of long-term interest rates is one of the most important determinants of investment by firms and will therefore affect total production, economic growth and employment. When banks borrow from the SARB at the repo rate, they have to pay back the amount that they borrowed within seven days. The repo rate is therefore a very short-term interest rate. It is therefore mainly the short-term rates in the economy, such as the prime overdraft rate of the banks, which is immediately affected by a change in the repo rate. However, unless the change in the repo rate had been anticipated by participants in the market, the medium-term and long-term rates will usually also change in the same direction as the change in the repo rate.

The rate of interest (via changes in the repo rate) is the most important operational variable used by the SARB in the execution of **monetary policy**. When the monetary authorities increase the repo rate, the interest rate at which the banks provide loans to their customers also increases. At a higher interest rate it is more expensive to borrow from banks. Therefore it is likely that **consumption** by households and **investment** by firms may decrease. The decrease in consumption and investment will mean that the demand for goods and services produced by the firms decreases. This will mean that firms may produce less and will also make it more difficult for firms to increase the prices of their goods and services. In this way the increase in the repo rate may bring down the inflation rate in the economy.

6.7 CONCLUSION

In this learning unit we have explained what money is and why it is important in the economy. You learnt how money can be measured in the economy. You also learnt about the difference between money, wealth and income. You learnt that different economists have different viewpoints on the role of money in the economy. We briefly introduced the viewpoint of one school of thought, namely monetarists. We have also discussed the financial sector and explained that it consists of different types of institutions. Lastly we explained what interest rates are and how the repo rate, which is set by the SARB, affects all other interest rates in the economy.

Bibliography

FinMark Trust 2012. FinScope South Africa 2012 brochure. Available at: http://www.finmark.org.za/wp-content/uploads/pubs/FinScope-SA-Booklet_2012.pdf (as on 16/07/2013)

South African Reserve Bank 2012. *South African Reserve Bank Quarterly Bulletin* (June 2013). Pretoria: SARB.

Van Wyk,K, Botha, Z & Goodspeed, I. 2012. *Understanding South African financial markets.* Pretoria: Van Schaik.

The Foreign Sector

7

Study instruction

Study this learning unit 7 and do the activities in the workbook.

Purpose of learning unit

The purpose of this learning unit is to investigate the important role played by the foreign sector in our quest for solving the scarcity problem.

Main outcomes of learning unit

Once you have worked through this learning unit you should be able to do the following:

- define an open economy
- explain the concepts of "absolute advantage" and "relative advantage"
- explain why countries trade
- explain the exchange rate between the United States dollar and the South African rand as well as any changes that might occur
- explain an appreciation or depreciation of the rand against the dollar (and vice versa)
- distinguish between the current account and the financial account of the balance of payments

7.1 INTRODUCTION

The South African economy can be 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, Japan (which relies heavily on both imports of raw materials and exports of manufactured products) may be considered one of the more “open” economies in the world. In this study unit we 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 as follows: 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?

7.2 THE BASIS FOR TRADE

Why does international trade take place? It is clear that the answer must lie in the endowment of different countries with **natural resources** (including the 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 hence 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. We also have industrially advanced nations (such as Germany) that 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. An **absolute advantage** is the ability of one country to produce more of a particular commodity within a certain period of time compared to another country. But the fact is that international trade is not only 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 which is most efficient at producing **all** goods. You might think that such a country could produce everything 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.

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

Example:

Suppose we have two countries A and B which can both only produce two possible products. If A devotes all its resources to the production of rice, it will be able to produce 40 bags of rice per work hour. If it uses all its resources towards the production of wine, it can produce eight bottles of wine per work hour. Country B, on the other hand, can produce either eight bags of rice or four bottles of wine per work hour. This situation is illustrated in the following table:

	Rice	Wine
Country A	40	8
Country B	8	4

From this position the following deductions can be made:

- 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 five times (40:8 or 5:1) more efficient in the production of rice and only twice as efficient (8:4 or 2:1) 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 with both products than A, but is relatively more efficient with wine than rice.
- Therefore, country B will specialise in the production of wine and export wine to 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 could benefit both countries if they traded.
- Take as an example a trade ratio of 4:1 (e.g. the two countries decide to trade four bags of rice for one bottle of wine).
- **Country A** will benefit because by switching a work hour from wine production to rice production it loses eight 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 two bottles of wine.
- **Country B** will also benefit because by switching a work hour from rice production to wine production it loses eight bags of rice but gains four bottles of wine. The four bottles of wine can earn 16 bags of rice through trade. In the process country B has gained eight 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 in a natural manner 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 policymakers 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 when countries are endeavouring to catch up economically with those other countries which have 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 "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.

7.3 EXCHANGE RATES

7.3.1 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, or ZAR), 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.

7.3.2 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's 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 R6, 50. Using the direct method of quotation, we say that the rand/dollar (R/$) exchange rate is R6, 50 = $1.00, or simply that the R/$ rate is R6, 50 **per** 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 R10, 50, then the rand/pound (R/£) exchange rate, using the direct method, is R10, 50 = £1.00, or R10, 50 per pound.

Imagine that a South African buyer wishes to import English china to the value of £500. Not having any pounds available, the importer wishes 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 amount of rand for the required quantity of pounds. The amount of rand needed is calculated by multiplying the R/£ exchange rate by the quantity of pounds needed, that is R10, 50 multiplied by £500, which is equal to R5 250. This amount of rand will be sufficient to purchase the £500 needed to pay the English exporter.

Note that the slash (/) separating the symbols for the two currencies in any exchange rate is equivalent to a division sign, since exchange rates are simply ratios. As such, they can easily be inverted (turned upside down): instead of the R/$ rate, we can just as well speak of 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 R6, 50 = $1.00. Inverting this to arrive at the $/R rate of exchange, we now have $1.00 = R6, 50. This can also be expressed as $1.00/R6, 50, which is calculated as 1/6, 50 = 0.1538. In other words, the $/R exchange rate is equal to $0.1538 = R1, 00, or $0.1538 per 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.

It is important to note that regardless of whether the direct or indirect method of quotation is used, the exchange rate is always expressed as a certain amount of the one currency required to purchase **one unit** of the other currency. As such, the denominator (the currency named after the slash [/]) is always reduced to 1. To recap, the R/$ rate is the amount 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 on 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/$ (= R6, 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

$$\frac{1}{6.50} \times X \frac{100}{1} = \frac{100}{6.50}$$

$$= 15.38$$

Note that the dollar signs cancel each other out. Therefore the ¥/R rate of exchange is equal to 100 ÷ 6.50 = ¥15.38 per rand.

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

7.3.3 The market for foreign exchange

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

TABLE 7.1: THE DEMAND FOR DOLLARS

The demand for dollars is based is on people's wish to convert rand into dollars. This can be as a result of

- paying for imports from the USA
- buying shares in US firms
- buying US assets
- people wishing to visit the USA
- placing a deposit with a US bank
- paying interest or dividends to US individuals and firms
- repaying debt borrowed from the US

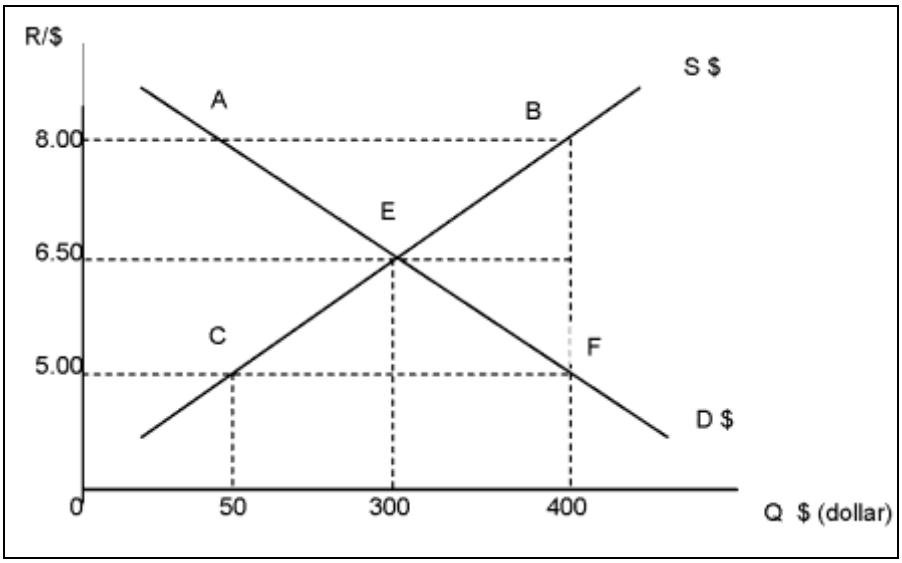
TABLE 7.2: THE SUPPLY OF DOLLARS

The demand for dollars is based is on people's wish to convert dollars into rand. This can be as a result of

- paying for exports from South Africa
- buying shares in South African firms
- buying South African assets
- people wishing to visit South Africa
- placing a deposit with a South African bank
- paying interest or dividends to South Africans
- repaying debt borrowed from South Africans

In all likelihood, the two parties mentioned, that is the South African importer of computers and the US importer of platinum, don't know of each other. If they did, the South African could buy the American's dollars from the US 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. It is more probable, however, 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 supply and demand intersect and so the equilibrium R/$ exchange rate is established (see figure 7.1).

Figure 7.1: The market for foreign exchange

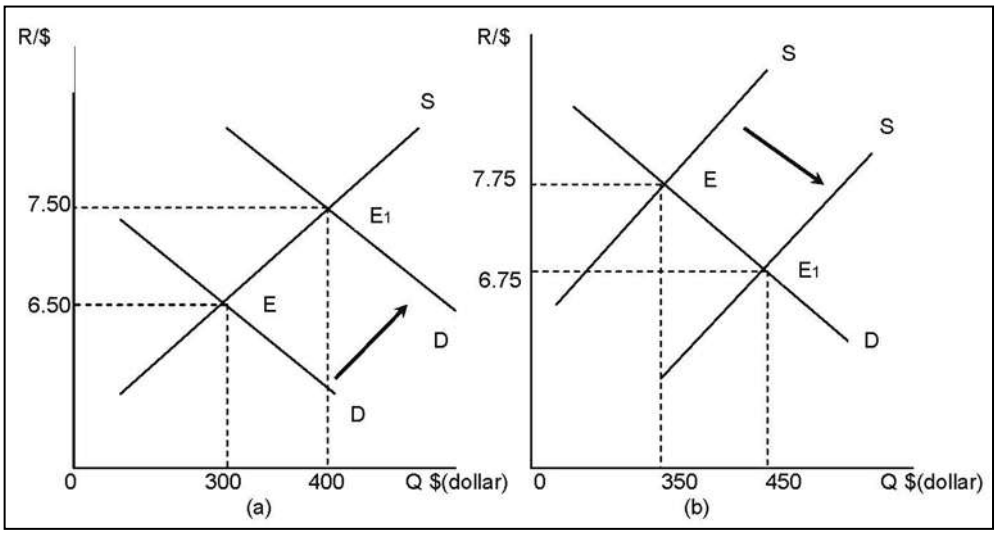


Note that the **quantity** of dollars is measured on the horizontal, or X axis. The **price** of one US dollar is on the vertical axis, expressed in rand per dollar (R/$). The $ part of this ratio is always equal to 1, as was mentioned earlier.

From figure 7.1 you can see that the equilibrium quantity of dollars traded ($300 million) is supplied and demanded at the equilibrium exchange rate of R6, 50 = $1.00. At a higher dollar value (e.g. R8, 00) an excess supply of dollars (AB) will exist and at a lower dollar value an 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 rand 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 7.2 for the effects of these changes on the equilibrium R/$ exchange rate.

Figure 7.2: Changes in the demand for and supply of foreign exchange



As regards terminology, a rise in the R/$ exchange rate is referred to as a **depreciation** of the rand against the dollar. 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. Such a depreciation of the rand is depicted in figure 7.2(a) where the value of the dollar has risen from R6, 50 to R7, 50. In contrast, a fall in the R/$ exchange rate indicates an **appreciation** of the rand against the dollar: The price of the dollar in rand terms 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 7.2(b) where the value of the dollar has fallen from R7, 75 to R6, 75.

7.4 THE BALANCE OF PAYMENTS

7.4.1 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 **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 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 could 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.

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

Table 7.3 is a slightly simplified presentation of South Africa's balance of payments for 2010. It shows that South Africa's merchandise exports for the period amounted to R566 760 million, plus R59 499 million worth of gold. South Africa's **trade balance** for 2010 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 R102 362 million and earned income to the value of R34 099 million in 2010. 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 (forex) needed to pay for imports and foreign services. In 2010, imports amounted to R598 151 million and payments for income were R134 843 million with R87 022 million for services. 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 2010 there was a net outflow of R16 762 million of transfers. By adding all of the above items together, a deficit of R74 058 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.

Financial account.

The financial account is divided into three categories of investment:

- **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 R8 073 million shows that there was a net inflow of direct investment during 2010.
- **Portfolio investment** 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. 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 or subtracted, the balance of payments will have either a deficit (-) or a 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. This is shown in the line item "Change in net gold and foreign reserves".

TABLE 7.3: SOUTH AFRICA'S BALANCE OF PAYMENTS, 2010

Current account	**(Rm)**
Merchandise exports	566 760
Net gold exports	59 499
Service receipts	102 362
Income receipts	34 099
Less: Merchandise imports	598 151
Less: Payments for services	134 843
Less: Income payments	87 022
Current transfers	-16 762
Balance on current account	**-74 058**
Capital transfer account (net receipts +)	**255**
Financial account	
Direct investment	8 073
Portfolio investment	79 644
Other investment	-6 717
Balance on financial account	**81 000**
Unrecorded transactions	24 136

Change in net gold and foreign reserves	**31 303**
Change in gross gold and foreign reserves	**-2 076**

Source*:* South African Reserve Bank (2011)

On the other hand, if the balance turns 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 2010 there was a surplus to the tune of R81 00 million on the financial account. This amount, together with the positive unrecorded transactions and the deficit on the current account and the positive capital transfer account, resulted in the **change in net gold and other foreign reserves** of R31 303 million.

Unrecorded transactions are basically a recording of all the errors and omissions that might occur when compiling individual transactions of the balance of payment. In other words, if the sum of all credit and debit entries is not equal to the change in the country's net gold and other foreign reserves, unrecorded transactions are "calculated" to ensure that the balance of payment does eventually balance.

The final line item in the 2010 balance of payments shows the actual increase in South Africa's gross gold and foreign reserves after taking account of **special drawing rights (SDR)** allocations and other adjustments. SDR was created by the IMF in 1969 as a supplementary foreign exchange reserve asset to boost international liquidity by adding to the standard reserve currencies.

7.4.3 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 for South Africans to import cars 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). You 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 of rand (and therefore platinum) demanded.

You 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 will 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 impinge on exchange rates and the balance of payments. South Africa's present policy of an accelerated and shared growth initiative to put the economy on a higher growth path will hopefully 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 phrase 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.

7.5 CONCLUSION

In this learning unit we had a look at the links between the domestic and foreign economies. You learnt that countries trade based on the principle of relative advantage. Once we established the reasons for trade we had a look at how currencies are traded on the forex market so as to facilitate the trade between countries. Lastly we had a look at the balance of payments, where all cross-border transactions between countries are recorded.

Inflation, Unemployment and Economic Growth

8

Study instruction

Study this learning unit 8 and do the activities in the workbook.

Purpose of learning unit

The purpose of this learning unit is to introduce you to a number of important economic indicators used to assess the performance of an economy.

Main outcomes of learning unit

Once you have worked through this learning unit you will be able to do the following:

- define inflation
- explain the concepts of "consumer price index" and "producer price index"
- define unemployment
- differentiate between the different kinds of unemployment
- the distribution of income
- define the business cycle
- distinguish between the different phases of the business cycle
- define economic growth
- calculate the economic growth rate
- assess South Africa's economic growth rate

8.1 INTRODUCTION

A number of very important economic indicators, used by economic analysts, are discussed throughout this study guide. Some of these are mentioned or discussed in other study units like the gross domestic product (GDP), the budget of the South African government, various measures of the money supply and the balance of payments. In this study unit some additional economic indicators are discussed to broaden your vision of the South African economy.

8.2 INFLATION

Inflation may be defined as a **sustained increase** in the general price level. The implicit GDP deflator gives a very comprehensive measure of price increases in the South African economy because all goods and services comprising the GDP are included in such an index. However, information on the implicit GDP deflator only becomes available after the GDP for a particular year or quarter has been estimated. There is a time lag of at least three months before information on this inflation indicator becomes available. The data is also subject to constant revision because the estimates of GDP are continuously updated. To have more timely (current) data on price increases available, other measures are available. We will now briefly consider two of the more commonly used indices in this regard.

8.2.1 Consumer price index (CPI)

The consumer price index (CPI) is probably the most widely used inflation index. It is a series of numbers (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 8.1 indicates annual changes in average rates for all categories according to the classification of individual consumption by purpose (COICOP). There is a noticeable deceleration in price inflation in the **recreation and culture** category in contrast to the acceleration in the **transport** category. This is mainly due to the considerable increases in the petrol price during the final quarter of 2010.

TABLE 8.1: HEADLINE CPI INFLATION IN COICOP CATEGORIES (ANNUAL PERCENTAGE CHANGE)

	Weights	2009	2010	Jan 2011
Education	**2,19**	9,9	9,4	9,2
Alcoholic beverages and tobacco	**5,58**	11,1	9,2	7,2
Health	**1,47**	10,8	7,5	7,4
Housing and utilities	**22,56**	7,9	6,6	6,3
Restaurants and hotels	**2,78**	11,0	7,1	4,9
Miscellaneous goods and services	**13,56**	11,6	6,8	3,7
Food and non-alcoholic beverages	**15,68**	9,7	1,4	3,1
Transport	**18,8**	-0,4	2,7	2,5
Clothing and footwear	**4,11**	4,9	1,9	0,9
Household contents, maintenance and equipment	**5,86**	6	0,4	0,5
Recreation and culture	**4,19**	11,6	0,2	-2,3
Communication	**3,22**	0,7	-1,6	-2,4
Total headline CPI	**100**	**7,1**	**4,3**	**3,7**

Source*:* South African Reserve Bank (2011)

The CPI is a fixed weight index, which implies that the weight for each item stays the same for the duration of 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 index, thus compiled, is shown in table 8.2 for a number of the more important product/service groups.

TABLE 8.2: CONSUMER PRICES FOR ALL URBAN AREAS ACCORDING TO THE COICOP CLASSIFICATION FOR 2004 TO 2010

	Weights	2004	2005	2006	2007	2008	2009	2010
Food and non-alcoholic beverages	**15,68**	73,2	74,6	79,2	86,7	100,0	109,5	111,1,0
Alcoholic beverages and tobacco	**5,58**	73,9	79,7	85,9	92,9	100,0	111,1,1	121,1,4
Clothing and footwear	**4,11**	108,4	107,3	97,7	88,9	100,0	104,9	106,8
Housing and utilities	**3,55**	70,9	75,0	79,4	86,6	100,0	119,8	136,0
Household contents, equipment and maintenance	**3,87**	98,9	99,1	98,0	98,3	100,0	105,7	103,2
Health	**0,57**	85,4	86,9	89,8	93,6	100,0	111,9	118,9
Transport	**15,60**	92,9	93,5	94,6	95,2	100,0	97,8	100,4
Communication	**0,31**	97,9	99,5	97,5	98,0	100,0	89,6	65,6
Recreation and culture	**2,94**	101,6	97,5	97,1	97,7	100,0	108,8	106,1
Miscellaneous goods	**1,99**	87,7	88,6	90,0	93,6	100,0	113,8	115,2
Total goods	**54,20**	**81,1**	**82,8**	**85,4**	**89,7**	**100,0**	**106,4**	**109,5**

Source: South African Reserve Bank (2011)

The table shows clearly how divergent price movements in the different categories were. It is important to note, however, that the base year of the indices moved to 2008. Over the period from 2008 to 2010 food prices had risen from 100 to 111, 0. This means a food basket costing R100 at the end of 2008 would cost R111 at the end of 2010; On the other hand, clothing and footwear in general were not subject to price increases during the same period. The price index for clothing and footwear increased from 100 in 2008 to 106, 8 in 2010, The second column shows the weight contribution for all goods to CPI over the period. You can clearly see how the relative importance of food products and transport costs in the basket influenced the weight of the total index.

The CPI is often used to calculate the inflation rate 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.

8.2.2 Production price index (PPI)

The second important price index that we have to know about is the production 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 where 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 Stats SA. From tables 8.3 and 8.4 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 is only 5, 87% in the case of the PPI as opposed to more than 15, and 68% in the CPI.

TABLE 8.3: PRODUCTION PRICES OF SELECTED PRODUCTS FOR 2003 TO 2010, SEASONALLY ADJUSTED

Period	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing	Electricity, gas, steam and water	Total PPI
Weights	**9,95**	**19,41**	**62,31**	**8,33**	**100**
2003	124,0	116,6	126,9	105,0	124,8
2004	122,7	127,8	129,5	107,9	127,7
2005	116,9	143,6	134,2	113,9	132,4
2006	135,4	159,4	142,8	120,0	142,6
2007	163,7	176,3	156,8	128,6	158,2
2008	181,0	199,8	180,6	149,0	180,8
2009	181,9	181,1	181,9	181,2	180,8
2010	182,9	208,2	185,3	219,2	191,7

Source*:* South African Reserve Bank (2011)

TABLE 8.4: PRODUCTION PRICES OF MANUFACTURING PRODUCTS FOR 2003 TO 2010, SEASONALLY ADJUSTED

Period	Food	Paper and paper products	Products of petroleum and coal	Chemical and chemical products	Basic metals	Transport
Weights	**5,87**	**4,96**	**4,98**	**6,74**	**6,66**	**5,83**
2003	138,3	128,5	120,2	127,3	122,4	122,7
2004	135,9	127,7	129,4	130,0	129,9	124,7
2005	134,4	130,3	163,3	131,9	140,5	126,3
2006	143,7	134,7	196,6	136,0	157,0	129,2
2007	163,7	144,7	222,3	145,0	187,5	133,1
2008	193,5	159,5	284,0	165,3	243,2	139,2
2009	200,5	174,0	211,0	166,0	244,4	146,6
2010	198,9	177,4	225,9	163,0	250,5	147,3

Source*:* South African Reserve Bank (2011)

Since only a few items are shown in the table, the weights do not add up to 100, the highest price increases were experienced in the basic metals category and the lowest in the textile, clothing and footwear group.

An important advantage of the PPI is 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.

8.3 UNEMPLOYMENT

Unemployment is perhaps the greatest challenge facing economic policymakers 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 working force. This rate, however, is not so easy to calculate, mainly because of difficulties with finding precise definitions for terms such as "unemployed" and the "total working force".

In 1998 Stats SA revised its definition of the official unemployment rate in line with the International Labour Organization (ILO) definition.

In this definition the unemployed are those people within the economically active population who

1. did not work during the seven days prior to the interview
2. want to work and are available to start work within a week of the interview
3. 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 both those 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 Stats SA previously called the **strict** unemployment rate. By contrast the **expanded unemployment** rate does not require criterion 3 above to hold. Only criteria 1 and 2 must be met for a person to be classified as unemployed.

In table 8.5 the unemployment rate in South Africa, according to the official or strict definition, is given for a number of dates. The unemployment rate according to the expanded definition, which is no longer published by Stats SA, is usually about 10 percentage points higher than the rate of the official (strict) definition.

TABLE 8.5: UNEMPLOYMENT RATE IN SOUTH AFRICA ACCORDING TO THE OFFICIAL DEFINITION FOR VARIOUS DATES

Date	Unemployment rate				
	African	Coloured	Indian/ Asian	White	Average
Sep 2001	35,7	21,2	18,8	5,8	29,4
Sep 2002	36,4	23,0	20,4	6,0	30,4
Sep 2003	33,9	21,1	16,6	5,0	28,0
Sep 2004	31,3	21,8	13,4	5,4	26,2
Sep 2005	31,5	22,4	15,8	5,1	26,7
Sep 2006	30,5	19,4	9,6	4,5	25,5
Sep 2007	26,8	20,6	8,2	3,8	22,7

Source: Statistics SA (2007)

Normally four types of unemployment may be distinguished:

1. **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.
2. **Seasonal unemployment**, as the name suggests, occurs when workers are laid off because of the seasonal nature of the work. Examples are fruit picking on farms.
3. **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.
4. **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. Fewer people smoking nowadays have resulted in job losses in the tobacco industry; the skills of traditional typists were no longer required with the advent of modern word processing, and so on.

8.4 INCOME DISTRIBUTION

Estimates of poverty 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 not only true of the population as a whole but also of ethnic groups when they are analysed separately. Despite rapid rises in black per capita income, the gap between rich and poor in the black population has been rising steadily since 1993 (Van der Berg & Louw 2003). There is no doubt that income inequality is a serious socioeconomic problem in South Africa. But how do we measure this inequality?

8.4.1 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 by explaining how the Lorenz curve is constructed.

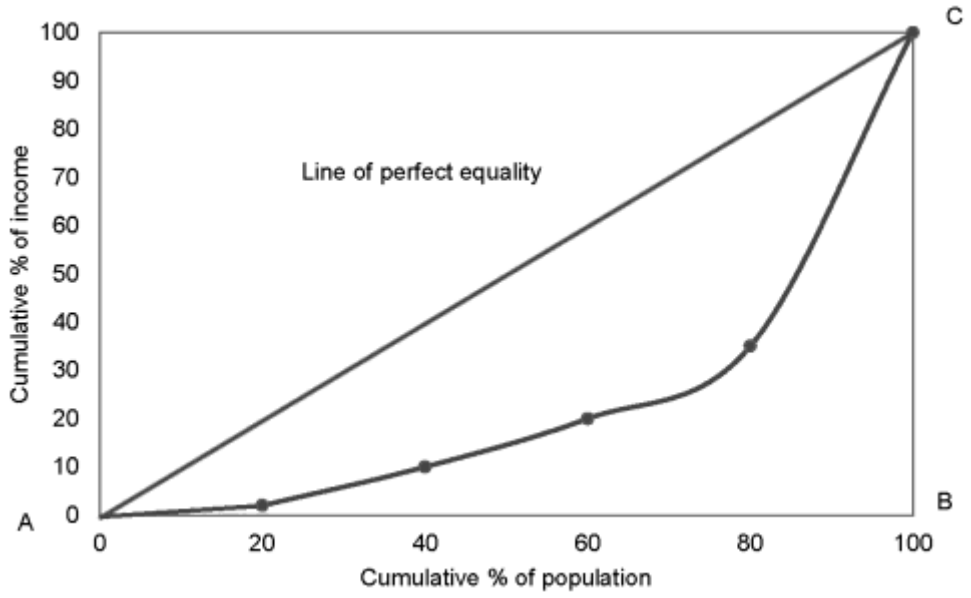
The Lorenz curve can best be explained by using a simple hypothetical example (Mohr P and Fourie LJ 2008:80). Let's assume the size of the population of country A is 100 and the total income of the population is R100. The total income of the poorest 20 people is only R2. The next poorest 20 people earn a total income of R8. The income of consecutive groups of 20 people steadily increases so that 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 8.6.

TABLE 8.6: INCOME DISTRIBUTION OF COUNTRY A

Percentage		Cumulative percentage	
Population	**Income**	**Population**	**Income**
Poorest 20	2	20	2
Next 20	8	40	10
Next 20	10	60	20
Next 20	15	80	35
Richest 20	65	100	100

By plotting the data of the last two columns in table 8.6 on a graph the Lorenz curve for country A can be drawn in figure 8.1.

Figure 8.1: The Lorenz curve for country A



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 how the Lorenz curve would have looked if each person earned exactly the same amount (i.e. a perfectly equal distribution of income). In our example of country A it means that each person earned exactly R1. The deviation of the actual Lorenz curve (see figure 8.1) 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.

What would the Lorenz curve for country A look like if one person earned R100 and the rest of the population nothing? This would be depicted by a right-angled triangle running from A to B to C (ABC) in figure 8.1. 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 closer the actual Lorenz curve moves towards ABC (or away from the line of perfect equality), the greater the degree of inequality in the country.

8.4.2 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, where 0 signifies perfect equality and 1 perfect inequality. In table 8.7 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 8.7: GINI COEFFICIENT BY POPULATION GROUP FOR 1991, 1996 AND 2001

Population group	1991	1996	2001
African	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)

8.5 BUSINESS CYCLES

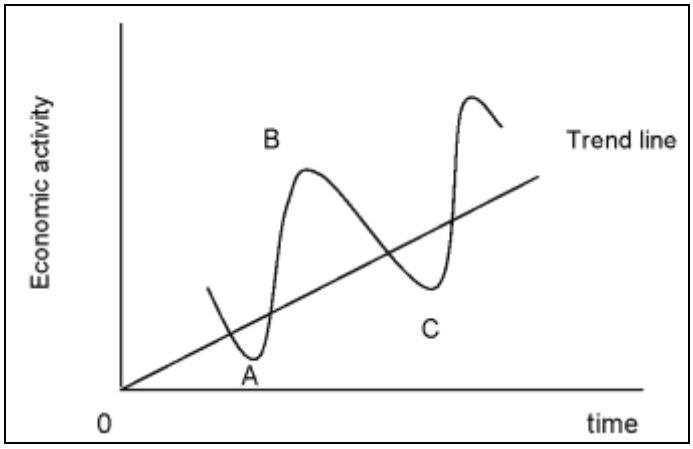
The next indicator we have to consider is the phenomenon of business cycles. Economic growth does not occur smoothly and at the same pace. All economies are subject to periodic booms or upswings which are often followed by recessions or even depressions. This pattern of expansion and contraction in economic 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 8.2 the various phases of the business cycle are illustrated. A complete business cycle is shown from the trough A to the next trough C. The upswing is shown by AB when the peak B is reached. This is followed by the downswing BC until the trough C 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 8, 8 the phases of the South African business cycle since the 1960s are shown.

Figure 8.2: The four phases of the business cycle



As you can imagine it is not easy to calculate 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. It uses a **composite index** of both **leading** and **lagging** economic indicators to predict and confirm the downturns and upturns of the business cycle.

TABLE 8.8: 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		

Source: South African Reserve Bank (2011)

8.6 ECONOMIC GROWTH

8.6.1 Calculating economic growth

When we discussed the difference between nominal and real values of the GDP we briefly introduced the calculation of economic growth. 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. Since economic growth may be defined as "the annual rate of increase in total production or income in the economy" (Mohr et al 2008:576), the GDP is ideally suited for measuring economic growth if real values are used.

To address this problem the GDP should be expressed on a **per capita** basis. Per capita means "per head" (i.e. per person), and means that the value of GDP should be divided by the population in order to arrive at the GDP per capita. Clearly the growth in per capita GDP will always be lower than growth in GDP.

Growth in GDP alone, however, does not take into consideration that the population of the country also increases. Real economic growth can only occur 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.

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.

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 by the following procedure:

- **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.

TABLE 8.9: GROWTH RATES OF GDP, GDP PER CAPITA AND GNI PER CAPITA AT CONSTANT 2005 PRICES

Year		Annual percentage change	
	GDP at constant 2005 prices (%)	**GDP per capita at constant 2005 prices (%)**	**GNI per capita at constant 2005 prices (%)**
2000	4,2	2,1	1,5
2001	2,7	0,8	0,6
2002	3,7	1,9	3,1
2003	2,9	1,3	1,6
2004	4,6	3,1	4,3
2005	5,3	3,9	4,2
2006	5,6	4,2	5,4
2007	5,6	4,3	3,5
2008	3,6	2,4	2,9
2009	-1,7	-2,7	-0,5
2010	2,8	1,8	3,9

Source: South African Reserve Bank (2011)

The involvement of foreigners in our economy has always been greater than South African participation in foreign countries, with the result that GNI has always been smaller than GDP. Our primary income payments to the rest of the world exceed our primary income receipts from the rest of the world. The difference in growth rates when the three national income magnitudes are compared is quite significant. In 1999, for example, the growth in real GDP amounted to 4, 2%, but in the same year GNI per capita recorded a growth of 1, 5%. Adjusting the real GDP for population increases and net primary payments to the rest of the world reduced the "economic growth rate" from a fairly healthy positive rate of 4, 2% to a miserable 1, 5%. In 2004 and 2005, however, the net payments to the rest of the world did not have a detrimental effect on the GNI per capita growth rate.

8.6.2 International comparison of economic growth

To conclude this study unit on selected economic indicators we can briefly explore South Africa's growth performance in comparison with the rest of the world. Table 7.10 shows the ranking and percentage shares of GDP in various countries of the world.

Any international comparison can be very misleading as there are so many pitfalls and difficulties with finding reliable comparative figures. In the previous section you saw that South Africa did not have a very rapid growth rate during the 1990s. Real per capita growth was in fact negative for quite a number of years during the last 15 years.

TABLE 8.10: RANKING AND PERCENTAGE SHARE OF GLOBAL GDP, 2000 TO 2015

2000		2010		2015	
1. USA	31,0%	1. USA	23,6%	1. USA	22,0%
2. Japan	14,5%	2. China	9,3%	2. China	12,2%
3. Germany	5,9%	3. Japan	8,7%	3. Japan	8,0%
4. UK	4,6%	4. Germany	5,3%	4. Germany	4,5%
5. France	4,1%	5. France	4,1%	5. France	3,6%
6. China	3,7%	8. Brazil	3,3%	7. Brazil	3,4%
9. Brazil	2,0%	10. Russia	2,4%	8. Russia	3,0%
13. India	1,5%	11. India	2,3%	9. India	2,9%
19. Russia	0,8%	27. South Africa	0,6%	26. South Africa	0,6%
30. South Africa	0,4%				

Source*:* National Treasury (2011)

Compared to other emerging markets like China, Brazil, Russia and India, South Africa is still lagging behind. The low growth rates of the industrialised countries should also be seen against the background of the substantial base from which these rates are projected. China's high growth rate, on the other hand, is from a relatively low base for such a large economy. In spite of this, there is little doubt that countries like China and India are catching up rapidly and very soon will be in the same league as superpowers like the USA.

8.7. CONCLUSION

In this learning unit we had a look at the different indicators used to assess the performance of an economy. Inflation, the distribution of income, the unemployment rate and the economic growth rate were discussed in the process. We also looked at the business cycle which indicated the economic growth path of a country over a period of time.