In addition, learners are provided with:

- Practise using the new knowledge, concepts and skills they have acquired in the lesson.
- Establish what they already know about a topic.
- Learn new facts about a topic.
- Extra practice activities that cater for both remediation and enrichment.

The Economics solutions for all Learner’s Book has been developed to support the content (knowledge, concepts and skills) contained in the National Curriculum Statement (NCS), as organised in the new Curriculum and Assessment Policy Statement (CAPS) for Economics.

This course provides everything the teacher and learners need to master Economics. The Economics Solutions for all Teacher’s Guide has been organised to support teaching and learning in the Economics classroom by presenting the material to be taught and practised in the classroom in an accessible way. In each lesson the learners will:

- Practise using the new knowledge, concepts and skills they have acquired in the lesson.
- Establish what they already know about a topic.
- Learn new facts about a topic.

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Note to the teacher:
Please refer to the Teacher’s Guide for possible formal assessment tasks, sample tests and exam papers, as well as their memoranda.
Understanding the icons used in this book

**What you know already**

This is a brief summary of what you have already learnt about this topic in earlier grades.

**Check myself**

This will be a short exercise you will do in a group or with your whole class to discuss the topic and check your prior knowledge.

**Word bank**

These are new words which appear in the topic. They each have a brief but clear definition to explain what they mean.

**What you still need to know**

This includes all the new material as part of the Grade 12 content that you will learn about in the topic.

**Issues of the day**

This icon will alert you to current economic issues covered in the topic.
Circular flow

What you will learn about in this topic

- The open economy circular flow model.
- The markets.
- National account aggregates and conversions.
- The multiplier:
  - definition of multiplier effect
  - explanation of the multiplier process aided with a circular flow and examples.

Let’s talk about this topic

- Why is investment spending important for the economy?
- Why are exports important for our economy?
- How do we know how many goods and services we produce in South Africa?
What you know already

It is the interaction between the important decision-makers (households, firms, government and the foreign sector) that determines the level of economic activity in a country. These interactions take place in the different markets (goods market, factor market, financial market and foreign exchange market). A change in the behaviour of one of the decision-makers impacts on the behaviour of another decision-maker, so we are collectively responsible for what is happening in the economy.

An important measure of the level of economic activity and the economic well-being of a country is the real gross domestic product.

Check myself

1. Who are the important decision-makers in the economy?
2. What are final goods and services?
3. What is meant by real gross domestic product?

Word bank

Autonomous spending is spending that is not influenced by the level of output and income.
Basic prices are used when GDP is calculated according to the production method and represent the production costs (including profits) of firms.
Capital goods include all manufactured resources, such as machines, tools and buildings, which are used in the production of other goods and services.
Circular flow model describes the continuous flow of spending, production and income between the different sectors in an economy.
Expenditure on gross domestic product is the total spending on the goods and services produced inside the borders of a country. It includes exports but excludes imports, since imports are produced outside the borders of the country.
Factor market is the market where the services of the factors of production are purchased and sold. This takes place in many different markets. These markets are collectively called the factor market. The factor market includes the labour market, where the services of labour are bought and sold, and the markets for capital goods. The factor market is also known as the resource market.
Factor prices are the prices paid for the services of factors of production (labour, capital, land and entrepreneurship) when these are exchanged through the factor market.
Financial market is the market where both short-term and long-term financial assets are traded.
Firms are defined as the units that employ factors of production to produce goods and services that are sold on the goods market.

Foreign exchange market is the market in which one currency can be traded for another currency. The price at which one currency is traded for another in this market is the exchange rate.

Foreign sector consists of all the countries in the rest of the world as well as international institutions that regulate the flow of goods and services and the flow of funds between different countries.

Goods market is where goods and services are exchanged for money.

Government includes all levels of government (local, provincial and national) as well as the different departments and government-owned business enterprises.

Gross domestic expenditure (GDE) is the total value of spending inside the borders of a country by the various economic participants (sectors). It includes spending on imports but excludes spending on exports, since spending on exports occurs in the rest of the world.

Gross domestic income (GDI) is the income received by the factors of production for producing the gross domestic product.

Gross domestic product (GDP) is the total value of all final goods and services produced within the boundaries of a country in a particular period (usually one year).

Households are the owners of the factors of production. Households sell the factors of production to firms and receive an income in return. From the income they receive they buy goods and services. This is referred to as consumption spending by households.

Injections are any factor that increases the flow of income and spending. Examples of injections are investment, government spending and exports.

Leakages are any factor that decreases the circular flow of income and spending. Examples of leakages are savings, taxes and imports.

Marginal propensity to consume is the proportion of an increase in income that households spend on consumption.

Marginal propensity to save is the proportion of an increase in income that households save.

Market prices are the prices that are paid for goods and services in the market. The prices include any indirect taxes on the products and services.

Money flow is the flow of money between the different sectors and through the different markets. Alongside money flow, in the opposite direction, is the real flow of goods and services.

Multiplier is the ratio of the change in income to the change in spending. Behind the multiplier is the idea that the spending of one person becomes the income of another person. It is because of this interdependence of spending and income that an increase in spending eventually causes production and income to increase by more than the initial increase in spending.
What you still need to know

1. The open economy circular flow model

A country that trades with other countries has an open economy. These links between a country and the rest of the world have a crucial impact on the country’s economic development and the level of economic activity. To get a better understanding of how these links impact on an economy we will build a circular flow model for an open economy.

1.1 The components of an open circular flow model

An open circular flow model consists of different components:

- participants (also known as decision-makers or sectors)
- markets
- flows (which are influenced by economic leakages and injections).

1.1.1 The participants in an open circular flow model

The participants in an open circular flow model are grouped into four sectors as follows:

- **Households** – A household is an individual or a group of people who live together and who make joint economic decisions. Households are also the owners of the factors of production (land, labour, capital and entrepreneurship). Households offer these factors of production to firms in the factor market. Firms then use these factors to produce goods and services. Households receive income from firms in exchange for the factors of production. This income is in the form of rent, wages and salaries, interest and profit. Households use this income to buy goods and services in the goods market.

Real flows are the physical side of the flow of goods and services in the economy. Alongside a real flow is a money flow, moving in the opposite direction to the real flow.

**Total income (or aggregate income)** is the income received by the owners of the factors of production for making these factors of production available to firms to be used in the production of goods and services. The main sources of income are wages and salaries, interest, rent and profits.

**Total production (or aggregate production)** is the production of all goods and services in the economy. The determination of the level of total production is an important issue in macroeconomics.

**Total spending (or aggregate spending)** is the spending by households, firms, the government and the foreign sector on domestically produced goods and services. The formula for total spending is:

\[ TS = C + I + G + (X - M). \]
• **Firms** – Also called business enterprises, these are entities that use the factors of production (labour, capital, land and entrepreneurship) to produce goods or services to be sold on the goods market. Firms are responsible for the production of goods and services, as well as for investing in the economy. Firms need the factors of production to produce goods and services. Firms buy these factors of production from households in exchange for income (in the form of rent, wages and salaries, interest and profit). As production increases, firms buy more factors of production from households, thereby increasing household income.

• **Government** – Government consists of the different levels of government (national, provincial and local), the different government departments (housing, health, education, etc.) and the government-owned enterprises. The government plays an important role in the economy because it supplies goods and services to households and also taxes households and firms.

• **Foreign sector** – The foreign sector consists of all the countries in the rest of the world as well as international institutions that govern the flow of goods and services and the flow of funds between different countries. The foreign sector plays an important role in the economy because this is where we buy (import) and sell (export) goods and services to and from foreign countries.

**Important decision makers**

1.1.2 The markets in an open circular flow model

There are three main markets in the circular flow model for an open economy:

• **Factor market** – The services of the factors of production (labour, capital, land, entrepreneurship) are exchanged for income (salaries and wages, interest, rent, profits) in the factor market. This is an important market because it is the market where households offer their factors of production to firms and earn income from firms in exchange for these factors.

• **Goods market** – Goods and services are bought and sold in the goods market. Firms offer their goods and services for sale to households, other firms and the foreign sector in the goods market. Therefore, this is the market where firms earn their income.

• **Financial market** – The financial market consists of the money and capital markets. Surplus funds are deposited and loans are made in the financial market. The savings in the economy flow to this market. Decisions about offering loans to applicants are also made in this market.
1.1.3 The flows in an open circular flow model

In the circular flow model we can distinguish between different types of flows. The three major flows are as follows:

- **Production flow** – This is the flow of goods and services produced in the economy. Firms produce goods and services and then sell these to households, the government and the foreign sector. The production flow begins when firms produce goods and services, and continues through the goods market where these goods and services are then sold in exchange for income.

- **Income flow** – This is the flow of income to the owners of the factors of production for the use of the factors of production. There is a flow of income from firms to households in exchange for the factors of production. This flow takes place through the factor market.

- **Spending flow** – This is the flow of spending on goods and services by the different participants (sectors). Households are responsible for consumer spending, firms are responsible for investment spending and the government is responsible for government spending. The foreign sector is responsible for spending on exports.

In a circular flow model we can also distinguish between real flows and money flows:

- **Real flows** – These are the flows of physical things, such as goods and services and factors of production.
- **Money flows** – These are also known as nominal flows and consist of the flow of money.

In the circular flow model the real flows and the money flows are in opposite directions.
Leakages and injections

It is also possible to distinguish between leakages (withdrawals) and injections in the circular flow model:

- **Leakages** – These are factors that cause a decline in the flow of spending, income and production. As you will see later in our open economic circular flow model the leakages are savings (S), taxes (T) and imports (M). These factors decrease the flow of money and the total spending in the economy. The leakages in the economy consist of savings, taxation and imports. These leakages reduce the flow of spending in the economy.

- **Injections** – These are factors that cause an increase in the flow of spending, income and production. In our open economic circular flow model the injections are investment (I), government spending (G) and exports (X).

The interesting thing to notice about these leakages and injections is that when the system is in equilibrium leakages are equal to injections. In other words, \( S + T + M = I + G + X \).

### 1.2 The open economy circular flow model

The open economy circular flow model for an open economy is also known as the four-sector model. To build this open circular flow model we will start with a two-sector model (consisting of households and firms), then build on to create a three-sector model (adding the government to the model). Finally we will arrive at the four-sector model (consisting of households, firms, government and the foreign sector).

#### 1.2.1 A two-sector model

The two-sector model is also known as a circular flow model for a closed economy without government. It is a two-sector model because there are only two sectors, namely households and firms. It is a circular flow model because it shows the relationship between the income, spending and production flows between households and firms. These flows take place through three markets, namely the factor market, the goods market and the financial market.

**Flows through the factor market**
Households are the owners of the factors of production (land, labour, capital and entrepreneurship) and they make these factors of production available to
firms through the factor market. This represents a real flow from households to firms.

Firms then use these factors of production to produce goods and services. In return for the use of the factors of production owned by households, firms pay households rent, wages and salaries, interest and profits. This is a money flow from firms to households. This money flow also represents the income flow in our model and is denoted by the symbol Y.

Note that the real flow and the money flow are in opposite directions.

Flows through the goods market
Households (H) use their income to buy goods and services produced by firms (F) on the goods market. This is called consumption spending by households and is denoted by the symbol C. This spending flow by households on goods and services presents a money flow from households to the firms.

In the opposite direction is a real flow of goods and services from firms, through the goods market, to households.

Flows through the financial market
Households, however, do not spend all their income on goods and services – they also save part of their income. This is called a savings flow. It is denoted by the symbol S and represents a money flow to the financial market.

In this particular circular flow model, the savings by households are then channelled through the financial market to firms in the form of loans. There is then a money flow from households to the financial market and from the financial market to firms.

Firms then use these funds to finance their investment spending (I). Firms spend money on building factories and manufacturing machines. So, this investment spending by firms represents a real flow to the goods market and a money flow from the financial market to firms.

Leakage and injection
In this two-sector circular flow model, there is one leakage and one injection. The leakage is the savings by households, because it decreases spending in the economy. Investment is the injection, because it increases spending in the model. When the system is in equilibrium leakages are equal to injections. In this model it is when \( S = I \).
**Spending, production and income flows**

In this two-sector model we can identify the flow of **total spending** (TS), **total production** (TP) and **total income** (TI).

The spending flow consists of the spending by households and firms. This spending is represented by consumption spending by households (C) and investment spending by firms (I). In symbols, we can write total spending as:

\[ TS = C + I \]

The production flow is the flow of goods and services produced by firms to the goods market. It consists of the consumer goods and services and **capital goods** produced by firms. The income flow is the flow of income in the form of rent, wages and salaries, interest and profits to households from firms.

These three flows take place simultaneously and are equal. What is spent on goods and services (TS) is equal to what is being produced (TP), which is equal to what is paid out as income (TI) to the factors of production that were used to produce the goods and services.

**A numerical example**

A numerical example of the different money flows in a two-sector model is given in Figure 1.3.

The total spending in the model is equal to:

\[ TS = C + I = 800 + 200 = 1000 \]

Since \( TS = TP = TI \), it follows that total production and total income are also equal to 1 000.

\[ Y = 1000 \]

Given the consumption (C) of 800 and an income (Y) of 1 000, it follows that the savings (S) in the model is:

\[ S = Y - C = 1000 - 800 = 200 \]
Savings (S) is a leakage and investment (I) is an injection:
Value of leakage = savings = S = 200
Value of injection = investment = I = 200

As you can see there is an equilibrium since S = I.

1.2.2 A three-sector model
By adding the impact of the government to our model, it becomes a three-sector model.

Adding government to our circular flow changes it as shown in Figure 1.4.

The government impacts the circular flow through government spending (G) and taxation (T).

The government provides goods and services to both households and firms. It provides us with roads, dams, schools, books, hospitals, medicines, law and order and various other government services.

It is on the goods market that the government buys goods and services. From the government to the goods market there is therefore a flow of money (a money flow), as the government pays for these goods and services. And there is a real flow as these goods and services flow to the government. As the government provides these goods and services to households and firms, there is a real flow of goods and services to households and firms.

Government also buys factors of production, mainly labour (services of teachers and government officials), from households on the factor market. There is therefore a real flow of factors of production from households to the government through the factor market. Government pays for these services and there is therefore a money flow from government to households through the factor market.

This spending by government is denoted by the symbol G. This represents an injection into our circular flow since it is part of the spending that is injected into the system. The more the government spends on goods and services and factors of production, the higher the spending, production and income in the system.

To finance its spending, the government uses different kinds of taxation, which is denoted by the symbol T. The main forms of taxation for government are income taxes, value-added tax (VAT) and tax on profits.
Income tax is a tax levied on the income of households and has an important impact on the consumption spending by households. Income tax decreases the income available to households. The consumption spending by households now depends on their disposable income \( \left( Y_d \right) \) that is, their income after paying income tax. In our circular flow model, some part of income paid to households flows to the government as a money flow in the form of income taxes.

Another tax paid by households is value-added tax (VAT). This tax is paid when households spend their income and there is therefore a money flow in the form of value-added tax from the households to the government.

A tax on profits is levied on the profits of firms. From firms to the government there is therefore a money flow in the form of tax on profits.

Since taxation \( (T) \) decreases the spending flow in the economy, it is regarded as a leakage.

What we can learn from this three-sector circular flow model is the following:
- The demand for goods and services in our economy consists of the spending by the participants and is equal to consumption spending by households plus investment spending by firms plus government spending. In symbols:
  \[ TS = C + I + G \]
- The three flows of spending, production and income are equal.
- There are two leakages, namely savings \( (S) \) and taxation \( (T) \).
  - There are two injections, namely investment spending \( (I) \) and government spending \( (G) \).
  - In equilibrium leakages are equal to injections.
    In other words \( S + T = I + G \).

A numerical example

Figure 1.5 gives a simplified numerical example of the different money flows. In this example we ignore value-added tax, tax on profits and the buying of factors of production by the government.

The total spending in the model is equal to:
\[ TS = C + I + G = 900 + 200 + 100 = 1200 \]

Since \( TS = TP = TI \), it follows that total production and total income are also equal to 1 200.
\[ Y = 1200 \]
Given an income ($Y$) of 1200 and taxes ($T$) of 50, it follows that:
$$Y_d = Y - T = 1200 - 50 = 1150$$

Given a consumption spending ($C$) of 900, savings is therefore:
$$S = Y_d - C = 1150 - 900 = 250$$

The leakages are savings ($S$) and taxation ($T$):
$$S + T = 250 + 50 = 300$$

The injections are investment ($I$) and government spending ($G$):
$$I + G = 200 + 100 = 300$$

### 1.2.3 The four-sector model (open circular flow)

By adding the foreign sector to our three-sector model we have a circular flow model of an open economy.

The foreign sector has an important impact on the factor, goods and financial markets and strong links exist between the foreign sector and the other participants, namely households, firms and government.

Households, firms and government buy goods and services from the foreign sector. These goods and services are called imports. Domestic firms sell goods and services to the foreign sector. These are called exports. The foreign exchange market is located in the financial market and it is on this market that the exchange rate is determined. There are also flows of funds between the foreign sector, firms and government as borrowing and lending takes place.

In our circular flow model, we simplify things and concentrate only on the flow of exports (denoted by the symbol $X$) and imports (denoted by the symbol $M$) through the goods market.

From the goods market to the foreign sector there is therefore a money flow that represents the payment for imports. In the opposite direction there is a real flow of the imported goods and services. From the foreign sector to the goods market there is a money flow of spending that represents the payment for exports. In the opposite direction there is a real flow of the exported goods and services from the goods market to the foreign sector.

What we can learn from this four-sector circular flow model is the following:
- The demand for goods and services produced in our economy consists of
the spending by the participants and is equal to consumption spending by households plus investment spending by firms plus government spending plus exports minus imports. Imports are subtracted because these are spending by domestic participants on goods and services we have not produced. In our model, part of the spending by households, firms and government is on imported goods and services and this must be subtracted. In symbols, the total spending on domestic goods is:

$$TS = C + I + G + (X - M)$$

- The three flows of spending (TS), production (TP) and income (TI) are equal.
- There are now three leakages, namely savings (S), taxation (T) and imports (M). Imports are a leakage because the more that is spent on imports, the less is spent on locally produced goods and the lower the total spending on goods produced domestically.
- There are three injections, namely investment (I), government spending (G) and exports (X). Exports are an injection because the more we export, the more goods and services we produce and the higher the spending, production and income.
- In equilibrium leakages are equal to injections. In other words $S + T + M = I + G + X$.

**A numerical example**

Figure 1.7 gives a simplified numerical example of the different money flows in a circular flow model for an open economy. In this example we ignore value-added tax, tax on profits and the buying of factors of production by the government.

The total spending in the model is equal to:

$$TS = C + I + G + (X - M)$$

$$= 850 + 200 + 100 + (100 - 120)$$

$$= 1130$$

Since $TS = TP = TI$, it follows that total production and total income are also equal to 1130.

$$Y = 1130$$

Given an income ($Y$) of 1130, and taxes ($T$) of 50, disposable income ($Y_d$) is:

$$Y_d = Y - T$$

$$= 1130 - 50$$

$$= 1080$$
Given the consumption (C) of 850 and disposable income (Y_d) of 1 080, it follows that the savings in the model is:

\[ S = Y_d - C \]
\[ = 1 \, 080 - 850 \]
\[ = 230 \]

The leakages are savings (S), taxation (T) and imports (M):

\[ \text{Leakages} = S + T + M \]
\[ = 230 + 50 + 120 \]
\[ = 400 \]

The injections are investment (I), government spending (G) and exports (X):

\[ \text{Injections} = I + G + X \]
\[ = 200 + 100 + 100 \]
\[ = 400 \]

1.3 From the circular flow model to a theory of the determination of output

How the level of production is determined in the economy is an important issue in macroeconomics. Our circular model can help us to find this out.

In this topic, we assume that the driving force of production is the total spending on domestically produced goods. This is because spending determines production, which in turn determines income, which in turn determines spending, and so on. A change in the level of production occurs if the level of spending increases or decreases. An increase in spending causes an increase in production, while a decrease in spending causes a decrease in production.

So, to understand changes in the level of domestic production, we need to understand the changes in spending on domestic production. When we look at the different flows, we see that spending on domestic goods consists of consumption spending by households (C) + investment spending by firms (I) + government spending (G) + (exports (X) – imports (M)). Imports are subtracted because this item is included in the consumption and investment figures.

We can use the following equation to express total spending (TS) on domestically produced goods and services:

\[ TS = C + I + G + (X - M) \]
Classroom activity 1.1 (21 marks)

1. Identify the different flows a, b, c, d, e, f, g, h and i. (9)

2. Calculate the missing values for flows d and a in the diagram in Question 1. (4)

3. Identify and calculate the leakages and injections. (8)

2. Markets

There are three main markets in the circular flow model, namely the:

1. factor market
2. goods market
3. financial market.

2.1 Factor market

The main purpose or role of the factor market in the circular flow model is to channel the services of the factors of production from the owners of these factors of production to the firms. The owners of the factors of production are the households. The factors of production are natural resources, labour, capital and entrepreneurship. It is through this factor market that households make the services of the factors of production they own available to firms. Firms then use these to produce goods and services. The flow represents a real flow.
Firms pay the households for the use of the factors of production. There is a flow of income in the form of rent (for natural resources), wages and salaries (for labour), interest (for capital) and profits (for entrepreneurship). This is a money, or nominal, flow.

The prices of the factors of production are determined in this market. In microeconomics, this entails the study of the factors that determine the supply of and demand for these factors of production. For example, it is the supply of and demand for labour that determines wages and salaries. Behind this supply of and demand for labour are factors such as the quantity and quality of labour.

Government, through its policies in education and training and through labour laws and regulations, has an important influence on events in this market. Similarly, policies for the distribution of land and the use of water will also have an important influence on the real and money flows through this market.

2.2 Goods market

Goods and services are exchanged for money in the goods market. Firms and the foreign sector supply goods and services (a real flow), and households, firms, government and the foreign sector buy these goods and services (a money flow).

There are thousands of different producers of goods and services, and millions of different consumers of these goods and services, in the economy. In macroeconomics, all of these different markets for goods and services, which include both producers and consumers, are grouped together under the heading of ‘the goods market’. In economics, this ‘grouping together’ is called aggregation.

In microeconomics, these markets are studied individually, such as the market for chicken, the market for petrol, the market for medical supplies and so on. Once again, this implies the study of the forces of supply and demand that determine the price and quantity supplied and demanded of these goods.

In the circular flow we are more interested in the aggregate flow of these goods and services and the factors that determine these aggregate flows. An important macro factor that determines the flow through this market is the total spending by households, firms, government and the foreign sector. The spending by these sectors is the money flow, while the flow of goods and services to these sectors is the real flow.

Government, through its taxation and spending policies, has an important impact on the flows through the goods market. If, for instance, government increases its spending, it increases the demand for goods and services and more goods and services will flow through this market. It can also use taxation to influence this market. An increase in taxation decreases the disposable income of households, resulting in lower consumption spending, which decreases the flows through this market. The use of spending and taxation by government to influence the flows through the goods market is called fiscal policy.
2.3 Financial market

In the financial market, which consists of the money and capital markets, funds from surplus units are channelled to deficit units in an economy.

Surplus units are those households and firms in an economy that do not spend all of their income. They are also called the savers in an economy. Deficit units are those households, firms and the government in an economy that are looking for more funds, for instance because they have overspent or because they need more money to invest. They are also called the borrowers in an economy.

Surplus units or savers deposit their surplus funds with financial institutions, such as banks. The institutions then use this surplus to lend money to deficit units that qualify for credit or a loan.

In a circular flow diagram, savings is a leakage from the spending and income flows – households are saving (leaking) rather than spending (injecting). But loans taken out by deficit units are an injection – firms are expanding their production capabilities and thus buying more factors of production. This increases the incomes of households, who can then buy more goods and services from other firms.

An important institution in the financial market is the central bank of a country. Through its regulations and monetary policy, it has an important impact on the flows.

In the financial market, we also find the foreign exchange market. In an open economy, foreign currencies are needed to finance transactions between countries. It is on the foreign exchange market that one currency can be exchanged for other currencies. Pulas are exchanged for rands, rands for dollars, dollars for euros,
euros for yen, yen for roubles, and so on. It is through the forces of supply and demand that the exchange rate for the rand is then determined in this market.

### Classroom activity 1.2 (12 marks)

Identify the real flows and the money flows through the factor market, the goods market and the financial market.

<table>
<thead>
<tr>
<th>Market</th>
<th>Money flow</th>
<th>Real flow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Factor market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goods market</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial market</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 3. National account aggregates and conversions

Households, firms and government need accurate and up-to-date information to make informed decisions. An important source of information is our national income accounts. Statistics South Africa and the South African Reserve Bank are responsible for compiling our national income accounts, which cover a wide range of areas. In this section, we will look at some of the important measures, such as gross domestic product, gross domestic expenditure and gross domestic income.

#### 3.1 Gross domestic product (GDP)

You have already learnt about the gross domestic product (GDP) in Grades 10 and 11. The GDP is the most important concept in our national accounts. It is the total market value of all final goods and services produced within the boundaries of a country in a particular period (usually a year). The GDP provides a measure of the level of production in an economy and of economic growth. It is a relatively simple concept to understand but a complex one to calculate.

Here is a summary of the important things to take note of when you deal with the gross domestic product of a country:

- GDP is a gross measurement, because it includes the total amount of goods and services produced. The measurement includes goods that replace goods that have depreciated or have worn out.
- GDP measures the goods and services produced inside the borders of a country by both its citizens and foreigners. So, it reflects the level of economic activity that is taking place in the country.
- GDP includes only final goods and services.
- GDP measures the production of new goods and services (also called current production) during a specified period. It is an annual flow, as it measures the value of goods and services produced over a year. A GDP of R60 billion implies that the South African economy produced R60 billion worth of final goods and services during a specific year.
• Total value is measured by expressing the value of production in terms of the prices of the various goods and services. GDP is usually valued at market prices, but it is also possible to value GDP by using basic prices or factor prices (also called factor income).
• Real GDP, or GDP at constant prices, is a measure of GDP in which the quantities produced are valued at the prices in a base year rather than at current prices. This is done to take the effect of inflation into account. Real GDP measures the actual physical volume of production.

3.2 Gross domestic expenditure (GDE)
Gross domestic expenditure (GDE) is the total value of spending on final goods and services within the borders of a country. GDE involves spending by households, firms and government on goods and services.

Part of the spending by households, firms and government within the borders of a country is on goods and services that are imported from the rest of the world (such as computers and DVD players). So, figures for GDE include spending on imports.

Spending on exports are excluded from the figures for GDE because exports represent expenditure that occurs outside of the borders of the country.

Gross domestic expenditure is divided into the following three expenditure components:
• final consumption expenditure by households (C)
• gross fixed capital formation (I)
• consumption expenditure by general government (G).

Gross domestic expenditure (GDE) = C + I + G

3.3 Gross domestic income (GDI)
Gross domestic income (GDI) measures the income earned by the factors of production in the production of the GDP of a country. It includes income such as rent, wages and salaries, interest and profits. This figure is calculated by using the income method for measuring gross domestic product.

Gross domestic income differs from gross national income because it measures what is happening to the income and living standards of all the people (both citizens and foreigners) within the borders of a country.

3.4 Measuring gross domestic product
Look at Figure 1.9. The three ways in which GDP can be measured are:
• income method
• production method
• expenditure method.
The income, production and expenditure methods of calculating the gross domestic product will only give the same result if the prices that are used in the calculations are the same.

There are three sets of prices in the world. These prices differ mainly because of taxes and subsidies. These different prices are:

- factor prices
- basic prices
- market prices.

3.4.1 Factor prices to basic prices

Factor prices to basic prices are used when GDP is calculated according to factor cost. In the national accounts, it consists of compensation of employees, net operating surplus and consumption of fixed capital (depreciation of the value of fixed assets). By adding these three items we get the figure for gross value added at factor cost.

Measuring output in terms of factor cost differs from using the production approach because of taxes and subsidies. Taxes that are paid by producers (such as payroll taxes and assessment rates) and subsidies that are paid to firms (such as a payroll or employment subsidy) are not reflected in the factor prices. To ensure that GDP according to factor cost is in line with GDP according to production, these
taxes must be added and subsidies subtracted. This gives us gross value added at basic prices.

Look at Table 1.1. This table shows the calculations that appear in the national accounts.

Table 1.1

<table>
<thead>
<tr>
<th></th>
<th>R millions 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation of employees</td>
<td>1 201 990</td>
</tr>
<tr>
<td>Net operating surplus</td>
<td>821 783</td>
</tr>
<tr>
<td>Consumption of fixed capital</td>
<td>350 982</td>
</tr>
<tr>
<td><strong>Gross value added at factor cost</strong></td>
<td><strong>2 374 755</strong></td>
</tr>
<tr>
<td>Other taxes on production</td>
<td>46 213</td>
</tr>
<tr>
<td><em>Less:</em> Other subsidies on production</td>
<td>8 478</td>
</tr>
<tr>
<td><strong>Gross value added at basic prices</strong></td>
<td><strong>2 412 490</strong></td>
</tr>
<tr>
<td>Taxes on products</td>
<td>263 988</td>
</tr>
<tr>
<td><em>Less:</em> Subsidies on products</td>
<td>15 044</td>
</tr>
<tr>
<td><strong>Gross domestic product at market prices</strong></td>
<td><strong>2 661 434</strong></td>
</tr>
</tbody>
</table>


3.4.2 Basic prices to market prices

Basic prices to market prices are used when the gross domestic product is calculated according to the production approach. The basic price of a product, however, differs from the price the user pays for it (the market price) if there is a tax or subsidy on the product.

A tax on the product will cause the market price to be higher than the basic price. For example, VAT on a product such as a can of cold drink implies that the price you pay for the cold drink is higher than the basic price of the cold drink. According to the accounts of the producer, the basic price of the can of cold drink (including the profit on it) might be R6,00 while the market price, which includes the VAT, is R6,84. So, the figure for GDP at market prices will be higher than the figure for GDP at basic prices. Taxes on products must therefore be added to basic prices to reach market prices. See the calculations in the national accounts in Table 1.1.

Subsidies that are paid on products cause the basic price to be higher than the market price. A subsidy paid by government on a loaf of bread means that the consumer pays a price that is lower than the basic price in the accounts of the producers. If the basic price of bread is R7 and the government subsidises this bread by 50 cents, the market price is R6,50. So, the figure for GDP at market prices will be lower than the figure for GDP at basic prices. Subsidies on a product must therefore be subtracted from GDP at basic prices to bring them in line with market prices. See the calculations in the national accounts in Table 1.1.
3.5 Expenditure method

The expenditure method uses market prices and the spending by the different sectors (households, firms, government and the foreign sector) to calculate gross domestic product at market prices.

**Table 1.2**

<table>
<thead>
<tr>
<th></th>
<th>R millions 2010</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final consumption expenditure by households</td>
<td>1 575 930</td>
</tr>
<tr>
<td>Final consumption expenditure by general government</td>
<td>573 470</td>
</tr>
<tr>
<td>Gross capital formation</td>
<td>517 009</td>
</tr>
<tr>
<td>Residual item</td>
<td>298</td>
</tr>
<tr>
<td><strong>Gross domestic expenditure</strong></td>
<td>2 666 707</td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>727 721</td>
</tr>
<tr>
<td>Less: Imports of goods and services</td>
<td>732 994</td>
</tr>
<tr>
<td><strong>Expenditure on gross domestic product (GDP at market prices)</strong></td>
<td>2 661 434</td>
</tr>
<tr>
<td>Primary income from the rest of the world</td>
<td>34 099</td>
</tr>
<tr>
<td>Less: Primary income to the rest of the world</td>
<td>87 022</td>
</tr>
<tr>
<td><strong>Gross national income at market prices</strong></td>
<td>2 608 511</td>
</tr>
</tbody>
</table>

These figures then reflect total spending on domestic goods:

\[ TS = C + I + G + (X - M) \]

3.5.1 National and domestic figures

While domestic figures tell us what is happening inside the borders of a country, national figures give us information about the position of the citizens of a country, no matter where they are in the world.

National figures are important if we want to know what is happening to the economic welfare of our citizens.

- **Gross domestic product (GDP)** is the measure of the value of the production that is taking place within the borders of a country.
- **Gross national product (GNP)** is the measure of the value of goods and services produced by the citizens of a country.

While these two measures are very similar, there is an important distinction. The GDP gives us a measure of what happens to physical production within a country, no matter who produces it. For example, Zimbabweans, Germans, and Americans who are living and working in South Africa also contribute towards South Africa’s GDP.

Gross national product (GNP) tells us something about the value of the goods and services produced by the citizens of a country, regardless of where in the world the production happens. Gross national income (GNI) gives us a measure of the income earned by South African citizens in South Africa and elsewhere in the world from the ownership of the factors of production.
To move from gross domestic product to gross national income, we must:
- subtract income earned by foreign-owned factors of production
- add all income earned by factors of production owned by South Africa in the rest of the world.

In the national accounts, this is done as follows:

Table 1.3

<table>
<thead>
<tr>
<th>Expenditure on gross domestic product (GDP at market prices)</th>
<th>2 661 434</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary income <em>from</em> the rest of the world</td>
<td>34 099</td>
</tr>
<tr>
<td>Less: Primary income <em>to</em> the rest of the world</td>
<td>87 022</td>
</tr>
<tr>
<td><strong>Gross national income at market prices</strong></td>
<td>2 608 511</td>
</tr>
</tbody>
</table>

3.5.2 Net figures

The figures in Table 1.3 are gross figures. The difference between gross figures and net figures is that in net figures, we make provision for depreciation. Depreciation reflects the wear and tear of capital goods. An adjustment is made to gross figures for the decrease in the value of capital goods that need to be replaced. This gives us a more realistic picture of the economic performance of the country.

**Classroom activity 1.3 (9 marks)**

1. Choose the correct answer in brackets to make the statement true: The GDP at market prices is equal to the GDP at basic prices (*plus subsidies minus taxes on products/minus taxes plus subsidies on products*). (2)

2. Study the following table of the national accounts of South Africa and answer the questions:

<table>
<thead>
<tr>
<th>R millions 2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation of employees</td>
</tr>
<tr>
<td>Net operating surplus</td>
</tr>
<tr>
<td>Consumption of fixed capital</td>
</tr>
<tr>
<td><strong>Gross value added at ____ (a) ____</strong></td>
</tr>
<tr>
<td>Other taxes on production</td>
</tr>
<tr>
<td><em>Less: Other subsidies on production</em></td>
</tr>
<tr>
<td><strong>Gross value added at ____ (b) ____</strong></td>
</tr>
<tr>
<td>Taxes on products</td>
</tr>
<tr>
<td><em>Less: Subsidies on products</em></td>
</tr>
<tr>
<td><strong>Gross domestic product at ____ (c) ____</strong></td>
</tr>
</tbody>
</table>

a) Provide the missing words for a, b and c.

b) Use the figures in the table to calculate the GNI at market prices if the factor payments from the rest of the world were R34 075 million and the factor payments to the rest of the world were R87 593 million.

4. The multiplier

4.1 Defining the multiplier effect

The multiplier is the process whereby an initial change in spending changes the level of output and income by more than the initial change in spending.

Behind the multiplier is the process whereby one person’s spending becomes another person’s income. This income then becomes that person’s spending, which becomes someone else’s income, and so on.

![Figure 1.10 The multiplier: Spending turns into income turns into spending turns into income](image)

If, for example, AB Manufacturers builds a new clothing factory in a town (in economics we refer to this as investment spending) some households living in the town will supply the firm with labour to build the factory. In return for their labour, the households will receive wages and salaries. Part of the investment spending by AB Manufacturers is now the income of households.

These households then use some of this income to buy goods and services from TJ Stores. Their spending is now the income of TJ Stores. TJ Stores then use this income to buy vegetables from the vegetable farmers. Their spending is now the income of the vegetable farmers. Due to the higher demand for vegetables, farmers employ more labour to work on the farms and more households receive an income. This increase in income then leads to more spending.

Some of the increased income that households receive might go towards spending on taxi fares to get to the factory building site and the vegetable
plots. This spending becomes the income of taxi owners and, because there is a higher demand for taxi transport, taxi owners will employ more drivers who are paid for their services. More households in the town are now employed.

What this example demonstrates is how an initial increase in spending – building a factory – leads to a multiplier effect on output and income in this town. The income not only of households who supply AB Manufacturers with labour has increased, but also the income of the shopkeepers, vegetable farmers, taxi owners and the households that these businesses employ.

4.2 The multiplier in the circular flow model

We can use the circular flow model to demonstrate the working of the multiplier in an economy. For this purpose, we will use a two-sector model consisting of households and firms.

![Circular flow diagram]

The multiplier process starts with an injection into the spending flow. In Figure 1.11, this is due to an increase in investment spending. In the open circular flow model, this can be the result of an increase in any of the injections, namely investment spending, government spending or exports.

Let’s assume that domestic firms increase their investment spending by R1 000. They do this by ordering capital goods to the value of R1 000 from domestic firms that specialise in the production of capital goods. In this case, we assume there are no capital imports.
Our total spending in the economy has increased by R1 000. Total production has increased by R1 000 (because the capital goods ordered by firms were produced by firms), which also leads to an increase of R1 000 in income. Note that the increase in spending is equal to the increase in production, which is equal to the increase in income.

Households then use this increase of R1 000 in income to increase their consumption spending (C). Households, however, do not increase their consumption spending by the whole amount – they save some part of it. Assuming that households save 20% of their income, out of an increase in income of R1 000 they will save R200 and increase their consumption spending by R800. So, the increase in consumption spending is 80% of the increase in income.

In economics, we refer to the 20% as the marginal propensity to save (denoted by a lower case s) and the 80% as the marginal propensity to consume (denoted by a lower case c).

What do you think domestic firms are going to do if households spend R800 more on domestic consumer goods? They will increase their production equal to the value of R800. As they produce more, they employ more factors of production and the income of households increases by R800.

It is important to realise that from an initial increase in spending of R1 000, total spending, total production and total income have increased by R1 000 (the initial spending) + R800 (increase in consumption spending) = R1 800. This is the multiplier process in action.

The process does not stop here. The increase of R800 in income leads to a further increase in consumption spending of $80\% \times R800 = R640$. This increase in consumption spending of R640 leads to a further increase in production and income of R640. The increase in total spending, production and income is now R2 440 and is made up as follows:

\[
\begin{align*}
\text{R 1 000} & \quad \text{(the initial spending)} \\
+ \text{R 800} & \quad \text{(increase in consumption spending in the first round)} \\
+ \text{R 640} & \quad \text{(increase in consumption spending in the second round)} \\
\hline
\text{R 2 440}
\end{align*}
\]

And the process continues. In the third round, the increase in income of R640 leads to a further increase of $80\% \times R640 = R512$ in consumption spending. This increase in consumption spending increases total spending, total production and total income by R512. The increase in total spending, production and income is now R2 952 and is made up as follows:
R 1 000 (the initial spending)  
+ R 800 (increase in consumption spending in the first round)  
+ R 640 (increase in consumption spending in the second round)  
+ R 512 (increase in consumption spending in the third round)  
**R 2 952**

And the process continues, but not indefinitely, due to the leakage that occurs. In this case, the leakage that occurs is the savings by households. Due to the savings by households, the subsequent increase in total spending becomes smaller each time. The process started off with an increase of R1 000 in investment spending, followed by an increase of R800 in consumption spending, which was followed by an increase of R640 and then an increase of R512. After every round, the increase in total spending becomes less.

It is possible to calculate the increase in spending, production and income that takes place if an injection occurs in the economy. In other words, it is possible to calculate the value of the multiplier.

What we have here is a geometric series:

\[
1 000 + (0,8 \times 1 000) + 0,8 \times (0,8 \times 1 000) + 0,8 \times (0,8 \times 0,8 \times 1 000) + \ldots
\]

The formula for the sum of this geometric series is: \[
\frac{1}{1-0,8} = 5\] which gives us the value of the multiplier.

The figure 0,8 in our example is the marginal propensity to consume (c), so we can write the formula for the value of the multiplier as \[
\frac{1}{1-c}
\].

In our example, the value of the multiplier is therefore \[
\frac{1}{1-0,8} = 5\]. What this value tells us is that if the increase in initial spending is R1, then total spending, total output and total income will eventually increase by R5. In our example, the initial increase of R1 000 will eventually lead to an increase of R5 000 in total output, spending and income.

Another way to consider the value of the multiplier is to look at the leakage that occurs. It is clear from the model that the reason why the multiplier does not continue indefinitely is the leakage in the form of savings. This leakage is captured by the marginal propensity to save (s), and in our example it is 20%, or s = 0,2. So, the value of the multiplier can be written as:

\[
\frac{1}{\text{leakage rate}} = \frac{1}{s} = \frac{1}{0,2} = 5
\]

From this, we can also conclude that the higher the leakage rate (or the more leakages there are in the economy), the lower the multiplier and the smaller the impact of an initial change in spending on the level of output and income.
Table 1.4 compares two scenarios.

**Scenario 1:** Marginal propensity to save \( s = 20\% = 0.2 \)
Marginal propensity to consume \( c = 80\% = 0.8 \)

**Scenario 2:** Marginal propensity to save \( s = 40\% = 0.4 \)
Marginal propensity to consume \( c = 60\% = 0.6 \)

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First round</strong></td>
<td>R 1 000</td>
<td>R 1 000</td>
</tr>
<tr>
<td>+ R 800</td>
<td></td>
<td>+ R 600</td>
</tr>
<tr>
<td><strong>R 1 800</strong></td>
<td></td>
<td><strong>R 1 600</strong></td>
</tr>
<tr>
<td><strong>Second round</strong></td>
<td>+ R 640</td>
<td>+ R 360</td>
</tr>
<tr>
<td></td>
<td><strong>R 2 440</strong></td>
<td><strong>R 1 960</strong></td>
</tr>
<tr>
<td><strong>Third round</strong></td>
<td>+ R 512</td>
<td>+ R 216</td>
</tr>
<tr>
<td></td>
<td><strong>R 2 952</strong></td>
<td><strong>R 2 176</strong></td>
</tr>
<tr>
<td><strong>Value of the multiplier</strong></td>
<td>( \frac{1}{1-c} = \frac{1}{1-0.8} = 5 ) or ( \frac{1}{s} = \frac{1}{0.2} = 5 )</td>
<td>( \frac{1}{1-c} = \frac{1}{1-0.6} = 2.5 ) or ( \frac{1}{s} = \frac{1}{0.4} = 2.5 )</td>
</tr>
<tr>
<td><strong>Final change</strong></td>
<td>( 5 \times R 1 000 = R5 000 )</td>
<td>( 2.5 \times R 1 000 = R2 500 )</td>
</tr>
</tbody>
</table>

What the scenarios show is that the higher the leakage, the lower the value of the multiplier and the smaller the impact of an initial change in spending on output and income.

### 4.3 The multiplier in a model with a government sector

When a government sector is added to the circular flow model, more leakages and injections occur.
- The leakages are savings (S) and taxation (T).
- The injections are investment spending (I) and government spending (G).

The impact of the additional leakage (taxation) to the model is that it lowers the value of the multiplier. Figure 1.12 demonstrates the reason for this.

The initial increase in investment spending of R1 000 increases the income of households by R1 000. Before the households can spend this increase in income on consumption, they must first pay their income taxes. Assuming that the tax rate \( t \) is 10% of their income, they must pay R100 to government, which leaves them with an increase in disposable income of R900. Assuming
further that their marginal propensity to consume is 0,8, they will increase their consumption spending by $0,8 \times 900 = R720$, which is less than in the case where there was no taxation.

\[
\frac{1}{1 - 0,8(1 - 0,1)} = 3,6
\]

Taxation decreases the value of the multiplier and an initial change in spending will have a smaller impact on the level of output and income. For every R1 increase in additional spending, output and income increase by R3,60.

**4.4 The multiplier in an open economy**

When a foreign sector is added to the circular flow model, the number of leakages and injections increases.
- The leakages are savings (S), taxation (T) and imports (M).
- The injections are investment (I), government spending (G) and exports (X).

The impact of the additional leakage imports (marginal propensity to import (m)) to the model is that it lowers the value of the multiplier.

The value of the multiplier is now: 
\[
\frac{1}{1 - c(1 - t) + m}
\]

Given the following values:
Marginal propensity to consume (c) = 0,8
Tax rate (t) = 0,1
Marginal propensity to import (m) = 0,2

The value of the multiplier is:
\[
\frac{1}{1 - 0,8(1 - 0,1) + 0,2} = 3,8
\]

For every R1 increase in additional spending, output and income increase by R3,80.
4.5 The multiplier effect in a graph

The multiplier effect can also be demonstrated using a graph. In Figure 1.13, the level of output and income in the economy is measured on the horizontal axis. On the vertical axis we measure the total spending in the economy.

The vertical intercept of the total spending curve $TS_1$ represents our initial spending in the economy, called autonomous spending. Autonomous spending is made up of the spending in the economy that is not influenced by the level of output and income. In a three-sector model it consists of autonomous spending by households, autonomous investment spending by firms and autonomous government spending.

This total spending curve slopes upwards, indicating that as the level of production and income increases, households increase their consumption spending, which increases total spending in the economy. So, the slope of this line captures the behaviour of households to increase their consumption spending as their income increases. The slope therefore indicates the marginal propensity to consume ($c$).

To demonstrate the impact of the multiplier, we start with a given total spending curve ($TS_1$). Given this total spending curve, there is a corresponding level of output and income, $Y_1$. An increase in autonomous spending, for instance an increase in investment spending or government spending, will shift the curve upwards, equal to the increase in autonomous spending. For example, if investment spending increases by R1 000, the curve shifts upwards by R1 000. We then have a new total spending curve ($TS_2$) and a new level of income and output, $Y_2$.

The multiplier effect is demonstrated by comparing the change in autonomous spending – the upwards shift on the vertical axis – with the change in output and income – the change on the horizontal axis. From this comparison, we can see that the vertical upwards shift is smaller than the change on the horizontal axis from $Y_1$ to $Y_2$. This demonstrates that an increase in autonomous spending has a multiplier impact on the level of output and income.

If investment spending increases by R1 000, the upwards shift is equal to R1 000. Given a marginal propensity to consume of 0.8, the increase in the level of output and income on the horizontal axis is equal to the multiplier:

$$
\left(\frac{1}{1-c}\right) \times \text{increase in investment spending} = \left(\frac{1}{1-0.8}\right) \times R1\ 000 \\
= 5 \times R1\ 000 \\
= R5\ 000
$$
What this multiplier demonstrates is that it is possible to use fiscal policy in the form of an increase in government spending to increase the level of output and income in the economy. An increase in government spending, which is an injection, will have a multiplier effect on the level of output and income. The same is true for an increase in exports. So, we can conclude that an injection will have a multiplier effect on the level of output and income.

Classroom activity 1.4 (14 marks)

1. Illustrate the impact of the multiplier by adding the missing values in the following circular flow model:

   ![Circular Flow Diagram](image)

   What this diagram demonstrates is that it is possible to use fiscal policy in the form of an increase in government spending to increase the level of output and income in the economy. An increase in government spending, which is an injection, will have a multiplier effect on the level of output and income. The same is true for an increase in exports. So, we can conclude that an injection will have a multiplier effect on the level of output and income.

2. Use the following diagram to show the multiplier effect in Question 1:

   ![Multiplier Diagram](image)

   What this diagram demonstrates is that it is possible to use fiscal policy in the form of an increase in government spending to increase the level of output and income in the economy. An increase in government spending, which is an injection, will have a multiplier effect on the level of output and income. The same is true for an increase in exports. So, we can conclude that an injection will have a multiplier effect on the level of output and income.
Households are important decision-makers in the economy. The way they behave will have an important impact on the economy, so their behaviour is closely monitored.

The following is an extract from the Annual Economic Report of 2011 by the South African Reserve Bank.

‘From an aggregate demand perspective, the major driving force behind the recovery has been final consumption expenditure by households. Real spending by households came from a low base, having contracted up to the middle of 2009, but has since risen at annualised rates of around 5 per cent. The recovery in households’ expenditure was especially strong in the area of durable goods such as motor vehicles. While lower interest rates have given indebted consumers a reprieve, rising real disposable income has been driving the expenditure, as opposed to a rapid increase in debt levels. Household debt has been rising moderately but disposable income has been increasing more forcefully, resulting in a declining household debt ratio. While the debt ratio remains high, its downward trend suggests more sustainable behaviour so far in the current phase of economic expansion.


Homework activity 1 (97 marks)

1. Indicate whether the following statements are true or false:
   a) The four sectors that influence the open circular flow of production, income and spending are the factor market, the goods market, the financial market and the foreign exchange market.
   b) In the factor market, funds from surplus units are channelled to deficit units.
   c) An increase in the flow of goods and services from firms to households also implies an increase in the flow of spending on goods and services from households to firms.
   d) An increase in injections increases the flow of spending, production and income.
   e) The gross domestic product provides a measure of the total value of final goods and services that are consumed within the borders of a country.
   f) If the real GDP of a country increases it means that the country produces more goods and services.
   g) Gross domestic expenditure includes the spending on imported goods and services.
   h) Expenditure on gross domestic product excludes exports and includes imports.
i) Value-added tax causes basic prices to be higher than market prices.

2 Answer the following questions:
   a) Given the following values, construct a circular flow model of production, income and spending for an open economy:
      Total production = 1 000 000
      Income taxes = 200 000
      Savings = 100 000
      Imports = 250 000
      Government spending = 150 000
      Investment spending = 200 000
      Exports = 200 000
   b) Identify and calculate the leakages and the injections.

3 Study the following table and answer the questions:

<table>
<thead>
<tr>
<th></th>
<th>2009 R millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compensation of employees</td>
<td>1 077 833</td>
</tr>
<tr>
<td>Net operating surplus</td>
<td>731 204</td>
</tr>
<tr>
<td>Consumption of fixed capital</td>
<td>332 584</td>
</tr>
<tr>
<td><strong>Gross value added at factor cost</strong></td>
<td>2 141 621</td>
</tr>
<tr>
<td>Other taxes on production</td>
<td>42 101</td>
</tr>
<tr>
<td>Less: Other subsidies on production</td>
<td>9 210</td>
</tr>
<tr>
<td><strong>Gross value added at basic prices</strong></td>
<td>2 174 512</td>
</tr>
<tr>
<td>Taxes on products</td>
<td>238 557</td>
</tr>
<tr>
<td>Less: Subsidies on products</td>
<td>14 914</td>
</tr>
<tr>
<td><strong>Gross domestic product at market prices</strong></td>
<td>2 398 155</td>
</tr>
<tr>
<td>Final consumption expenditure by households</td>
<td>1 460 911</td>
</tr>
<tr>
<td>Final consumption expenditure by general government</td>
<td>502 492</td>
</tr>
<tr>
<td><strong>Gross capital formation</strong></td>
<td>470 963</td>
</tr>
<tr>
<td>Residual item</td>
<td>−15 095</td>
</tr>
<tr>
<td><strong>Gross domestic expenditure</strong></td>
<td>2 419 271</td>
</tr>
<tr>
<td>Exports of goods and services</td>
<td>657 192</td>
</tr>
<tr>
<td><strong>Expenditure on gross domestic product (GDP at market prices)</strong></td>
<td>2 398 155</td>
</tr>
<tr>
<td>Primary income from the rest of the world</td>
<td>34 075</td>
</tr>
<tr>
<td>Less: Primary income to the rest of the world</td>
<td>87 593</td>
</tr>
<tr>
<td><strong>Gross national income at market prices</strong></td>
<td>2 344 637</td>
</tr>
<tr>
<td>Less: Imports of goods and services</td>
<td>678 308</td>
</tr>
</tbody>
</table>

a) What is the difference between gross domestic expenditure and expenditure on gross domestic product? (4)
b) What is meant by gross capital formation? (2)
c) In 2009 households received R_______ for the provision of labour to the economy. (1)
d) If factor prices are used to calculate the gross domestic product, then the gross domestic product was equal to R_______ in 2009. (1)
e) In 2009 the subsidies received by firms on production were R_____. (1)
f) In 2009 the taxes on products, for instance VAT, were R_____. (1)
g) In 2009 consumption spending by households was R_____. (1)
h) In 2009 the primary income South Africans earned from the rest of the world was (more/less) than the primary income we paid to the rest of the world. (1)
i) Explain why the expenditure on gross domestic product in 2009 was less than the gross domestic expenditure. (2)

4 Explain why an increase in exports has a multiplier effect on the domestic level of production and income. (7)

5 Explain what happens to the multiplier effect if there are more leakages. (5)

6 Discuss the three main markets in the circular flow model. (40)

Extra practice activity 1 (32 marks)

1 Indicate and explain whether the following variables are leakages or injections:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Leakage or injection</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Taxation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Government spending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(18)
Use the following data for South Africa to construct a circular flow model of an open economy:

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final consumption expenditure by households</td>
<td>1 575 930</td>
</tr>
<tr>
<td>Final consumption expenditure by general government</td>
<td>573 470</td>
</tr>
<tr>
<td>Gross capital formation</td>
<td>517 009</td>
</tr>
<tr>
<td>Residual item</td>
<td>298</td>
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</tr>
<tr>
<td><strong>Expenditure on gross domestic product</strong> (GDP at market prices)</td>
<td><strong>2 661 434</strong></td>
</tr>
</tbody>
</table>


### Summary

- An open circular flow model shows the flows of spending, production and income in an economy consisting of households, firms, government and a foreign sector.
- There are three leakages in an open circular flow model, namely savings, taxation and imports.
- There are three injections in an open circular flow model, namely investment, government spending and exports.
- Using the circular flow model, we can show how the different aggregate concepts, such as gross domestic product, gross domestic expenditure and gross national income, are measured and what they mean.
- Gross domestic product tells us something about the level of production within the borders of a country. We can measure gross domestic product in three different ways: as spending, as production or as income. In the real world, however, we must take taxes and subsidies into account, which cause market prices, basic prices and factor prices to differ.
- Gross domestic expenditure tells us something about the spending patterns of households, firms and government in a country. It includes spending on imports but excludes spending on exports.
• Gross national income tells us what is happening with the income of the citizens of a country. It is an important measurement of the economic welfare of the citizens of a country.

• The multiplier is the process whereby an initial change in spending changes the level of output and income by more than the initial change in spending.

• The size of the multiplier depends on the number of leakages in the system. The more the leakages in the system, the smaller the multiplier will be.
What you will learn about in this topic

- The composition and features of business cycles.
- Explanations.
- Government policy.
- The new economic paradigm (smoothing of cycles).
- Features underpinning forecasting with regard to business cycles.

Let’s talk about this topic

- Have you ever wondered why the level of economic activity goes up and down?
- How does an economic recession impact on your household?
- What can we do about the ups and downs of economic activity?
What you know already

Our economy is characterised by fluctuations (ups and downs) in the level of economic activity. This can be the result of a change in consumer spending, investment spending, government spending and spending by the foreign sector. This results in changes in our real gross domestic product and sometimes these changes can be quite dramatic.

To deal with this instability, policy-makers can make use of fiscal and monetary policy.

Check myself

1. What is the impact of an increase in exports on total spending, total production and total income?
2. Distinguish between fiscal policy and monetary policy.

Word bank

**Business cycle** is the recurring fluctuations (ups and downs) in economic activity, relative to the economic trend value.

**Coincident indicators** are indicators that provide us with a picture of the current state of the economy. Examples are the gross domestic product, value of wholesale, retail and new vehicle sales, utilisation of production capacity and employment in certain sectors. These indicators change at the same time and in the same direction as the economy.

**Contraction phase** is the downward phase of the business cycle. During this phase, spending declines, gross domestic product falls, employment decreases, business confidence declines and income falls.

**Demand-driven business cycle** is caused by a change in the spending components \( C + I + G + (X - M) \). Changes in any of these components cause changes in the demand for goods. As a result, production and income in the economy change.

**Depression** refers to a sustained, long-term economic downturn in the business cycle that is more severe than a recession.

**Endogenous approach** (also called the Keynesian approach) states that business cycles cause the inherently unstable nature of market economies.

**Endogenous factors** are an inherent part of the economy, unlike factors that impact from outside the economy.

**Exogenous approach** (also called the classical approach) states that the causes of business cycles are exogenous forces, not forces inherent in a market system, and inappropriate government policies.

**Exogenous factors** occur from outside, and then impact on the economy.

**Expansion phase** occurs when economic activity rises. This is reflected in an increase in spending, gross domestic product and employment.
Fiscal policy refers to the government spending and taxation used to influence the demand for goods and services in the economy.

**Investment-driven business cycles** are caused by the investment behaviour of businesses in the economy and by the expectations of business people.

**Juglar business cycles** are cycles of 8–11 years where prosperity is usually followed by a crisis, which causes the liquidation of businesses and eventually a recession follows.

**Kitchin business cycles** are short cycles of 3–5 years, also known as inventory cycles.

**Kondratieff business cycles** are very long business cycles of 40–60 years that are characterised by periods of high sectoral growth, followed by periods of slow growth.

**Kuznets business cycles** are long business cycles of 15–25 years, also known as infrastructural investment cycles.

**Lagging indicators** are indicators that lag behind the business cycle, for example hours worked in the construction sector, employment in the non-agricultural sector and labour costs in the manufacturing sector.

**Leading indicators** are indicators that precede the business cycle, for example building plans passed, opinion surveys and job advertisements.

**Monetary policy** refers to the policy of the central bank to influence the demand for goods, by changing the availability and cost of money, and credit in the economy, through changing the interest rate.

**Peak** is the point where the economic expansion is at its highest. It is followed by a contraction.

**Political business cycle** is caused by the behaviour of politicians who try to win votes through manipulating the economy.

**Prosperity phase** refers to the portion of the expansion phase of the business cycle during which the level of economic upswing accelerates.

**Recession** refers to a decline in the level of economic output (a downturn in the business cycle) that lasts for six months or longer.

**Recovery phase** refers to the portion of the expansion phase of the business cycle that occurs directly after the business cycle reaches a trough and the level of economic activity starts to gradually increase.

**Supply-driven business cycle** is caused by a change in one of the determinants of the aggregate supply of goods and services (such as natural resources, labour, technology and capital).

**Trend line** is a line on a graph that indicates a statistical trend. In the case of the business cycle, the trend line represents the long-term growth potential of the economy.

**Trough** is the point where the economic contraction is at its lowest. It is followed by an expansion.
What you still need to know

1. Composition and features of business cycles

Fluctuations in the level of economic activity are part of our lives and influence all of us in some way or another:

- An increase in the level of economic activity makes it easier for people to find jobs and gives households more money to spend.
- On the other hand, a decline in economic activity makes it harder to find a job and can even cause people to lose their jobs.

Economists have been studying these ups and downs in the level of economic activity for centuries. Some of the issues around economic activity that economists have been trying to explain require them to ask questions such as:

- What are the causes of these ups and downs?
- What can be done to smooth these ups and downs?
- What is in store for us in the future?

In this topic, you will learn about the nature and causes of business cycles. You will look at what can be done about business cycles and you will discover the problems involved in forecasting them.

1.1 Composition of business cycles

The data on economic activity for South Africa shows that it is not a smooth process. An increase in economic activity is usually followed by a decrease in economic activity, which is in turn followed by an increase in economic activity.

These recurring ups (expansions) and downs (contractions) of economic activity are known as the business cycle.

The business cycle trends are long-term trends. One complete cycle typically lasts from three to five years, but could last ten years or even longer.

1.2 Features of business cycles

Let us take a closer look at the different features of a business cycle and at how one phase follows another.

1.2.1 Four phases of the business cycle

The business cycle is divided into four phases as illustrated in Figure 2.1:

Recession phase
This is indicated from point a to point b in Figure 2.1.

Depression phase
This is indicated from point b to point c in Figure 2.1. During the recession phase and the depression phase the level of economic activity contracts and it is also referred to as the contraction period (point a to point c).
Recovery phase
This is indicated from point c to point d in Figure 2.1.

Prosperity phase
This is indicated from point d to point e in Figure 2.1. During the recovery phase and the prosperity phase economic activity expands and it is also referred to as the expansion period (point c to point e).

1.2.2 Peaks and troughs
We can also distinguish between points, namely peaks and troughs.

Peaks
The prosperity phase and expansion period come to an end once a peak is reached. At the peak of the business cycle the economy uses most, if not all, of its resources, such as skilled labour and capital. Following a peak is the recession phase and contraction period. In Figure 2.1 the peaks are indicated as points a and e.

Troughs
The depression phase and contraction period come to an end once a trough is reached. At the trough of the business cycle the level of economic activity is low and resources are underutilised. The trough is a turning point after which the economy begins to recover as the recovery phase and expansion period start. In Figure 2.1 the troughs are indicated as points c and f.

1.2.3 The trend line
In general terms, the trend line represents the long-term economic growth potential of the economy of a country. There are a number of statistical techniques available that can be used to draw a trend line. The trend line is the dotted line shown in Figure 2.1. In this case it is upward sloping indicating that the production potential of the economy is growing over time.

1.2.4 The amplitude of the business cycle
The amplitude of the business cycle is the maximum deviation from its trend. In Figure 2.1 this can be indicated by the distance between the peak or trough and the trend line. For instance, the deviation from the trend is given by the distance between point f and point g. If you compare this distance with the distance between point c and the trend line, you can see that the amplitude differs. This is due to the change in the underlying forces, and the size of the changes experienced.
1.2.5 Duration of a business cycle

A complete business cycle consists of the two periods, namely the contraction period and the expansion period. It can either be measured from peak to peak (point a to point e) or trough to trough (point c to point f). The duration of this cycle depends on how long these periods last and can either be long or short.

1.3 Explanation of the different phases

1.3.1 Recession phase

Figure 2.2 The level of economic activity decreases and spending by firms decreases during a recession phase.

Once the peak is reached, the recession phase starts. During the recession phase of the business cycle the level of economic activity starts to decrease and the level of real GDP falls.

This decline in economic activity implies that fewer goods and services are produced and consequently firms employ fewer factors of production. As firms employ fewer factors of production, the income of households falls and their spending on goods and services declines. The decline in spending by households leads to a further decline in production and the recession gets worse.

During the recession phase firms retrench workers and unemployment rises. Firms also find it more difficult to sell their goods and services and inventories rise. Due to this, unemployment increases in the labour market and wages tend to rise at a lower rate or they may even fall. In the goods market prices of goods and services will also rise at a lower rate and inflation will be lower.

The level of business confidence declines and it is more difficult for firms to find the necessary funds to finance their businesses. Consequently, firms decrease their investment spending. This leads to a further decline in economic activity. The risk of bankruptcy also increases during the recession phase.

Due to the lower income of households and higher unemployment, households lose confidence and consequently decrease their spending, thereby worsening the economic situation.

1.3.2 Depression phase

As the recession phase continues and the situation becomes more severe, it
might result in a depression. A significant fall of about 25% of the real GDP is experienced and unemployment rises sharply. This is a sustained, long-term economic downturn in the business cycle.

Due to this, depressed conditions in the labour and the goods markets prevail, and wages and prices fall. Inflation not only declines but deflation, that is a decrease in the price level, is also a possibility.

More and more firms close their doors and bankruptcy rises. Business expectations and confidence turn very negative and very little, if any, investment takes place in the economy.

The income of households continues to decline and they experience an increase in unemployment. This in turn leads to heightened pessimism and lower spending.

This depression phase comes to an end once a trough is reached.

Fortunately, economic depressions are a rare occurrence and the last time South Africa and the major economies of the world experienced an economic depression was in the 1930s. Since then we have been able to stave off economic depressions by the use of fiscal and monetary policies.

1.3.3 Recovery phase

The recovery phase starts once a trough (a lower turning point) in the business cycle is reached. During the recovery phase the level of economic activity gradually increases. In other words, more goods and services are produced, which results in an increase in real GDP.

As the level of economic activity increases more goods and services are produced. Consequently, more factors of production are employed by firms and unemployment will start to decrease.

Households will find that their income increases and they will increase their spending on goods and services. This causes a further increase in production, spending and income. Confidence levels of households increase and pessimism turns into optimism.
Due to this increase in economic activity and increased spending, the sales of firms increase and their levels of confidence also rise. It is also easier for firms to secure bank credit and increase their investment spending.

1.3.4 Prosperity phase

During the prosperity phase the level of economic activity increases and even accelerates. The production of goods and services continues to rise and the real GDP increases.

As the prosperity phase gets underway the levels of confidence by households and firms continue to increase, causing an increase in spending, production and income. Households increase their consumption spending while firms increase their investment spending.

During the prosperity phase unemployment continues to decrease and firms experience an increase in sales. Pressures now build up in the labour and goods markets. In the labour market these pressures lead to an increase in wages, while in the goods market prices rise and inflation is the result.

During the prosperity phase we also find that imports increase substantially, causing changes in the exchange rate. The prosperity phase comes to an end once a peak is reached (the upper turning point of the business cycle).

1.4 Actual business cycles in South Africa

Look at Figure 2.4. From the data on past business cycles in South Africa, we see that there are no simple patterns. Some cycles are long and others are short, some cycles are mild and others are severe.

The longest business cycle in South Africa, if measured from trough to trough, started in March 1986, reached a peak in February 1989, and ended in a trough in May 1993 – a total period of 86 months.

The shortest contraction phase lasted seven months, starting in June 1967 and ending in December 1967, while the longest contraction phase lasted 51 months, starting in March 1989 and ending in May 1993.

The shortest expansion phase lasted 15 months, starting in April 1983 and ending in June 1984, while the longest expansion phase lasted for 99 months, starting in September 1999 and ending in November 2007. The end of that expansion phase was caused by the international financial crisis that originated in the USA.

Classroom activity 2.1 (16 marks)

1. Discuss how you think your household will be affected by the following:
   a) the expansion phase of the business cycle
   b) the contraction phase of the business cycle.

2. What is the purpose of a trend line in a business cycle?

3. What can cause the expansion phase to reach a peak? Explain.

4. Discuss the impact that a huge investment project can have on the business cycle.

2. Explaining the business cycle

It is not easy to identify the causes of business cycles. One problem is that the business cycle is also influenced by human decisions and actions. These cannot be explained on the grounds of a single model or theory. However, models and theories do help to give us some understanding of the causes of business cycles.

2.1 Exogenous (monetarist) approach

One view is that business cycles are caused by exogenous factors and not by factors that are inherent in the market system. Exogenous factors are factors that originate from outside the domestic economic system.

Examples are:
- technology shocks
- weather and natural disasters
- political shocks
- taste shocks.
These exogenous factors can act as a trigger mechanism for a contraction or expansion.

Technology shocks, which change the process of production, might bring about changes in productivity and could cause some disruption to the process of production.

Many sectors, such as agriculture and tourism, are influenced by the weather. A change in weather patterns might have negative consequences for these sectors, which can spill over into other sectors of the economy.

Changes in fashions, tastes and preferences of consumers can have an impact on the clothing and entertainment industries.

The classical and monetarist schools support the exogenous approach to the business cycle. They work from the basis that the market economy is inherently stable and that if markets are allowed to do what they are supposed to do, then the business cycle will not be a prominent feature of the economy.

They argue that when exogenous factors occur, they do cause instability and markets will respond in an appropriate way to ensure that economic stability is reached fairly soon. This, however, depends on how free markets are.

An important cause of business cycles, according to the monetarist approach, is inappropriate policies by the government and monetary authorities. They view the cause of most of the economic instability as the incorrect use of monetary policies – by increasing the money supply too fast or too little.

### 2.2 Endogenous (Keynesian) approach

Another view is that business cycles are caused by endogenous factors. These are factors that are inherent in the economy. The expansion phase also contains the seeds that eventually cause a contraction of economic activity.

According to this view, a market system is inherently unstable and the level of economic activity tends to fluctuate quite dramatically sometimes. So, the level of economic activity tends to be either above or below the potential of the economy.

This is the result of a failure of the price mechanism in a market economy to ensure stability. This might be due the inflexibility of markets where prices are not flexible enough to ensure that demand equals supply. Market failure therefore occurs. Another contributing factor might be fundamental uncertainty that makes decision-making very difficult in the economy.

According to the endogenous approach, as the level of economic activity increases, the total spending in the economy increases as well. This causes an increase in imports, which negatively...
affects the balance of payments and leads to a depreciation of the exchange rate and an increase in the interest rate. These factors then impact negatively on the economy and a slow-down occurs. Or it might be that the increase in total spending leads to an increase in inflation, which negatively impacts on the level of economic activity.

Our perceptions about the future also play an important role in influencing the business cycle. If consumers and business people have positive expectations about the future, they tend to spend more. The increased spending influences the business cycle. On the other hand, if consumers and business people have negative perceptions, they tend to spend less. This might cause a contraction or a delay in the expansion phase. The expectations we have of the future might not be based on facts but on our subjective perceptions of things.

Since the cause of the business cycle is the inherent instability of the market system, people who follow this approach see the government as having an important role in smoothing the cycles through fiscal policy and monetary policy.

2.3 Kinds of business cycles

There are seven kinds of business cycles:
- supply-driven business cycles
- demand-driven business cycles
- political business cycles
- Kitchin business cycles
- Juglar business cycles
- Kuznets business cycles
- Kondratieff business cycles.

2.3.1 Supply-driven business cycle

In a supply-driven business cycle, the cause of the business cycle lies in sudden changes in macroeconomic supply factors. These are factors such as natural resources, labour, technology and capital. In the long term, changes in the availability and prices of these factors are to be expected. It is possible to deal with these long-term changes. However, if there is a sudden change in one or more of these factors, this might cause a fair amount of instability in the short run.

For example, think about a sudden large decrease in the quantity of oil and a sharp increase in its price:
- The decrease in the supply of oil will cause an economic contraction to set in.
- An increase in the price of oil (caused by the decrease in supply) causes an increase in the cost of production.
- As the cost of production increases the following occurs:

Figure 2.7 An increase in the price of oil signals a decrease in supply, which can ultimately cause an economic contraction.
Inflation starts to rise.

Households are unable to buy the same amount of goods and services and they reduce their total spending in the economy.

Firms react to this decline in total spending by producing fewer goods and services.

As a result, unemployment rises and income in the economy decreases further.

Business sentiment declines and many firms decide to postpone their investment plans, which causes a further decline in total spending.

As a result of the lower income in the economy, the government receives less revenue in the form of taxes and might decide to decrease its spending accordingly.

The economy is now heading for a recession.

2.3.2 Demand-driven business cycle (Keynesian view)

A demand-driven business cycle occurs more frequently than a supply-driven business cycle. In a demand-driven business cycle the cause of the business cycle is found in changes in total spending. This can be as a result of a change in consumption spending by households, investment spending by firms, government spending or foreign sector spending.

A typical demand-driven business cycle in South Africa might, for instance, start when the economic growth rates of our main foreign trading partners rise. An increase in their economic growth rates increases our exports to them and the total spending on our goods then increases. This means that an injection into the circular flow has occurred. As the demand for our exports increases, domestic firms produce more goods. They therefore employ more factors of production and the income of households increases. This leads to a rise in consumption spending and a further rise in production and income. The multiplier effect is in operation and the expansion phase of the business cycle is on its way.
Many economists see changes in investment spending as an important cause of business cycles. They argue that investment-driven business cycles can be classified as a separate category.

The decision to invest is a complicated affair and has much to do with the profits that can be made in an uncertain future. As entrepreneurs’ expectations of the future change, their investment behaviour will change:
- A sudden surge in optimism from entrepreneurs will cause a noticeable increase in investment spending in the economy:
  An injection takes place in the circular flow of spending, production and income. → This increases the level of economic activity. → An upswing will occur in the business cycle.
- A more pessimistic attitude from the entrepreneurs has the opposite effect:
  Investment spending drops (leakage from circular flow). → This decreases the level of economic activity. → A contraction phase will begin in the business cycle.

2.3.3 Political business cycle

The political business cycle occurs when government tries to manipulate the economy in order to win votes during an election year. According to this view, during an election year governments will try to stimulate the economy through expansionary fiscal and monetary policies. In the short run, it is possible to implement tax cuts that benefit taxpayers, increase government spending for special interest groups and decrease the interest rate.

These actions will cause an increase in total spending in the economy and impact on the business cycle. However, after the election, the government will have to reverse some of its decisions because some of their actions might have negative consequences for the economy, such as rising inflation, increased debt and balance of payments deficits. These actions will then impact on the business cycle and contribute to increased instability in the economy.

2.3.4 Kitchin business cycle

The Kitchin business cycle is named after Joseph Kitchin, a British businessman and statistician. It is also known as the inventory cycle. The Kitchin business cycle is a relatively short business cycle of about 3–5 years. According to this view of the business cycle, firms do not know when to start decreasing or increasing their production. As economic activity accelerates during the prosperity phase, firms tend to overproduce and end up with an increase in their inventories. This might then lead to production slowing down.

2.3.5 Juglar business cycle

The Juglar business cycle is named after Clement Juglar, a French doctor and statistician. This is a long business cycle of about 8–11 years where fixed
investment by firms is considered responsible for the cycle. In this business cycle prosperity is usually followed by a crisis, which causes the liquidation of businesses and eventually a recession follows.

2.3.6 Kuznets business cycle

The Kuznets business cycle is named after Simon Kuznets, a Russian–American economist. This is a long business cycle of 15–25 years. In this model, business cycle fluctuations are caused by the development of infrastructure investment. This is why this model is sometimes called the infrastructural investment cycle.

2.3.7 Kondratieff business cycle

The Kondratieff business cycle, also known as the K-Wave or Supercycle, was developed by Nikolai Kondratieff, a Russian economist. This is a very long business cycle lasting 40–60 years. The cycle is characterised by periods in which high sectoral growth takes place, followed by periods of slow growth.

Classroom activity 2.2 (7 marks)

1. In 2010 a tsunami hit Japan, causing extensive damage to towns and cities, as well as to some of Japan’s nuclear power stations. After these events, Japan’s economy experienced a recession. Was this recession due to exogenous or endogenous factors? Briefly explain your answer. (3)

2. Briefly explain what the impact of an economic crisis in Europe might be on the South African business cycle. (4)

3. Government policy and the business cycle

Since the Great Depression and the publication of The general theory of money, interest and employment by John Maynard Keynes, governments all over the world have tried to smooth or stabilise business cycles by actively intervening in the economy through fiscal policy and monetary policy. This kind of action is also referred to as ‘fine-tuning’ the economy. The important instruments listed in Table 2.1 are at the government’s disposal.

Table 2.1 Instruments of fiscal and monetary policy

<table>
<thead>
<tr>
<th>Fiscal policy instruments</th>
<th>Monetary policy instrument</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taxation Government spending</td>
<td>Interest rate</td>
</tr>
</tbody>
</table>
3.1 Using expansionary policy

When economic activity slows down during a contraction phase, the government can use its fiscal and monetary policy instruments to stimulate the level of economic activity.

If you look at the circular flow model in Topic 1, you will see that if the government decreases taxation, households have more disposable income. Households’ consumption spending also increases. So, an injection into the flow of spending, output and income takes place and the level of economic activity increases.

By increasing its spending, government causes a further injection into the flow of spending, output and income. The level of economic activity will increase.

Decreasing the interest rate reduces the cost of borrowing money. Households and firms can then borrow more and spend more. This increased spending increases the level of economic activity.

3.2 Using contractionary policy

During the expansion phase, the economy might overheat (it grows too fast in relation to its capacity). So, something must be done to decrease the level of economic activity. This requires an increase in taxation, a decrease in government spending and an increase in the interest rate. These policy measures will cause the total spending to decrease and the level of economic activity to decline.

Classroom activity 2.3 (6 marks)

Which of the following policies would you advise government to undertake during the:
- downward phase of the business cycle
- upward phase of the business cycle?

<table>
<thead>
<tr>
<th>Decrease taxation</th>
<th>Increase taxation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase government spending</td>
<td>Decrease government spending</td>
</tr>
<tr>
<td>Increase interest rates</td>
<td>Decrease interest rate</td>
</tr>
</tbody>
</table>

4. The new economic paradigm

These kinds of expansionary and contractionary policies were very popular and seemed to work until the late 1960s. Today there is less emphasis on trying to smooth the cycle and more emphasis on providing stability. This new approach is referred to as ‘the new economic paradigm’.

In the new paradigm, government focuses less on fine-tuning and more on eliminating uncertainties with regard to fiscal and monetary policy.
One of the problems of fine-tuning is to know what to do when. We do not have perfect knowledge about how the economy functions. So, it is difficult to pinpoint what is wrong and what the causes of the problems are. Even if we know what is wrong, it may be too late to take action. For example, by the time the government realises that the economy needs an injection in the form of lower taxation, a trough could have been reached already and the recovery phase may have started. Implementing such a policy at such a time might be more harmful to the economy than doing nothing at all.

The other problem with fine-tuning is that any policy action takes time to implement and once implemented, it takes time to impact on the economy. By the time its impact is felt on the economy, it may no longer be needed. This might once again do more harm than good.

There is also the view that, in many instances, the causes of the business cycle are inappropriate actions of government. So, government should rather stick to a stable and predictable policy to enhance the stability of the economic system.

Since fine-tuning seems to be problematic, the view is that government should rather concentrate on the long term by developing stable, credible and predictable macroeconomic policies. Doing this will ensure that there is more certainty about the government’s intentions, making planning for the future easier in the private sector. This will contribute to economic stability.

**Classroom activity 2.4 (3 marks)**

Name three problems associated with the use of fiscal and monetary policy to fine-tune the economy.

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5. Features of forecasting in business cycles

Accurate prediction is not possible in economics. If it were possible, all economists would be very rich. The best economists can do is to try to forecast what might happen with certain economic variables. They may be able to forecast, for example, that a certain type of spending will increase, but they can never tell exactly by how much. This is also true of forecasting business cycles. There are many techniques available to help economists to forecast business cycles. Business cycle indicators are grouped into three categories: leading, coincident and lagging indicators.

5.1 Leading indicators

Leading indicators are economic indicators that change before the economy has changed. They tell us something about what the economy will look like in a few months’ time. When leading indicators rise, it means the level of economic activity will also rise in a few months’ time.
In Figure 2.10, the dotted line indicates the change in economic activity in terms of the leading indicators. Note how the leading indicators lead (happen before) the actual business cycle.

In South Africa, the leading indicators of the business cycle are:
- opinion surveys on the volume of orders in manufacturing
- opinion surveys of stocks in relation to demand for manufacturing and trade
- the composite leading business cycle indicator of major trading partner countries
- commodity prices in US dollars for a basket of South Africa’s export commodities
- real M1 money supply
- prices of share categories
- the number of residential building plans passed
- labour productivity in manufacturing
- job advertisements in the Sunday newspapers
- the average number of hours worked per factory worker in the manufacturing sector.

For example, think about the number of residential building plans passed. If this number increases, it means that people intend to build more houses. So, you can expect that the building sector and other related sectors will show increased growth in a few months’ time when these houses are being built.

Let’s look at another example. If the business cycle indicator of major trading partner countries (a leading indicator) shows that a decline in economic activity is expected in these countries, we will probably export less to them. The level of activity for the export sector in our economy will decrease.

5.2 Coincident indicators

Coincident indicators give us information about the current state of the economy. This is because they vary at the same time as the economy and because of changes in the economy. A contraction in the economy causes a decline in these indicators, while an expansion causes a rise in these indicators.

The coincident indicators for the South African economy are:
- gross value added at constant prices, excluding agriculture, forestry and fishing
- value of wholesale, retail and new vehicle sales at constant prices
- use of production capacity in manufacturing
• total formal non-agricultural employment
• industrial production index.

For example, an increase in the sales of new vehicles would indicate that the economy is in an expansion phase. This is because vehicle production accounts for more than 7% of South Africa’s gross domestic product.

From the current phase of the business cycle we can also form an opinion of what is happening with these coincident indicators. For instance, if the business cycle is at its peak, economists also expect that retail sales are at a peak.

5.3 Lagging indicators

We get a picture of what was happening in the economy from lagging indicators, because these are indicators that change after the economy has changed.

Examples of lagging indicators are:
• employment in the non-agricultural sectors
• hours worked in construction
• real investment in machinery and other investment
• unit labour cost in manufacturing.

From the current phase of the business cycle we can predict, for instance, what will happen to real investment. If the business cycle is in a downward phase, economists expect that real investment will decline.

5.4 Extrapolation

Extrapolation is a technique that economists use to predict the future by using past data. Look again at Figure 2.1 on page 41. The trend line indicates the general direction of the economy. Extrapolation involves the extension of the curve while we assume that the structural variables in the economy will be largely unchanged and that the other variables will behave in the same way as in the past. According to the trend line in Figure 2.1, the economy is growing (because the trend line slopes upwards).

Extrapolation can also be used to indicate what might happen in the next few months. Once we know that we have gone through a trough, we can predict that the level of economic activity will increase in the next few months.

While this looks sensible at first glance, extrapolation has a definite flaw. This is because in economics, past behaviour is not necessarily a good indicator of future behaviour. So, using extrapolation to predict economic behaviour has proven to be very unreliable.
5.5 Moving averages

Moving averages are used to minimise the effect of short-term fluctuations. The aim is to highlight the long-term movements when dealing with time series data (observations of a variable made over time) in economics. Applying moving averages to the business cycle reduces the impact of random events and reveals underlying trends. This smooths the business cycle.

Classroom activity 2.5 (9 marks)

Indicate whether the following indicators are leading indicators, coincident indicators or lagging indicators:

a) real M1 money supply
b) the number of residential building plans passed
c) hours worked in construction
d) unit labour cost in manufacturing
e) use of production capacity in manufacturing
f) real investment in machinery and other investments
g) total formal non-agricultural employment
h) prices of shares
i) value of wholesale, retail and new vehicle sales at constant prices

The business cycle is a feature of our economy and influences all of us in one way or another.

The following is an extract from the Annual Economic Report of 2011 by the South African Reserve Bank.

In South Africa the business cycle reached a lower turning point in August 2009. The recovery that followed was well synchronised with the global economic cycle. In the subsequent six quarters activity strengthened in all the main sectors of the economy, albeit from a low base. A contraction of 1,7 per cent in real gross domestic product in 2009 made way for an expansion of 2,8 per cent in 2010, with annualised growth rates of more than 4 per cent in the final quarter of 2010 and first quarter of 2011. Of particular significance is that employment also started increasing from the second quarter of 2010.

Homework activity 2 (111 marks)

1. Draw a diagram of the business cycle in which you identify the four phases of the business cycle and give a short description of each phase.

2. Indicate whether the following variables increase or decrease during a contraction phase:

<table>
<thead>
<tr>
<th>Variable</th>
<th>Contraction phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Gross domestic product</td>
<td></td>
</tr>
<tr>
<td>b) Level of economic activity</td>
<td></td>
</tr>
<tr>
<td>c) Total spending</td>
<td></td>
</tr>
<tr>
<td>d) Level of production</td>
<td></td>
</tr>
<tr>
<td>e) Consumer spending</td>
<td></td>
</tr>
<tr>
<td>f) Investment confidence</td>
<td></td>
</tr>
<tr>
<td>g) Investment spending</td>
<td></td>
</tr>
<tr>
<td>h) Imports</td>
<td></td>
</tr>
<tr>
<td>i) Inflation</td>
<td></td>
</tr>
</tbody>
</table>

3. Give some reasons why an expansion phase might turn into a contraction phase.

4. Differentiate between endogenous and exogenous factors of the business cycle and give an example of each.

5. Differentiate between the Keynesian and monetarist view of the business cycle.

6. Copy and complete the table. Indicate whether the following are regarded as a cause of a demand-driven or supply-driven business cycle:

<table>
<thead>
<tr>
<th>Description</th>
<th>Demand-driven business cycle</th>
<th>Supply-driven business cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) An increase in the economic growth rate of our trading partners</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b) An increase in exports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Description

<table>
<thead>
<tr>
<th>Demand-driven business cycle</th>
<th>Supply-driven business cycle</th>
</tr>
</thead>
<tbody>
<tr>
<td>c) An increase in consumer spending</td>
<td></td>
</tr>
<tr>
<td>d) The discovery of oil</td>
<td></td>
</tr>
<tr>
<td>e) A change in technology</td>
<td></td>
</tr>
</tbody>
</table>

7. What are the arguments against the use of government policies to smooth (or fine-tune) the business cycle? (5)

8. Distinguish between leading indicators, coincident indicators and lagging indicators. Give an example of each indicator and explain how it can be used for prediction. (15)

9. Discuss the nature and causes of business cycles. Include an appropriately labelled diagram to illustrate the nature and cyclical trends in your response. (43)

### Extra practice activity 2 (31 marks)

1. Complete the given diagram of a business cycle by indicating the following:
   a) What is measured on the horizontal axis? (1)
   b) What is measured on the vertical axis? (1)
   c) The trend line (1)
   d) The peaks (1)
   e) The troughs (1)
   f) An expansion phase (1)
   g) A downward or contraction phase (1)

2. Copy and complete the following table and explain what you expect will happen to the variables during a contraction phase and an expansion phase of the business cycle.
## Business cycles

<table>
<thead>
<tr>
<th>Variable</th>
<th>Contraction</th>
<th>Expansion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output in the manufacturing sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prices of goods and services</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advertised jobs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hours worked in the manufacturing sector</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of productive capacity in manufacturing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross domestic product</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Retail sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vehicle sales</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household income</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Household spending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Business confidence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Investment spending</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Imports</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

### 3 Read the following scenario and then answer the questions:

Consumer confidence is at an all-time high in the economy of Landandia. Consumer spending has reached its highest level in five years.

However, some warning signs are appearing on the horizon. Credit extension to households from the banks is rising at an alarming rate. Manufacturers indicate that, due to the high demand for consumer goods and capacity constraints, they are experiencing an upward pressure on their cost of production. The central bank also reports that the deficit on the current account is at an alarmingly high level, which is not sustainable in the future.

a) What is the cause of the expansion phase?  
(2)

b) Are we dealing here with a demand-driven or a supply-driven business cycle?  
(1)

c) Will this expansion phase continue indefinitely?  
(1)

d) What do you think is going to happen in the economy of Landandia in the coming months? Explain your answer.  
(6)
Summary

- The business cycle consists of four phases: peak, downward or contraction phase, trough, upward or expansion phase (which consists of the recovery phase and the prosperity phase).
- A complete cycle is measured from peak to peak or from trough to trough and can last many years.
- Exogenous factors are factors that originate from outside the domestic economic system while endogenous factors originate from within the domestic economic system.
- According to the exogenous approach, the market system is inherently stable and the causes of the business cycle are exogenous factors.
- According to the endogenous approach the market system is inherently unstable and the causes of the business cycle are endogenous factors.
- Governments can use fiscal policy and monetary policy to smooth (or ‘fine-tune’) the business cycle.
- According to the new economic paradigm, government should not try to ‘fine-tune’ the business cycle but should rather concentrate on increasing certainty in the market economy.
- Leading indicators are economic indicators that change before the economy has changed and provide us with information about what might happen in the economy.
- Coincident indicators are indicators that change with the economy and provide us with information about the current state of the economy.
- Lagging indicators are indicators that change after the economy has changed and provide us with information about what was happening in the economy.
Topic 3

The public sector

What you will learn about in this topic

• The composition and necessity of the public sector.
• Problems of public sector provisioning.
• Objectives of the public sector and its budgets.
• Fiscal policy (including the Laffer curve).
• Reasons for public sector failure.

Let’s talk about this topic

Have you ever thought about who clears up all the rubbish after a concert or festival? The concert-goers are not interested once the concert is over but if the rubbish is left, it just blows around and spoils other people’s enjoyment of the environment. Rubbish and pollution are examples of a negative externality. The government can make rules about such issues for the good of everyone.
What you know already

In Grade 11 you learnt that South Africa has a mixed economy. This means that it has elements of both a market and a command system, with the government (public sector) providing some goods and services and also intervening in the economy to encourage economic growth. You also looked at the goods and services provided by the government and how the government attempts to redress past inequalities.

Check myself

1. What are the characteristics of a mixed economy?
2. What are the different social services provided by the government?

Word bank

**Balanced budget** is when government spending equals tax revenues.

**Budget deficit** is when government expenditure is greater than government income.

**Budget surplus** is when government income is greater than government expenditure.

**Economic efficiency** exists when resources are allocated in such a way that no one can be made better off without making someone else worse off.

**Free-riders** are people who are able to make use of a good or service without paying for it.

**National budget** is the planned income and expenditure by the state for a given year.

**Nationalisation** is the transfer of ownership of a business from the private sector to the state.

**Negative externalities** are costs that are imposed on a second or third party that firms do not factor into the price of their goods and services.

**Non-excludability** means that no one can be prevented from using a good or service once it is provided.

**Non-rivalry** is when use of a good or service by one person does not exclude its use by another person.

**Positive externalities** exist when a second or third party gets a benefit from the consumption or production of a good or service.

**Privatisation** is the transfer of ownership of a business from the state to the private sector.

**Progressive taxation system** is when tax rates increase as income increases.

**Public enterprises** are state-owned businesses.
Public sector consists of state-run activities or businesses. Subsidies are income given by the state to individuals or businesses for a specific purpose, for example disability grants. Top slice means money that is set aside for debt repayments and emergencies.

What you still need to know

In Topic 2, you studied business cycles and learnt about how the South African Reserve Bank (SARB) can use monetary policy to try to smooth out fluctuations in the cyclical nature of the economy. In this topic, you will learn about how the public sector of the economy functions and what is meant by fiscal policy.

1. The composition and necessity of the public sector

1.1 The composition of the public sector

The public sector plays an important part in the South African economy. It consists of all the organisations owned and controlled by the state or government and can be divided into:

- national (central) government, which is mainly concerned with national issues such as health, defence, education, safety and security. It includes government departments such as health, education and environmental affairs and tourism. It also includes non-profit organisations, such as the CSIR and SABS
- provincial (regional) government, which is mainly concerned with the administration of the nine provinces and any economic issues that are specific to the region
- local government, which is concerned with local issues within a town or municipal area, such as refuse collection, street lighting and traffic control
- public corporations, which are state-owned enterprises (SOEs) that provide public goods and services, such as Eskom, Transnet and SABS. The government either has majority shares (such as Eskom) or owns these by law (such as SABS).

1.2 The necessity of the public sector

Adam Smith, a reputable British economist who wrote in the nineteenth century, identified the following three duties of government:

- to protect its citizens against threats
- to maintain law and order inside the economy
- to provide certain necessity goods and services.
You will remember from Grade 11 that we looked at three different types of economies: a market economy, a command economy and a mixed economy. There isn't a single country in the world that operates a pure market economy. There are always reasons why it is in the best interests of a country’s inhabitants for the public sector to be involved in the economy. Market failure may occur in a market economy and some goods and services may be oversupplied or undersupplied. Correcting this would then require government intervention.

1.3 The South African Constitution and the public sector

The Constitution is the foundation of the laws and policies of this country and it protects the fundamental rights of all South Africans. The Constitution sets out rules for how the government must operate. No policy or budget can go against the Constitution.

The Constitution says that national, provincial and municipal budgets and budgetary processes must promote:
- transparency
- accountability
- the effective financial management of the economy, debt and the public sector.

On people’s health rights, it says that everyone has the right to an environment that is not harmful to their health or well-being. Everyone has the right to have access to healthcare services, sufficient food and water and social security if they are unable to support themselves and their dependants. Every child has the right to basic nutrition, shelter, basic healthcare services and social services. It is part of the duty of the public sector to uphold these rights.

1.4 Reasons for government intervention

1.4.1 To provide public goods and services

There are some goods and services that would be underprovided if left to the market mechanism. This is because some people would be unwilling to share in paying for them, even though they are in the public interest. Examples of these include:
- community goods such as defence, police, street lighting and flood control, which are supplied for the benefit of all citizens
- collective goods that we are all able to enjoy, such as parks, beaches, streets and roads
- merit goods, such as education and health, which would be too expensive for some people to afford, yet consuming them increases the welfare of the country. (Demerit goods are goods that are harmful to society, such as cigarettes.)
Public goods have two main characteristics:

- When they are provided to one individual they are provided to everyone, which means there is non-excludability.
- Consumption by one individual does not prevent consumption by others, which means there is non-rivalry.

Non-payers (free-riders) cannot be excluded from the benefit of such goods. This non-excludability means that individuals cannot be charged a price on the basis of use. These goods and services are not offered by the private sector because consumption by one does not exclude consumption by another. For example, when street lights are switched on, everyone benefits and no one can be excluded from using them even if some people do not pay rates and taxes. A cyclist does not pay a road licence but can still make use of roads. We all benefit from using traffic lights.

1.4.2 To provide merit goods

Merit goods are goods that provide more public benefit than benefit to the individual and include services such as education and healthcare. These goods or services have a broad social benefit that extends beyond the benefit to the individual who uses the service. For this reason, people believe that the individual should not have to bear the full cost of these goods. The state provides merit goods because there is a risk that these would be undersupplied, or inadequately consumed, due to lack of income. For example, offering free vaccinations against polio has more or less eradicated polio from the world, so we all benefit.

Positive externalities exist when a second or third party gets a benefit from the consumption or production of a good or service. For example, by inoculating small children against measles, we lessen the risk of catching the disease for everyone, especially expectant mothers whose babies could be harmed by the disease.
1.4.3 To protect natural resources

If people are allowed to use resources insensitively and carelessly, such as oceans and rivers, it can cause damage. The government intervenes to protect the environment and control or prevent the creation of negative externalities. The Bill of Rights, which is part of the South African Constitution, states that everyone has a right to an environment that is not harmful to their health and well-being and that the environment must be protected through legislation.

Negative externalities are costs resulting from the production of a good or a service that impact on a second or third party and that are not reflected in the price. Businesses often fail to take into account the costs that society incurs as a result of production, such as pollution, noise and congestion.

1.4.4 To redistribute wealth and income

One aim of the public sector may be to obtain a more equitable distribution of income and wealth within a country. This can be achieved through a progressive taxation system and use of transfer payments of money from the government to individuals. Examples of transfer payments include retirement pensions, sickness benefits, child benefits and unemployment benefits. This helps to narrow the gap between the rich and the poor and creates a more stable society.

1.4.5 To manage the economy

The market system does not necessarily bring about higher employment, price stability and an acceptable economic growth rate. The government can apply suitable government policies to achieve these objectives.

A government has to manage the economic interests of the citizens to ensure that an environment exists in which individuals and businesses can pursue their own interests to the maximum and that economic growth occurs.