Tutorial letter 102/3/2018

Macroeconomics 2

ECS2602

Department of Economics

Workbook:
Activities for learning units 1 to 9

BAR CODE

IMPORTANT VERBS

As a student, you should know exactly what is expected when certain verbs are mentioned in an activity, check list or examination question. In economics, the most common verbs used are:

Verb	Description
compare	Identify the similarities or differences between facts, viewpoints, concepts or ideas.
contrast/distinguish/what is the difference between?	Point out the differences between certain objects or concepts.
define	Give a short and concise description of a subject or topic.
describe	Name and give a short discussion of the characteristics of an object or topic.
discuss	Discuss a topic by examining its various aspects.
explain	Explain and clarify to ensure that the reader clearly understands you.
explain with the aid of (a) diagram(s)	You should draw a fully annotated diagram. Make sure all the axes and curves are labelled. The diagram must then be explained in a manner that the reader can follow and understand — in other words, tell the reader what is happening in the diagram.
give/identify/list/name	Give only the facts without any discussion.
illustrate	Here you are usually required to explain your answer with the aid of a diagram (or figure).

An overview of the South African macro-economic environment

1

Activity 1.1

1. Indicate whether the following statements are true or false:

	Statement	True	False
a.	Macroeconomics studies the determination of the level of output and income for a specific firm.		
b.	In macroeconomics we focus on the determination of the demand for and supply of individual goods and the determination of their prices.		
c.	In macroeconomics we focus on the interaction between different markets, such as the goods market, the financial market, the labour market and the foreign exchange market.		
d.	The economic crisis of 2007 – 2009 originated in the financial markets in the United States of America.		
e.	The impact of the economic crises on the South African economy was mainly due to the decline in the growth rates of our trading partners.		
f.	Given the following information the economic growth rate for year 2 is -4.46% : Real GDP for year 1: R1 751 499 million Real GDP for year 2: R1 673 259 million		
g.	Since 1993 economic growth has always been positive in South Africa.		
h.	Real GDP per capita is widely used as a measure of economic welfare or wellbeing of the residents of a country.		
i.	In South Africa the real GDP per capita has continuously increased since 1993.		
j.	The main focus of this macroeconomics module is the study of determinants of the long-term growth potential of an economy.		
k.	The impact of fiscal and monetary policy on the level of output and income is an important topic in this module.		
l.	The main instrument of fiscal policy is the budget, while the main policy variable is the interest rate.		
m.	A contractionary monetary policy implies a decrease in government spending and an increase in taxation.		

n.	The labour absorption capacity of the formal sector in South Africa consistently increased during the 1990s.		

Answers

Answers to activity 1.1

1. a. False. Macroeconomics deals with the economy as a whole and not a specific firm.
   b. False. The focus is on the current level of output and income, given the structure of the economy.
   c. True. That is what we will be studying in this module.
   d. True.
   e. True. It was due to the decline in exports and not due to the instability of the financial sector in South Africa.
   f. True.
   g. False. See figure 2.2 in the textbook.
   h. True.
   i. False. For some years, the increase in population was greater than the economic growth rate.
   j. False. We will be studying stabilisation policies.
   k. True.
   l. False. The policy variables are government spending and taxation.
   m. False. Contractionary monetary policy implies a decrease in the money supply and therefore results in an increase in the interest rate.
   n. False. It declined.

Checklist: The South African macroeconomic environment

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
Economic growth			
Gross domestic product			
Nominal and real gross domestic product			
Unemployment			
Strict definition of unemployment			
Expanded definition of unemployment			
Stabilisation policies			
Monetary policy			
Fiscal policy			

The goods market 2

Summary of the goods market

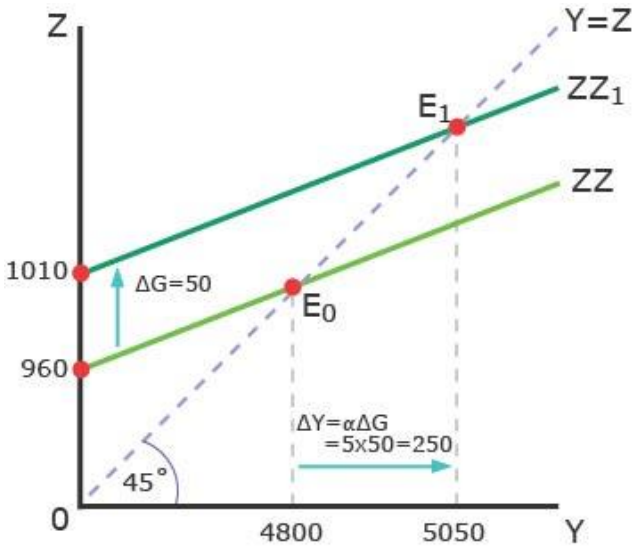


Diagram 2.12 in the Study guide. Increase in government spending

Equation for the demand curve (ZZ):
$Z = c_0 + \bar{I} + G - cT + cY$
A change in I, c_0, G or T will shift the curve.
e.g. $T\downarrow \Rightarrow Y_D\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$
A change in c (marginal propensity to consume) will change the slope of the curve.

An expansionary fiscal policy shifts the ZZ curve upwards, which increases the demand for goods and services and increases the level of output and income.
Chain of events: $G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$
Equilibrium condition: $Y = \frac{1}{1-c}(c_0 + \bar{I} + G - cT)$

Activity 2.1

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Expenditure on GDP includes imports but excludes exports.		
b.	In South Africa final consumption expenditure by government was higher than exports in 2013.		
c.	Final consumption expenditure by government in South Africa includes expenditure on capital goods.		
d.	During 2013 private firms were responsible for most of the investment spending in South Africa.		
e.	Imports consist only of imported final goods and services consumed by households.		
f.	If exports exceed imports a budget surplus exits.		
g.	If imports exceed exports gross domestic expenditure exceeds expenditure on gross domestic product.		
h.	The goods market is the market where factors of production are sold to firms.		

Activity 2.2

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Since consumer spending is a very large component of expenditure on GDP in South Africa it makes it a key component of the demand for goods and services in the economy.		
b.	Households and firms are responsible for consumer spending in the economy.		
c.	The most important determinant of consumption spending is current income		
d.	A positive relationship exists between income and consumption since an increase in income leads to an increase in consumption.		
e.	If the income of households increases by R500 million, we can expect consumer spending to increase, but the increase will be less than R500 million.		

Activity 2.3

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The marginal propensity to consume is greater than zero but smaller than one.		
b.	A marginal propensity to consume of less than one implies that households increase their consumption spending by more than the increase in income.		
c.	The marginal propensity to consume determines by how much consumption increases for a given increase in income.		
d.	Real GDP and the level of output and income mean the same and are measured on the horizontal axis of a goods market model.		
e.	An increase in total production increases total income.		

Activity 2.4

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Households spend all their income on consumption.		
b.	The marginal propensity to consume indicates the proportion of a change in income that will be saved.		
c.	Consumption spending is a negative function of the level of output and income.		
d.	The sum of the marginal propensity to consume (c) and the marginal propensity to save (s) is always greater than 1.		
e.	A marginal propensity to consume of 0.9 means that if $\Delta Y = 100$, then $\Delta C = 90$. The corresponding $\Delta S = 10$.		

Activity 2.5

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The consumption function is $C = c_o + cY_D$ where c_o is equal to autonomous consumption and cY_D is equal to a proportion of disposable income.		
b.	If the income households receive from taking part in production is R500m and taxes are R120m, the disposable income of households is the R480m.		
c.	An increase in taxes will decrease the disposable income of households.		
d.	There is a positive relation between Y and Y_D and a negative relation between T and Y_D.		

2. Which of the following factors will cause an increase in the disposable income of households?

   a. An increase in the level of production in the economy
   b. A decrease in the level of production in the economy
   c. A decrease in the tax rate
   d. An increase in the tax rate

Activity 2.6

1. Indicate whether the following statements are **true** or **false**:

Statement	True	False
a. The cY_D part of the consumption function is also known as the induced consumption.		
b. A change in the income of households will have no impact on induced consumption.		
c. An increase in the marginal propensity to consume will increase consumption spending.		
d. If the disposable income of households is R100 million, then households will spend more than R100 million on induced consumption.		
e. Assume the disposable income is R500m. If the marginal propensity to consume increases from 0.5 to 0.6 households spending will increase from R250m to R300m.		
f. If the marginal propensity to consume is equal to one then an increase in income of R100m will lead to an increase in consumption of R100m.		

Activity 2.7

1. Given that the marginal propensity to consume is 0.7, calculate by how much consumer spending would decrease if the government increased taxes by R10 million.

2. Do you agree with the following statement?
   Lower taxes increase consumer spending but by less than one to one.

Activity 2.8

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Autonomous consumption will change because of a change in income while induced consumption will change when interest rates and access to credit changes.		
b.	If Y increases c_0 will also increases.		
c.	Only non-income determinants will influence autonomous consumption.		
d.	If consumption spending increases autonomous consumption will also increase.		
e.	Autonomous consumption and induced consumption are the two parts of the consumption function.		

2. The high level of HIV/Aids in South Africa will have an important impact on the level of consumption expenditure in South Africa.

   Use the consumption function $C = c_0 + cY_D$ to show the possible impact of HIV/Aids on consumer spending in South Africa.

Activity 2.9

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Both consumption spending and savings will be lower if the level of output and income in the economy decreases.		
b.	The savings function is $S = c_o + (1–c)Y_D$. The (1–c) is the marginal propensity to save (s).		
c.	If c = 0.5, then s will be equal to 0.5, but when c = 0.8, s will be 0.2.		
d.	A positive relation exists between c and s.		
e.	If households consume 60 cents of each rand they will save only 40 cents.		

Activity 2.10

Fill in the correct answer:

The consumption function as a diagram: In the consumption function diagram consumption spending is measured on the _____ axis and disposable income on the _____ axis. _____ is indicated by the vertical intercept of our consumption curve and the consumption curve is _____ sloping indicating that, as _____ increases, _____ increases. The slope of the consumption curve is determined by the _____ and it determines how much consumption spending increases for a _____.

Activity 2.11

Draw the following two consumption functions and indicate the reason for the difference between them.

$C = 500 + 0.9Y_D$ $C = 500 + 0.4Y_D$

Activity 2.12

1. a. Draw a diagram of the following consumption function and indicate the effect on consumer spending of an increase in income from 500 to 600.
   $C = 300 + 0.6Y_D$.
   b. Use the same function to show what happens if autonomous consumption increases by 50.
   c. Identify two factors that might cause autonomous consumption spending to increase.

2. Indicate which of the following factors might be a possible reason for the difference between the following two consumption functions:

$$C = 600 + 0.75Y_D \quad C = 500 + 0.75Y_D$$

   a. A difference in the marginal propensity to consume
   b. A difference in the savings behaviour of households
   c. A difference in the wealth position of households
   d. A difference in access to credit

Activity 2.13

1. Indicate whether the following statements are **true** or **false**:

Statement	True	False
a. An increase in autonomous consumption will shift the consumption curve upwards.		
b. If disposable income increases the consumption curve will shift upwards.		
c. If disposable income decreases a downward movement along the consumption curve will take place.		
d. If taxes increase, disposable income will decrease and a downward movement along the consumption curve takes place.		

Activity 2.14

1. Briefly explain the difference between an exogenous variable and endogenous variable.

2. List the various endogenous and exogenous variables in the consumption function.

Activity 2.15

1. Describe the relationship between income, consumption and spending by using words and a chain of events. Assume that income increases.

2. Is the multiplier in operation?

Activity 2.16

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Buying shares in a company on a stock exchange market is regarded as real investment.		
b.	If a farmer buys a tractor that is to be used for the production of grain it is regarded as part of real investment.		
c.	Building a new factory is regarded as part of financial investment.		
d.	Investment is important since it creates a demand for consumer goods and services.		

Activity 2.17

1. List the factors that determine autonomous investment. Also, indicate the relationship between the factors and autonomous investment.

2. Draw a diagram showing that investment is an autonomous variable with respect to the level of output and income.

Activity 2.18

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in savings causes an increase in investment spending.		
b.	In the goods market model an increase in investment leads to an increase in saving.		
c.	According to Keynes the relationship between investment and savings is as follows: $I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow \Rightarrow S\uparrow$		
d.	A positive relationship exists between investment and the level of output and income.		

Activity 2.19

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Since government spending is an exogenous variable, this implies that the level of government spending does not influence the level of output and income.		
b.	Government spending increases as total income increases.		
c.	If spending by government is less than the tax revenues of government, a budget surplus exists.		
d.	Fiscal policy is said to be expansionary if government spending decreases and taxes increase.		
e.	In this model government spending is determined by tax revenue.		
f.	If production and income increases tax revenue increases as well.		
g.	A contractionary fiscal policy will lead to a decrease in the budget deficit or an increase in the budget surplus.		

Activity 2.20

1. Write down the demand equation.

2. Identify the autonomous and induced spending components of the demand equation.

3. The notation z_0 is used to indicate _____.

Activity 2.21

1. Describe equilibrium.

2. Describe the equilibrium condition in the goods market.

3. Write down the equilibrium equation and explain what the equation tells us.

Activity 2.22

1. You are given the following information. Use it to answer the questions that follow:

For Z_1:			For Z_2:		
c_0	=	50	c_0	=	30
$\bar{I}$	=	60	$\bar{I}$	=	26
G	=	46	G	=	16
T	=	20	T	=	10
c	=	0.8	c	=	0.6

a. Using the following formula
$Y = (c_0 + \bar{I} + G – cT) + cY$
replace the variables with the given values for Z_1 and Z_2.
b. Calculate autonomous spending for Z_1 and Z_2.
c. Calculate the multiplier for Z_1 and Z_2.
d. Calculate the equilibrium level of income for Z_1 and Z_2. Comment on the difference between Z_1 and Z_2.

2. List the factors that will change the equilibrium level of output and income.

Activity 2.23

1. Indicate whether the following statements are **true** or **false**:

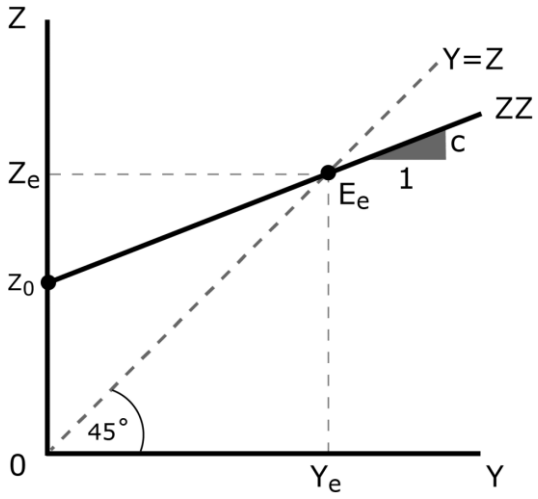
	Statement	True	False
a.	If there is an excess supply of goods and services, it implies that the demand for goods exceeds the level of output and income.		
b.	If the demand for goods exceeds the level of output and income, producers will increase their production of goods and services.		
c.	If there is an excess demand for goods and services, it implies that the demand for goods is greater than the level of output and income.		
d.	If the demand for goods is less than the level of output and income, producers will decrease their production of goods and services.		
e.	An increase in production increases consumer spending by households.		

Activity 2.24

Illustrate the equilibrium condition with the aid of a diagram.

Activity 2.25

Study the following diagram:



1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The demand equation is represented by curve ZZ.		
b.	At point E_e : Y = Z		
c.	All the autonomous spending components are represented on the vertical intercept as z_e.		
d.	A positive relationship exists between Y and Z; therefore, the ZZ curve is upward sloping.		
e.	The 45^0 line indicates only one possible equilibrium position.		

2. You are given the following information.

For Z_1:			**For Z_2:**		
c_0	=	50	c_0	=	30
$\bar{I}$	=	60	$\bar{I}$	=	26
G	=	46	G	=	16
T	=	20	T	=	10
c	=	0.8	c	=	0.6

Draw the demand for goods curves Z_1 and Z_2 and indicate the equilibrium positions.

Activity 2.26

Use two diagrams to illustrate the difference between excess supply and excess demand.

Activity 2.27

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	If c changes, Y will change.		
b.	Autonomous spending has no impact on the equilibrium level of income.		
c.	If the value of the multiplier changes, Y will be unchanged.		
d.	An increase in autonomous investment components will increase the equilibrium level of output and income.		
e.	The equilibrium level of output and income will not be influenced by a change in taxes.		
f.	An increase in c will increase Y, given that all the autonomous spending components are unchanged.		

Activity 2.28

1. Use the following formula

$$Y = \frac{1}{1-c} \quad (c_0 + \bar{I} + G - cT)$$

to calculate the equilibrium level of output and income if
$c = 0.9$, $c_0 = 300$, $\bar{I} = 400$, $G = 200$ and $T = 100$

2. Calculate what will happen to the equilibrium level of output and income (in question 1 above) if investment spending increases to 500.

3. Explain why the following statement is correct:
An increase in investment spending increases consumer spending by households.

Activity 2.29

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The value of the marginal propensity to consume lies behind the value of the multiplier.		
b.	If c changes, the value of the multiplier changes.		
c.	The multiplier effect results from the behaviour of households and firms, which increase their consumption spending and investment spending whenever their income increases.		
d.	In the goods market: C increases if Y decreases.		

Activity 2.30

1. Assume a marginal propensity to consume of 0.75 (¾) and an increase in government spending of R100.

   Complete the following table by showing the changes in the variables:

	Government spending G	Consumption C	The demand for goods Z	Output and income Y
Initial effect	100		100	100
First round				
Second round				
Third round				
End result				

2. Calculate the multiplier.
3. By how much does output and income increase for a R1 increase in government spending?

Activity 2.31

Calculate the equilibrium level of output and income if c = 0.8, c_0 = 300, $\bar{I}$ = 400, G = 600 and T = 100.

Activity 2.32

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	If households do not increase their consumer spending when their income increases, there is no multiplier effect in the economy.		
b.	If the marginal propensity to consume increases, the value of the multiplier increases.		
c.	A larger multiplier indicates that an increase in autonomous spending has a smaller impact on the equilibrium level of output and income.		
d.	If the multiplier is 3, a decrease in investment spending of 100 will decrease the equilibrium level of output and income by 300.		

2. Use a diagram to indicate what happens to the equilibrium level of output and income if the level of investment spending declines.

Activity 2.33

Given the following:
C = R2 million + 0.6Y and I = R2 million.
Assume there is a massive increase in investor confidence and investment spending increases by R12 million.
Use the data and completed table to explain the multiplier effect graphically.

	Investment spending I	Consumption C	The demand for goods Z	Output and income Y
Initial effect	12	0	12	12
First round		7.2	7.2	7.2
Second round		4.3	4.3	4.3
Third round		2.6	2.6	2.6
		….	….	….
End result	**12**	**18**	**30**	**30**

Activity 2.34

By using two diagrams, show the difference of an increase in investment spending and an increase in the marginal propensity to consume on the equilibrium output and income level.

Activity 2.35

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	A change in government spending will have no impact on the equilibrium level of output and income.		
b.	Government spending is one of the autonomous spending components.		
c.	The impact of a change in government spending is the same as that of investment spending in that it has a multiplier effect on the equilibrium level of output and income.		
d.	Government spending is the only policy variable of fiscal policy.		

Activity 2.36

1. Use the following formula

$Y = \frac{1}{1-c}$ $(c_0 + \bar{I} + G - cT)$ to calculate the equilibrium level of output and income if $c = 0.9$, $c_0 = 300$, $\bar{I} = 400$, $G = 300$ and $T = 200$.

2. Calculate what will happen to the equilibrium level of output and income (in question 1 above) if government spending increases with 100.

3. Briefly explain the impact of the increase in government spending on the equilibrium level of output and income.

Activity 2.37

1. Use a diagram to illustrate the impact of a decrease in government spending on the equilibrium output and income level.

2. Use a chain of events to indicate the impact of a decrease in government spending on the equilibrium output and income level.

Activity 2.38

1. Calculate the equilibrium level of output and income if c = 0.5, c_0 = 300, $\bar{I}$ = 400, G = 600 and T = 100.

2. Calculate what will happen to the equilibrium level of output and income (in question 1 above) if taxes decline to 50.

3. What will happen to the equilibrium level of output and income if taxes increase?

Activity 2.39

1. Explain briefly why a decrease in taxes increases the demand for goods and shifts the demand for goods curve upwards, equal to c(T) and not T.

2. Use a chain of events to indicate the impact of an increase in taxes on the equilibrium output and income level.

Activity 2.40

1. Calculate the equilibrium level of output and income if c = 0.5, c_0 = 300, $\bar{I}$ = 400, G = 300 and T = 100.

2. Calculate what will happen to the equilibrium level of output and income (in question 1 above) if an expansionary fiscal policy is introduced and the government spending increases to 500.

3. Use the data in questions 1 and 2 to illustrate with the aid of a diagram the impact of an expansionary policy on the equilibrium level of output and income.

4. By how much did the budget deficit increased after the implementation of expansionary fiscal policy?

Activity 2.41

1. Calculate the equilibrium level of output and income if c = 0.5, c_0 = 300, $\bar{I}$ = 400, G = 300 and T = 100.

2. Calculate what will happen to the equilibrium level of output and income (in question 1 above) if a contractionary fiscal policy is introduced where government spending decreases to 200 and taxes increase to 150.

3. Use the data in questions 1 and 2 to illustrate with the aid of a diagram the impact of a contractionary fiscal policy on the to the equilibrium level of output and income.

4. By how much did the budget deficit decrease after the implementation of contractionary fiscal policy?

5. Assume that you live in a country called Paradiso, which is currently experiencing political instability because of an attempted coup by the military. Because of this situation, households have indicated that they intend to spend less in the coming year and firms have indicated that, as a result of a significant drop in business confidence, they will freeze their investment plans for the year.

   a. Use your knowledge of the determination of output and income on the goods market to explain in words and with the aid of diagrams the likely consequences of the above on the following variables:

   i. consumer spending in the economy
   ii. investment spending in the economy
   iii. the demand for goods
   iv. the level of output and income

   b. Explain what possible steps the government could take to counter the impact of the above on the level of output and income.

Activity 2.42

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	In our goods market model there can be only one equilibrium position.		
b.	Full employment can be described as a situation in which all available resources (labour, capital, land and entrepreneurship) are used to produce goods and services, and this is one of the macroeconomic objectives.		
c.	If the equilibrium level of output and income Y_0 is equal to R5 900 million and the full employment Y_F is equal to R6 500 million the unemployment gap (or output and income gap) is equal to R500 million.		

d.	Keynes argued that an increase in government spending (in other words, expansionary fiscal policy) could be used to move to full employment.	

Activity 2.43

Use a diagram to explain how government spending can be used to achieve full employment. Also, comment on the magnitude of government spending that is needed.

Activity 2.44

1. Calculate by how much the equilibrium level of income and output will increase if the government decreases taxes by 200 and the marginal propensity to consume is 0.8.

2. Question 2 is based on the following information:

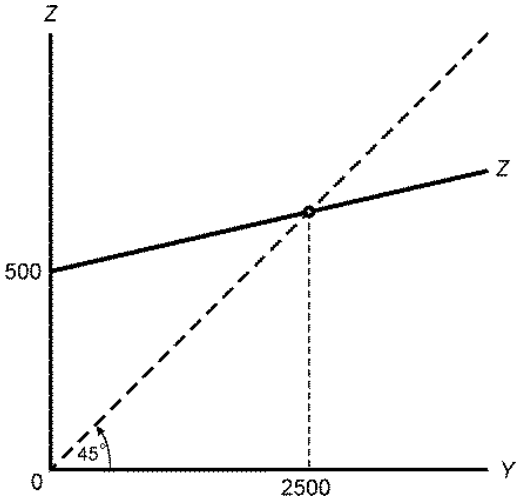
   Marginal propensity to consume = 0.8
   Autonomous consumption spending= R80 million
   Investment spending = R40 million
   Government spending = R20 million
   Taxes = R15 million
   Full employment level of output and income = R940 million

   a. Calculate the multiplier.
   b. Calculate autonomous spending.
   c. Calculate the equilibrium level of output and income.
   d. Use the goods market model to present the economy graphically. Make sure you indicate the current equilibrium level of output and the full employment level of output and income on your diagram.
   e. Use your goods market model to illustrate and explain the following:
      i. The income gap between the current level of output and income and the full employment level of output and income
      ii. How full employment can be reached by using government spending.
      iii. How full employment can be reached by using taxation.
      iv. Is it reasonable for government spending to use fiscal policy to achieve the full employment level?

Activity 2.45

1. Define a balanced budget.

2. Use the following goods market model to illustrate graphically and explain the impact of a simultaneous increase of 200 in government spending and an increase of 200 in taxes on the level of output and income. Assume the marginal propensity to consume = 0.8.



3. Explain why the net effect of an equal increase in government spending and taxes will still have a stimulatory effect on the level of output and income.

Activity 2.46

Briefly explain the paradox of savings.

Activity 2.47

List six the factors or possible constraints that need to be kept in mind when designing fiscal policy to combat unemployment

Answers

Answers to activity 2.1

1. a. False. Expenditure on GDP includes exports but excludes imports.
   b. False. Final consumption expenditure by government was lower.
   c. False. It does not include expenditure on capital goods.
   d. True. They were responsible for 64.39% of investment.
   e. False. It also includes the importation of intermediate and capital goods.
   f. False. If exports exceed imports, a trade surplus exists. A budget surplus occurs when government revenue exceeds government spending.
   g. True. Spending by inhabitants of a country is more than what is spent on the goods and services produced between the borders of the country.
   h. False. It is called the factor market. In the goods market goods and services are traded.

Answers to activity 2.2

1. a. True.
   b. False. Only households are responsible for consumer spending in the economy. Firms are responsible for investment spending in the economy.
   c. True.
   d. True.
   e. True.

Answers to activity 2.3

1. a. True.
   b. False. Households will increase their consumption by less than the increase in income.
   c. True.
   d. True.
   e. True.

Answers to activity 2.4

1. a. False. Households do not spend all their income on consumption. The part that they do not consume is saved.
   b. False. The marginal propensity to save indicates the proportion of a change in income that will be saved.
   c. False. Consumption spending is a positive function of income. In other words, an increase in income increases consumption spending.
   d. False. The sum of the marginal propensity to consume (c) and the marginal propensity to save (s) is equal to 1.
   e. True. Note that c + s = 1. A marginal propensity to consume of 0.9 implies that the marginal propensity to save is 0.1. For a given increase of R100 in output and income consumption increases by R90 and savings by R10. Both consumption and savings increase since they are both positive functions of income.

Answers to activity 2.5

1. a. True.
   b. False. The disposable income of households will be R380 million (R500m – R120m = R380m).
   c. True.
   d. True. As Y increases then Y_D increases and as T increases Y_D decreases.

2. a and c.

   a. An increase in the level of production in the economy increases income and therefore disposable income increases.
   c. A decrease in the tax rate implies that households pay less tax and therefore have more disposable income ($T\downarrow \Rightarrow Y_D\uparrow$).

Answers to activity 2.6

1. a. True.
   b. False. A change in the income of households will have an impact on induced consumption since induced consumption is cY_D.
   c. True. Households consume a greater proportion of their income.
   d. False. The consumption spending will be less than R100m due to the marginal propensity to consume which is less than 1.
   e. True. The consumption spending will increase from 0.5 (R500m) = R250m to 0.6 (R500m) = R300m.
   f. True. A marginal propensity to consume of 1 implies that households will spend all of an increase in income on consumption.

Answers to activity 2.7

1. An increase in taxes decreases disposable income by an amount equal to the increase in taxes, which in this case is R10 million. As disposable income decreases households decrease their consumer spending, but the decrease in consumer spending is only 0.7 (R10m) = R7 million since higher taxes decrease consumer spending but by an amount of less than one to one.

2. The statement is correct. See the above for the reason why.

Answers to activity 2.8

1. a. False. Autonomous consumption will change when interest rates and access to credit changes while induced consumption will change because of a change in income.
   b. False. If Y increases, c_0 will be unchanged since a change in Y will have no impact on autonomous consumption.
   c. True.
   d. False. Note the direction of causality: If autonomous consumption increases consumption spending will increase.
   e. True.

2. The HIV/Aids epidemic will influence both the marginal propensity to consume and autonomous consumption spending. If a member of a household becomes sick and needs medication then the household will consume a greater part of their income and the marginal propensity to consume increases. The consumption function has a steeper slope. To deal with the medical expenses households will probably make use of their previous savings or borrow the money. This will have the impact to increase the autonomous part of consumption spending. The consumption spending curve shifts upwards.

   What about a loss of income if the breadwinner loses his or her job? The question to ask is what happens to the job? If someone else gets the job, and moves from being unemployed to employed, the loss of income for the one household is a gain for another household and overall consumption spending for the economy is unchanged. Remember we are dealing with aggregate consumption spending and not the consumption spending of an individual household.

Answers to activity 2.9

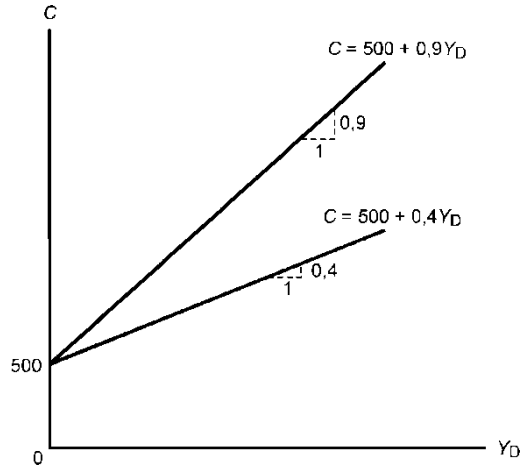
1. a. True.
   b. False. The savings function is $S = -c_o + (1–c)Y_D$.
   c. True.
   d. False. A negative relation exists. If c increases, s will decrease. Remember that $c + s = 1$.
   e. True.

Answers to activity 2.10

The consumption function as a diagram: In the consumption function diagram consumption spending is measured on the **vertical** axis and disposable income on the **horizontal** axis. **Autonomous consumption** is indicated by the vertical intercept of our consumption curve and the consumption curve is **upward** sloping indicating that, as **disposable income** increases, **consumption spending** increases. The slope of the consumption curve is determined by the **marginal propensity to consume** and it determines how much consumption spending increases for a **change in income**.

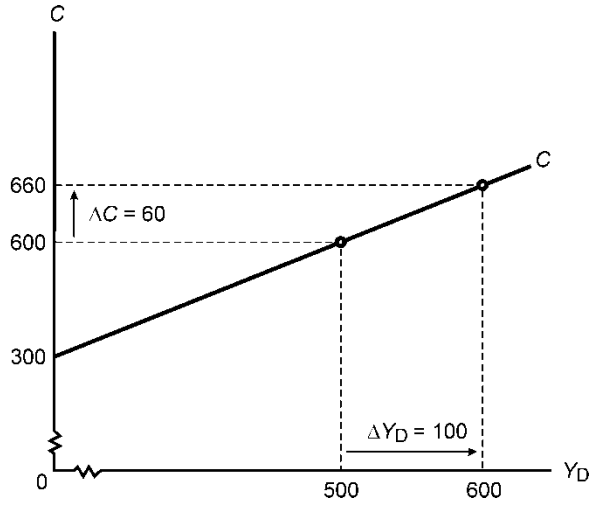
Answers to activity 2.11

The difference between the two equations is the difference in the marginal propensity to consume and therefore the slopes of the curves are different.

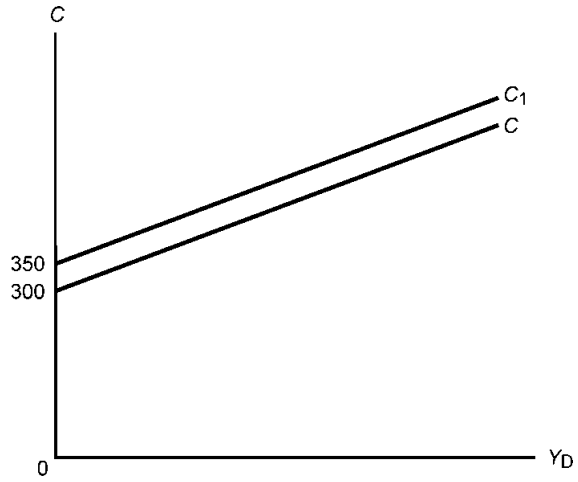


Answers to activity 2.12

1. a. $C = 300 + 0.6Y_D$
   If $Y_D = 500$, then $C = 300 + 0.6(500) = 300 + 300 = 600$
   If $Y_D\uparrow$ from 500 to 600, then $C = 300 + 0.6(600) = 300 + 360 = 660$



b.



The upward shift is equal to 50.

c. Autonomous consumption reflects the influence of the non-income determinants of consumer spending. **Non-income determinants** are all the other factors, except the level of income, that influence consumer spending, such as the interest rate, expectations, wealth, income distribution, access to credit, health, and so on.

2. c and d.

Since the marginal propensity to consume is the same for both equations, there is no difference between the marginal propensities and the savings behaviour of households.

The difference between the two equations lies in autonomous consumption spending, which is a function of interest rates, expectations, wealth, income distribution, access to credit, health, and so on.

Answers to activity 2.13

1. a. True.
   b. False. An upward movement along the consumption curve will take place.
   c. True.
   d. True.

Answers to activity 2.14

1. An exogenous (or autonomous) variable is independent of the endogenous variable – the variable we are trying to explain – and, while the exogenous variable influences the endogenous variable, the exogenous variable is thus not influenced by the endogenous variable.
2.

Endogenous variable	Exogenous variables
1. Level of output and income (Y)	1. Autonomous consumption (c_0)
	2. Marginal propensity to consume (c)

Answers to activity 2.15

1. **In words:** As income and out output rises, consumption spending rises and this causes the demand for goods to increase which, in turn, increases income and output and consumption spending.
   Chain of events: $Y\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow \Rightarrow C\uparrow$

2. Yes, the multiplier is in operation.

Answers to activity 2.16

1. a. False. It is regarded as financial investment.
   b. True. It is part of spending on additions to the capital stock.
   c. False. It is part of spending on additions to the capital stock and is regarded as part of real investment.
   d. True. Investment is important since it creates a demand for consumer goods and services.

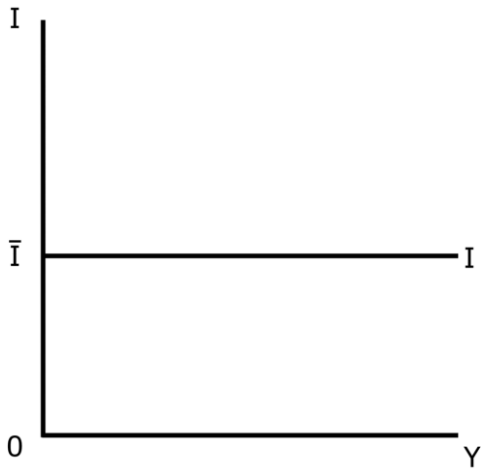
Answers to activity 2.17

1.

Exogenous factors	Relationship
Interest rates	A higher interest rate decreases investment
Expectations	Improved expectations about the future increase investment
Business confidence	Higher business confidence increases investment
Regulations	A more investment-friendly environment increases investment

Note that the relationship can also be in the opposite direction, e.g. a lower interest rate increases investment.

2. **Autonomous investment**



A change in output and income has no impact on investment spending.

Answers to activity 2.18

1. a. False. The decision to save and the decision to invest are two different decisions.
   b. True.
   c. True.
   d. True.

Answers to activity 2.19

1. a. False. While the level of output and income does not influence the level of government spending, the level of government spending does influence the level of output and income.
   b. False. Government spending is an exogenous function and is not influenced by the level of output and income.
   c. True.
   d. False. Fiscal policy is expansionary if government spending increases and taxes decrease.
   e. False. Both government spending and government revenue (taxation) are regarded as exogenous factors.
   f. False. In this case, the statement is false since it is assumed that tax revenue is not a function of income and output. In some other models, the assumption might be that it is indeed a function of output and income.
   g. True.

Answers to activity 2.20

1. Demand equation: $Y = (c_0 + \bar{I} + G - cT) + cY$
2. Autonomous spending components: $c_0 + \bar{I} + G - cT$
   Induced spending component: cY
3. …… all the autonomous spending components namely $c_0 + \bar{I} + G - cT$

Answers to activity 2.21

1. Equilibrium can be described as a situation in which all forces of change are neutralised or balanced – that is, a situation that will be maintained in the absence of new forces (or changes in existing forces).

2. In our goods market model, equilibrium occurs when the level of output and income (Y) is equal to the demand for goods (Z). The equilibrium condition can therefore be written as:
   Y = Z: equilibrium condition in the goods market

3. Equilibrium equation: $Y = \frac{1}{1-c}$ ($c_0 + \bar{I} + G - cT$)

   The equation tells us is that the equilibrium level of output and income is a multiple (1/1-c) of autonomous spending ($c_0 + \bar{I} + G - cT$). The 1/1-c part is the Keynesian multiplier.

Answers to activity 2.22

1a. Y = (50 + 60 + 46 – 0.8(20)) + 0.8Y b. Autonomous spending = 140	a. Y = (30 + 26 + 16 – 0.6(10)) + 0.6Y b. Autonomous spending = 66

c. The multiplier for Z_1 is:
   1/1-0.8 = 1/0.2= 5
   The multiplier for Z_2 is:
   1/1-0.6 = 1/0.4 = 2.5

d. The equilibrium level of income for Z_1 is:
   5 x 140 = 700

   The equilibrium level of income for Z_2 is:
   2.5 x 66 = 165

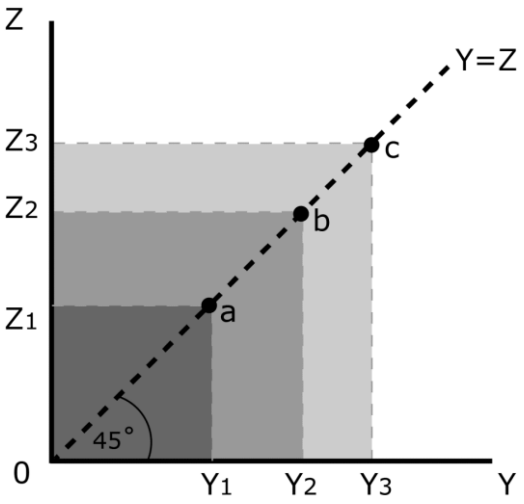
   Both autonomous spending and the marginal propensity to consume are higher for Z_1 than for Z_2 and consequently the equilibrium level of output and income is higher for Z_1 than for Z_2.

2. ● The marginal propensity to consume: c
   ● Any of the autonomous spending components: $c_0 + \bar{I} + G - cT$

Answers to activity 2.23

1. a. False. The demand for goods is less than the level of output and income.
   b. True.
   c. True.
   d. True.
   e. True.

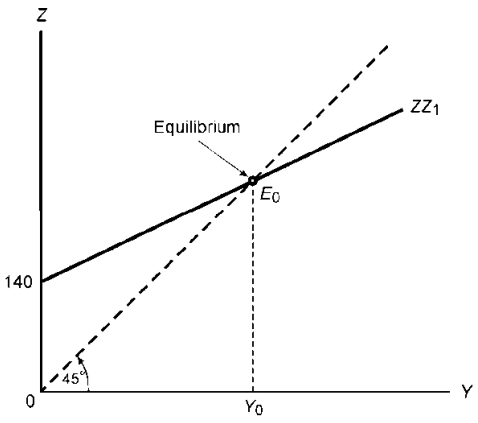
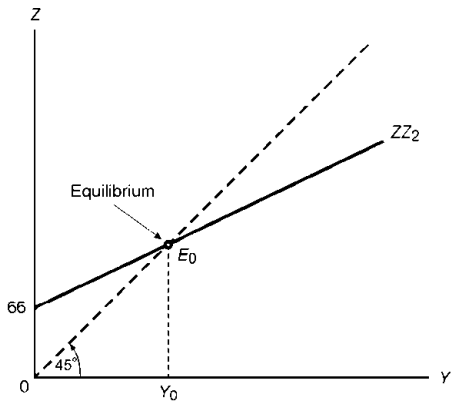
Answers to activity 2.24



Answers to activity 2.25

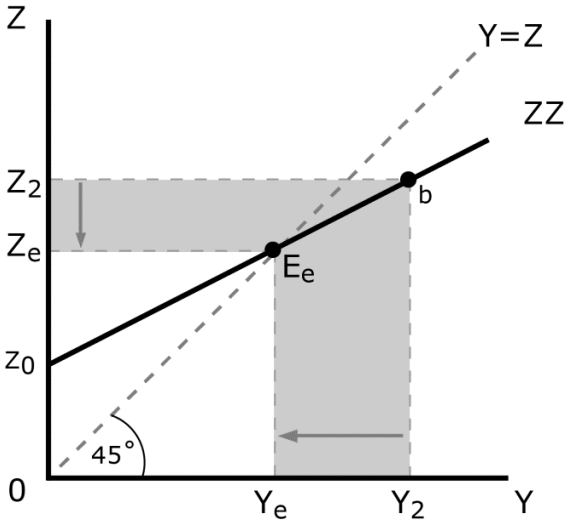
1. a. True.
   b. True.
   c. False. It is presented by z_0.
   d. True.
   e. False. It indicates all possible equilibrium positions.

2.

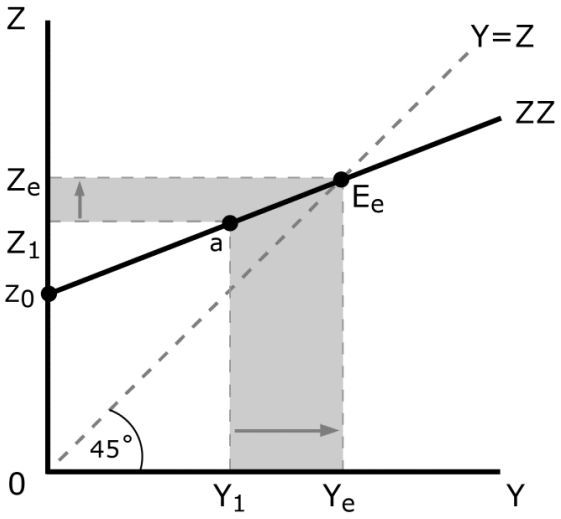
Autonomous spending = (50 + 60 + 46 – 0.8(20) = 140	Autonomous spending = 30 + 26 + 16 – 0.6(10) = 66
	

Answers to activity 2.26

1. Excess supply



2. Excess demand



Answers to activity 2.27

1. a. True.
   b. False. Is does have a very important impact.
   c. False. If the value of the multiplier changes, Y will also change.
   d. True.
   e. False. Taxes are an autonomous spending component and will therefore have an influence on the equilibrium level of output and income.
   f. True.

Answer to activity 2.28

1. Y = $\frac{1}{1-0.9}$ (300 + 400 + 200 – 0.9[100]) = $\frac{1}{0.1}$ (810) = 10 x 810 = 8 100

2. Y = $\frac{1}{1-0.9}$ (300 + 500 + 200 – 0.9[100]) = $\frac{1}{0.1}$ (910) = 10 x 910 = 9 100

3. An increase in investment spending increases the demand for goods and the level of output and income in the economy. Consumer spending is a positive function of income and, as income increases, households increase their consumer spending. This is why there is a multiplier effect.

Answer to activity 2.29

1. a. True.
   b. True.
   c. False. It results from the behaviour of households, which increase their consumption spending whenever their income increases.
   d. False. C increases if Y increases.

Answers to activity 2.30

1.

	Government spending G	Consumption C	The demand for goods Z	Output and income Y
Initial effect	100		100	100
First round		75 (0.75 x 100)	75	75
Second round		56.3 (0.75 x 75)	56.3	56.3
Third round		42.2 (0.75 x 56.3)	42.2	42.2
		....	.....	.....
End result	**100**	**300**	**400**	**400**

2. Multiplier = $\frac{1}{1-c}$ = $\frac{1}{1-0.75}$ = $\frac{1}{1-0.25}$ = 4.

3. R4.

Answers to activity 2.31

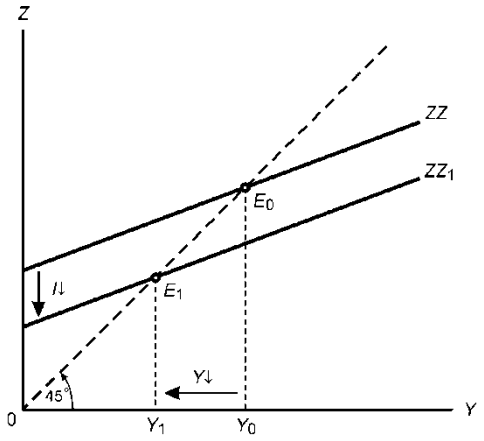
Y = $\frac{1}{1-0.8}$ (300 + 400 + 600 – 0.8[100]) = $\frac{1}{0.2}$ (1300 - 80) = 5 x 1 220 = 6 100

Answers to activity 2.32

1. a. True. It is because households increase their consumption spending when their income increases that there is a multiplier effect.
   b. True.

c. False. A larger multiplier indicates that an increase in autonomous spending has a **bigger** impact.
d. True.

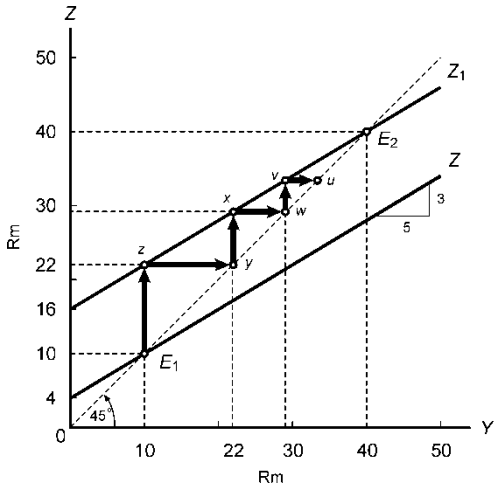
2.



Answers to activity 2.33

	Investment spending I	Consumption C	The demand for goods Z	Output and income Y
Initial effect	12	0	12	12
First round		7.2	7.2	7.2
Second round		4.3	4.3	4.3
Third round		2.6	2.6	2.6
		….	….	….
End result	**12**	**18**	**30**	**30**

The multiplier = 2.5
The diagram will look as follows:

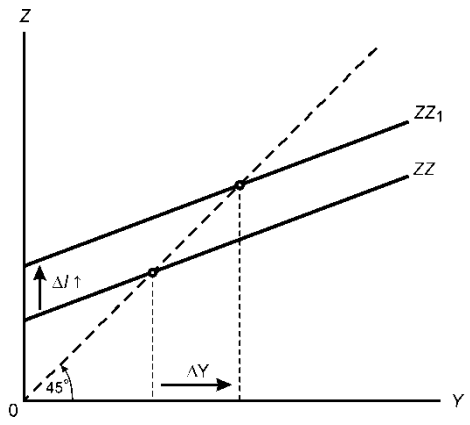
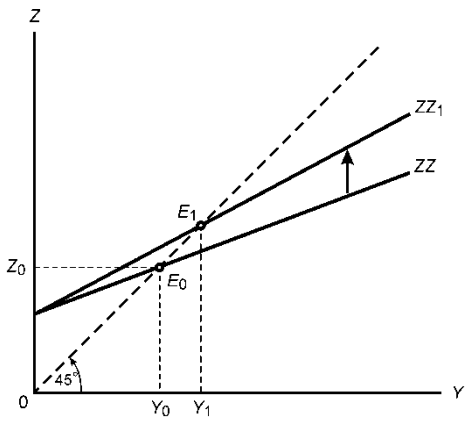


Total investment spending increases from R2 million to R14 million which causes the aggregate demand curve to shift from Z to Z_1 by R12 million. The vertical intercept is now at R16 million.

The move from point E_1 to point z (vertical axis) and point z to point y (horizontal axis) respectively graphically represent the initial effect of the increase in investment spending of R12 million. The move from point y to point x and from point x to point w respectively represent the first round effect through the multiplier which is R7.2 million (12 x 0.6). The multiplier effect continues until it reaches the final cumulative effect of R30 million (12 x 2.5).

The equilibrium level of output and income increases from R10 million to R40 million.

Answers to activity 2.34

Increase in investment spending	Increase in the marginal propensity to consume
	

Answers to activity 2.35

1. a. False. Since it is an autonomous spending component and part of the equilibrium equation a change in government spending will have an impact on the equilibrium level of output and income.
   b. True.
   c. True.
   d. False. Fiscal policy has two policy variables: Government spending and/or taxes.

Answers to activity 2.36

1. $Y = \frac{1}{1-0.9}$ (300 + 400 + 300 – 0.9[200]) = $\frac{1}{0.1}$ (1 000 –180) = 10 x 820 = 8 200

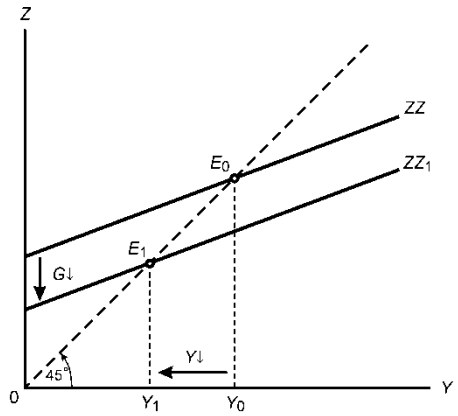
2. $Y = \frac{1}{1-0.9}$ (300 + 400 + 400 – 0.9[200]) = $\frac{1}{0.1}$ (1 100 – 180) = 10 x 920 = 9 200

3. An increase of 100 in government spending increases the equilibrium level of output and income by 1 000 – that is by 100 times the multiplier of 10.

For every 1-unit increase in autonomous spending, output and income increase by 10 units. What we are seeing here is the workings of the Keynesian multiplier. We therefore can conclude that the impact of change in autonomous spending (in this case government spending) on equilibrium level of output and income is equal to the multiplier times the change in autonomous spending (government spending).

Answers to activity 2.37

1.



.

2. G↓ ⇒ Z↓ ⇒ Y↓

Answers to activity 2.38

1. $Y = \frac{1}{1-0.5}$ (300 + 400 + 600 – 0.5[100]) = $\frac{1}{0.5}$ (1 300 – 50) = 2 x 1 250 = 2 500

2. $Y = \frac{1}{1-0.5}$ (300 + 400 + 600 – 0.5[50]) = $\frac{1}{0.5}$ (1 300 – 25) = 2 x 1 275 = 2 550

3. The equilibrium level of output and income will decrease.

Answers to activity 2.39

1. The reason is that initial effect of a change in taxes is on the disposable income of households, while a change in government spending directly influences the demand for goods. As disposable income changes, consumption spending changes, but the change in consumption spending is smaller than the change in disposable income because the marginal propensity to consume is less than one. In other words, a decrease of 50 in taxes will initially increase consumption spending by c(50). In this case, the upward shift of the demand for goods curve is c(50) = 40 and not 50. Consequently, the impact of a change in taxes on output and income is indirect via the consumption function.

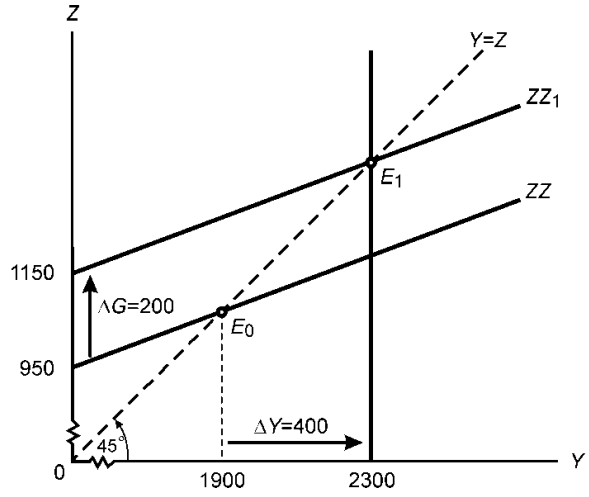
2. $T\uparrow \Rightarrow Y_D\downarrow \Rightarrow C\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$

Answers to activity 2.40

1. Y = $\frac{1}{1-0.5}$ (300 + 400 + 300 – 0.5[100]) = $\frac{1}{0.5}$ (1 000 – 50) = 2 x 950 = 1 900

2. Y = $\frac{1}{1-0.5}$ (300 + 400 + 500 – 0.5[100]) = $\frac{1}{0.5}$ (1 200 – 50) = 2 x 1 150 = 2 300

3.



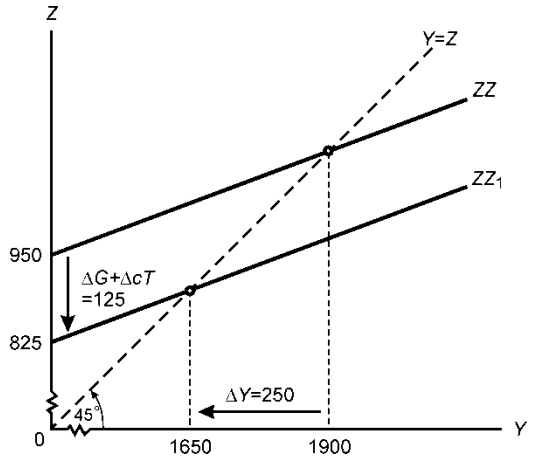
4. The budget deficit increased by 200.
Before the implementation of the expansionary fiscal policy the budget deficit was:
G – T = 300 – 100 = 200
After the implementation of the expansionary fiscal policy the budget deficit increased to 400 (G – T = 500 – 100 = 400).

Answers to activity 2.41

1. Y = $\frac{1}{1-0.5}$ (300 + 400 + 300 – 0.5[100]) = $\frac{1}{0.5}$ (1 000 – 50) = 2 x 950 = 1 900

2. Y = $\frac{1}{1-0.5}$ (300 + 400 + 200 – 0.5[150]) = $\frac{1}{0.5}$ (900 – 75) = 2 x 825 = 1 650

3.



4. The budget deficit decreased with 150.
Before the implementation of the contractionary fiscal policy the budget deficit was:
G – T = 300 – 100 = 200.
After the implementation of the contractionary fiscal policy the budget deficit decreased to 50 (G – T = 200 – 150 = 50).

5a. i. In terms of consumption spending by households it is possible that households will decrease their marginal propensity to consume and decrease their autonomous spending.
In a diagram, the decrease in the marginal propensity to consume decreases the slope of the demand for goods curve. The impact of a decrease in autonomous consumption is a downward shift of the demand for goods curve (the vertical intercept is lower).

Consumption spending by households is therefore lower.

ii. Autonomous investment declines and the demand for goods curve shifts downwards (the vertical intercept is lower).

iii. The above causes the demand for goods to be lower.

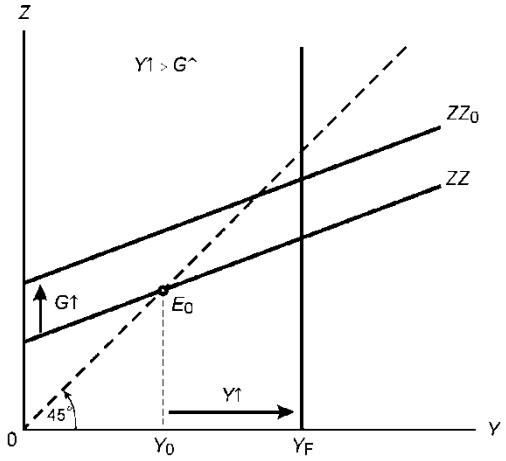
iv. Due to the lower demand for goods the level of output and income in the economy is lower and unemployment increases. In terms of the goods market diagram the demand for goods curve is flatter (due to the lower marginal propensity to consume) and vertical intercept is lower (due to the decrease in autonomous consumption and autonomous investment). The decrease in the level of output and income is larger than the decrease in autonomous spending due to the effect of the multiplier effect.

b. This requires an expansionary fiscal policy by increasing government spending and/ or decreasing taxation. Both of these policy actions shift the demand for goods curve upwards (the vertical intercept is higher). Note that the upward shift in the case of government spending is equal to the change in government spending while in the case of taxation the upward shift is equal to c(T).

Answers to activity 2.42

1. a. False. There can be different equilibrium positions depending on the value of the multiplier and autonomous spending.
   b. True.
   c. False. The output or income gap is equal to R600 million. (R6 500m – R5 900m = R600m).
   d. True.

Answers to activity 2.43



Because of the multiplier, the increase in government spending required is less than the gap between the equilibrium level of output and income and the level of full employment.

Answers to activity 2.44

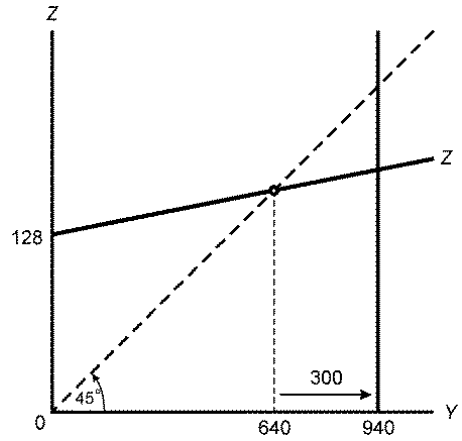
1. The value of the multiplier is $\frac{1}{1-0.8}$ = 5.

   The change in autonomous spending is c(T) = 0.8(200) = 160.

   The increase in income is therefore 5 x 160 = 800.

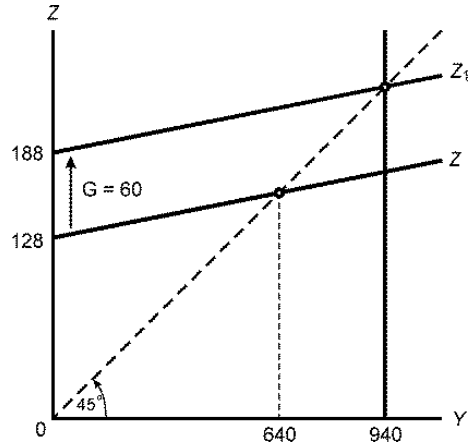
2. a. The multiplier is 1/1-0.8 = 5.
   b. Autonomous spending = 80 + 40 + 20 – 0.8(15) = 128.
   c. Equilibrium level of output and income = 128 x 5 = 640.

d.



e. i. The output and income gap: 940 – 640 = 300.

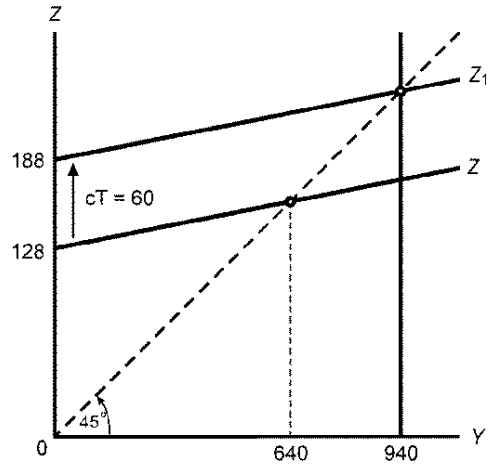
ii. If government spending is to be used it implies that it must increase by 300/5 = 60.



iii. If taxation is to be used it implies that the decrease in taxes is therefore

0.8(T) = 60

T = 60/0.8 = 75.



iv. Taxes would be negative meaning government will paying either us the citizens' money and the increase in government spending is a huge increase which would need to be financed through borrowing or future tax increases which places a large burden on the citizens.

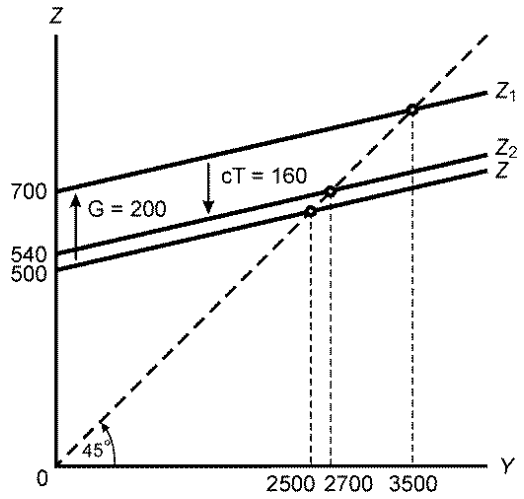
Answers to activity 2.45

1. A balanced budget is one where the change in G is equal to the change in T ($\Delta G = \Delta T$).

2. The value of the multiplier is $\frac{1}{1-0.8} = 5$.
Starting with an increase in government spending the increase in autonomous spending is 200. This is illustrated by an upward shift of the demand curve for goods by 200. The increase in the level of output and income is therefore 200 x 5 = 1 000 and the level of output and income increases to 3 500.

The increase of 200 in taxes decreases autonomous spending by 0.8(200) = 160. This is illustrated be a downward shift of the demand curve for goods by 160. The decrease in the level of output and income is therefore 160 x 5 = 800. The level of output and income therefore settles at 2 700.

The net effect of an equal increase in government spending and taxes is still expansionary.



3. The reason is that an increase in government spending has a direct impact on the demand for goods and the level of output and income while a change in taxes influence the demand for goods and output and income via household behaviour as captured by the consumption function.

Answer to activity 2.46

The argument is that if households increase their savings the end result is that the level of output will decrease and households will end up with the same amount of savings.

The reason for this is that an increase in savings implies a decrease in consumption spending. As consumption spending decreases, the demand for goods also decreases and, consequently, the level of output and income decrease too. In addition, as output and income decrease savings also decrease since savings are a positive function of output and income.

Answer to activity 2.47

1. Structural unemployment requires a different remedy
2. Jobless growth
3. Wage increases might upset the chart
4. A budget deficit constraint
5. Crowding out might occur
6. The balance of payments might act as a constraint

Checklist: The goods market

	Well	Satis-factorily	Must redo
Concepts			
I am able to explain the following concepts:			
Goods market			
Total demand for goods			
Consumption			
Autonomous consumption			
Disposable income			
Induced consumption			
Marginal propensity to consume			
Financial investment			
Real investment			
Government spending			
Equilibrium condition in the goods market			
Equilibrium output and income			
Autonomous spending			
Induced spending			
Multiplier			
Exogenous variables			
Endogenous variables			
Fiscal policy			
Stabilisation policies			
Budget deficit			
Budget surplus			
Balanced budget			
Balanced budget multiple			
Contractionary fiscal policy			
Expansionary fiscal policy			
Full employment			
Crowding out			

Relations

I am able to explain the following relations using words, equations and/or a chain of events:

Consumption relation			
Effect of a change in income on consumption			
Investment relation			
Government spending relation			
Taxation relation			
Demand relation			
Equilibrium formula			
Multiplier			

The effect of the following on the equilibrium output and income:

- a change in autonomous consumption			
- a change in investment			
- a change in government spending			
- a change in taxation			
- a change in marginal propensity to consume			
- balanced budget multiplier			

Diagrams

I am able to present and explain the following with the aid of a diagram:

Consumption relation			
Demand relation			
Equilibrium in the goods market			
The multiplier			

Effect of the following on the equilibrium level of output and income:

- a change in autonomous consumption			
- a change in investment			
- a change in government spending			
- a change in taxation			
- a change in marginal propensity to consume			
- balanced budget multiplier			

Policy

I am able to explain the following:

How fiscal policy can be used to achieve full employment in the goods market			
Why the net effect of an equal increase in government spending and taxation has a stimulatory (expansionary) effect on output and income			

Application

I am able to discuss the following:

The constraints on using an expansionary fiscal policy to achieve full employment in South Africa			

Financial markets 3

Summary of the financial market

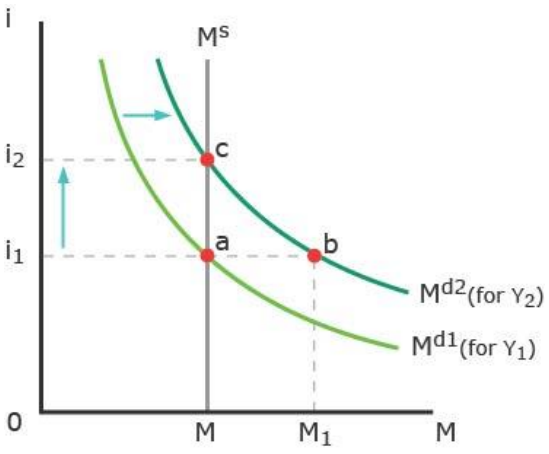


Diagram 3.6. A change in income and the interest rate

The money demand curve is determined by the active and passive demand for money.
$i\uparrow \Rightarrow$ passive demand for money$\downarrow \Rightarrow M^d\downarrow$ (**movement** along M^d upwards)
$Y\uparrow \Rightarrow$ active transactions$\uparrow \Rightarrow M^d\uparrow$ (**shift** of M^d to the right)
An increase in income (Y is **endogenous**) shifts the M^d curve to the right which results in a higher interest rate given the money supply. See diagram 3.6.

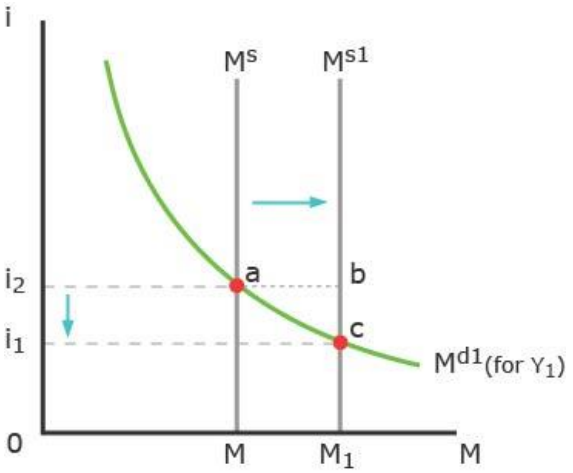


Diagram 3.7. An increase in the supply of money

Money supply (M^s) is **exogenously** determined by the central bank.
When the central bank wants to stimulate economic activity (increase the level of output and income), it buys bonds through the open market. Money flows from the central bank into the market, thus the money supply increases, M^s shifts to the right and as a result, the interest rate declines.
Diagram 3.7: Expansionary monetary policy:
$M^s\uparrow$: $D_B\uparrow \Rightarrow P_B\uparrow \Rightarrow i\downarrow$

Activity 3.1

The following information pertains to Joyce's financial position as at 31 July 2014:

Salary	R10 000
Interest received from bonds	R200
Balance on cheque account	R4 000
Cash in her purse	R500
Value of her bonds	R2 000
Outstanding loan on her house	R450 000
Value of her house	R600 000

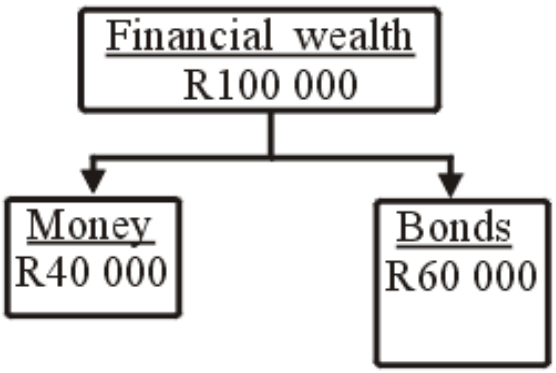
1. Use the above information to calculate:
   a. her income.
   b. her financial wealth.
   c. the amount of money she holds (her demand for money).

2. If the value of her house increases to say R650 000 show what happens to her …
   a. income.
   b. financial wealth.
   c. demand for money.

3. What do you think would happen to her demand for money if her salary increases to R12 000?

Activity 3.2

Given the following division of Patrick's financial wealth between money and bonds, answer the questions that follow:



1. What is Patrick's demand for money?
2. If there were a significant increase in the interest rate, what advice would you give Patrick about the amount of money and bonds he should hold?
3. What happens to Patrick's demand for money in the event of an increase in the interest rate?
4. What happens to his demand for bonds in the event of an increase in the interest rate?
5. If Patrick receives a substantial increase in his income what do you think will happen to the number of transactions he will want to do?

6. What happens to Patrick's demand for money if his income increases?
7. Think carefully about the following statement and then decide whether it is true or false:
   An increase in the demand for bonds implies a decrease in the demand for money.
8. Use chain of events to distinguish between the demand for active balances and the demand for passive balances.

Activity 3.3

Write the demand for money as an equation. Indicate the relationship between income and the demand for money as well as the relationship between the interest rate and the demand for money.

Activity 3.4

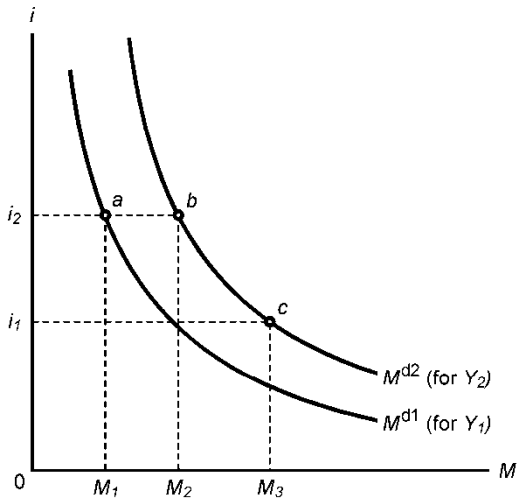
1. Briefly explain why there is a positive relationship between the level of income and the demand for money.

2. Briefly explain why there is a negative relationship between the interest rate and the amount of money demanded.

3. Use a demand for money curve to illustrate the following:

   a. The effect of an increase in the interest rate.
   b. The effect of a decrease in the interest rate.
   c. The effect of an increase in the level of output and income.
   d. The effect of a decrease in the level of output and income.

4. Study the following diagram and indicate whether the following statements are **true** or **false**:



	Statement	True	False
a.	At points a and b the interest rate is the same.		
b.	At points a and b the demand for money is the same.		
c.	At point b people wish to do more transactions than at point a.		
d.	The increase in the demand for money from point a to point b represents an increase in the demand for active balances.		
e.	At point c people wish to do more transactions than at point b.		
f.	The increase in the demand for money from point b to point c represents an increase in the demand for active balances.		
g.	At points b and c the amount of money demand is the same.		

Activity 3.5

Explain the meaning of an exogenous money supply and illustrate it by using a diagram.

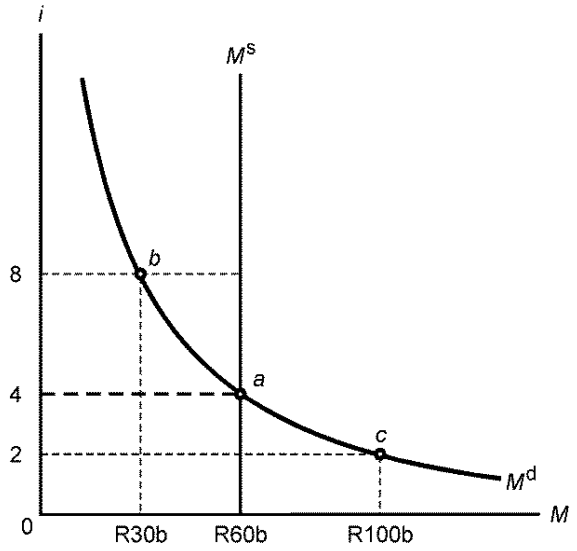
Activity 3.6

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The equilibrium position in the financial market indicates that portfolio equilibrium exists in the market.		
b.	Disequilibrium in the market implies that financial market participants are either holding too much money and too few bonds, or too little money and too many bonds, and this will cause them to change their behaviour.		
c.	Equilibrium in the financial market indicates that the demand for money is equal to the supply of money.		
d.	If there is disequilibrium in the market level of output and income will change to re-establish equilibrium.		

Activity 3.7

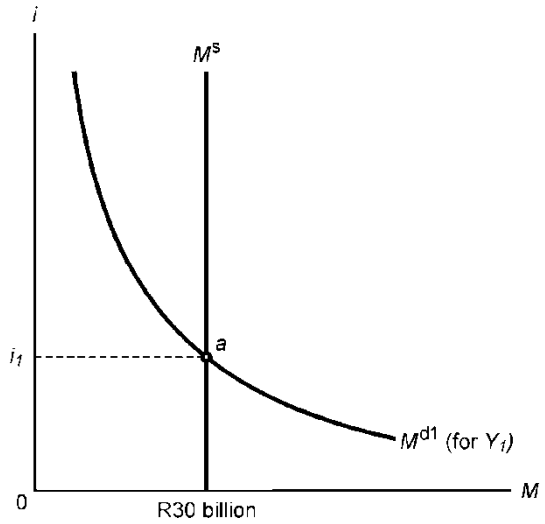
1. Study the following diagram and indicate whether the following statements are **true** or **false**:



	Statement	True	False
a.	Financial market equilibrium is at point a.		
b.	At an interest rate of 2% the quantity of money demanded is higher than the quantity of money supplied, in other words an excess demand for money exists.		
c.	At an interest rate of 8%, R30b of money is demanded while R60b of money is supplied. Thus, an excess supply of money occurs in the financial market.		
d.	At an interest rate of 2% an excess demand of R40b exists.		
e.	M^s is an exogenously determined money supply. It implies that the money supply is determined by the central bank and is independent of the interest rate.		
f.	In the event of an excess supply of money the interest rate will decline. As the interest rate declines, the quantity of money demanded increases and a downward movement along the money demand curve occurs. This process continues until equilibrium is reached at point a.		

Activities 3.8 and 3.9

Assume M^s = R30 billion



1. Indicate whether the following statements are **true** or **false**:

Statement		True	False
Activity 3.8			
a.	At point a people are willing to hold R30 billion.		
b.	At an interest rate of i_1 the demand for money is equal to R30 billion.		
c.	If the level of income increases, people will wish to hold more than R30 billion at an interest rate of i_1.		
d.	An increase in income increases the demand for money and the M^s curve shifts to the right.		
e.	If the level of income increases, an excess supply of money exists at an interest rate of i_1.		
f.	A decrease in income requires a decrease in the interest rate to ensure that people are willing to hold the M^s of R30 billion.		
Activity 3.9			
g.	An increase in the money supply from R30 billion to R40 billion shifts the M^s curve to the left.		
h.	If the money supply increases, an excess supply of money exists at an interest rate i_1.		
i.	If the money supply increases people will only be prepared to hold a larger amount of money if the interest rate is lower than i_1.		

Activity 3.10

Assume the following:
You have R100 000 available which you believe you will not need for the next year. The government needs R100 000 and decides to issue a treasury bill with a face value of R100 000 and a maturity of one year.

1. If the government offers to sell the treasury bill to you for R100 000, would you consider buying it?

2. If the government offers to sell it to you for R101 000, would you consider buying it?

3. If the government offers to sell it to you for R94 000, would you consider buying it?

4. If you bought this treasury bill for R94 000, for how much would the government buy it back for on its date of maturity?

5. If you bought the treasury bill for R94 000 and sold it back on the date of maturity to the government, what would be your rate of return?

6. If you bought the treasury bill for R99 000 and sold it back on the date of maturity to the government, what would be your rate of return?

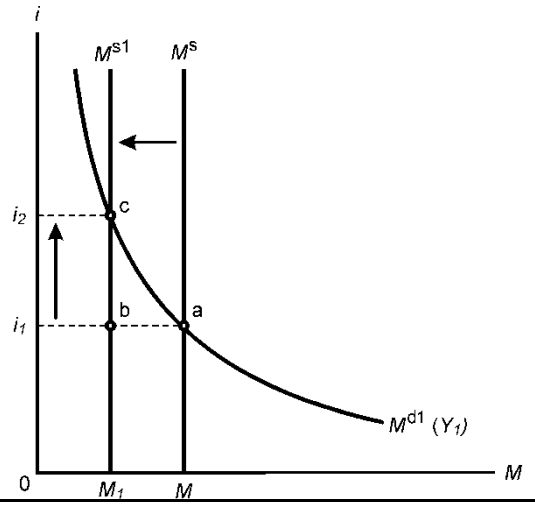
Activity 3.11

1. Explain briefly why a decrease in the level of output and income causes a decrease in the equilibrium interest rate.

2. Use a chain of events to indicate the above adjustment process.

Activity 3.12

Use the following diagram to explain why a decrease in the money supply will lead to an increase in the equilibrium interest rate.



Activity 3.13

1. a. Explain the difference between a contractionary and an expansionary monetary policy.

   b. Explain by referring to events in the financial market why an expansionary monetary policy causes a decrease in the interest rate.

Activity 3.14

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	In a liquidity trap, expansionary monetary policy will not lead to a decrease in the interest rate.		
b.	A decrease in the interest rate leads to an increase in the demand for bonds.		
c.	At a very low, nearly zero or zero interest rate, after people have satisfied their need for money for transaction purposes, they are indifferent between holding their financial wealth in the form of money or bonds.		
d.	When the economy is in a liquidity trap, monetary policy is very effective.		
e.	Refer to diagram 3.11 in the study guide; at interest rate i_0, $0M_1$ reflects the demand for money for transaction purposes.		
f.	During a liquidity trap, people are willing to hold less money at the same interest rate.		
g.	It is more effective for authorities to use fiscal policy when the economy is in a liquidity trap.		

Activity 3.15

1. Use the financial market model to illustrate the impact on the equilibrium interest rate of the following scenarios:

   a. An increase in income with simultaneous contractionary open market operations by the central bank.
   b. A decrease in income with simultaneous expansionary open market operations by the central bank.

2. What is the impact of an increase in income with simultaneous expansionary open market operations by the central bank on the equilibrium interest rate?

3. What is the impact of a decrease in income with simultaneous contractionary open market operations by the central bank on the equilibrium interest rate?

Activity 3.16

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The purpose of this financial market model is to explain how the interest rate is determined.		

b.	The nominal money supply is an endogenous variable and the interest rate is an exogenous variable in the financial market model.		
c.	Since the nominal money supply is not influenced by the interest rate in our model, but is determined by the central bank it can be regarded as an exogenous variable.		
d.	The interest rate is an endogenous variable in the financial market.		

Activity 3.17

1. Name the two assumptions we need to get rid of in order to understand the conduct of monetary policy in South Africa.

2. What is a demand deposit and how is it created?

3. Define the repurchase rate (repo rate).

4. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Examples of demand deposits are current accounts, transaction deposits and debit cards.		
b.	It is due to demand deposits that banks are able to create money.		
c.	Money is created by banks when a loan is approved and a demand deposit is created against this loan. When a bank creates this demand deposit for a client, the money supply increases since the money supply consists of cash (C) plus demand deposits (D).		
d.	For the central bank to influence the money supply it needs to influence this creation of demand deposits. In South Africa, the South African Reserve Bank does this mainly through loans to the clients.		
e.	If the South African Reserve Bank wishes to decrease the money supply it decreases the repo rate, and if it wishes to increase the money supply it increases the repo rate.		

Answers

Answers to activity 3.1

1. a. Joyce's income is (salary plus interest) = R10 000 + R200 = R10 200.
   b. Joyce's financial wealth is (value of bonds plus value of house minus outstanding loan plus balance on cheque account plus cash on hand) = (R2 000 + R600 000 – R450 000 + R4 000 + R500) = R156 500.

c. The amount of money Joyce holds is (balance on cheque account + cash on hand) = R4 000 + R500 = R4 500.

2. Joyce's income is unchanged. Her financial wealth increases by R50 000. What happens to her demand for money depends on how she reacts to the increase in the value of her house. If she does nothing her demand for money is unchanged. If, however, she decides to increase her loan amount by R10 000 and put it in her cheque account, her demand for money will increase by R10 000. Note that her financial wealth still increases by R50 000, but the composition of her financial wealth is different since her money holdings are higher.

3. If Joyce were like the rest of us, she would like to do more transactions and therefore demand more money. In other words, her demand for active balances increased.

Answers to activity 3.2

1. Since Patrick wishes to hold R40 000 in money, his demand for money is R40 000.

2. He should consider keeping less money and more bonds (reason: the opportunity cost of holding money is significantly higher). Remember the opportunity cost of holding money is the interest that he could have earned if he had held bonds.

3. If he keeps more bonds his demand for money declines.

4. If he wishes to keep less money his demand for bonds will increase.

5. If he were like everybody else he would want to increase his number of transactions.

6. His demand for money will increase.

7. True.

8.

Demand for active balances	Demand for active balances
$Y\uparrow \Rightarrow$ active transactions$\uparrow \Rightarrow M^d\uparrow$	$i\uparrow \Rightarrow$ passive demand for money$\downarrow \Rightarrow M^d\downarrow$
$Y\downarrow \Rightarrow$ active transactions$\downarrow \Rightarrow M^d\downarrow$	$i\downarrow \Rightarrow$ passive demand for money$\uparrow \Rightarrow M^d\uparrow$

Answers to activity 3.3

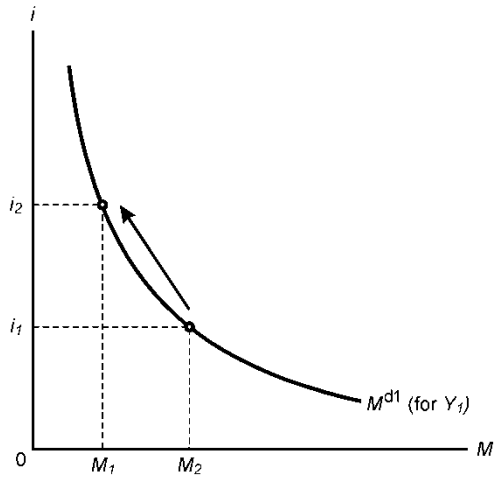
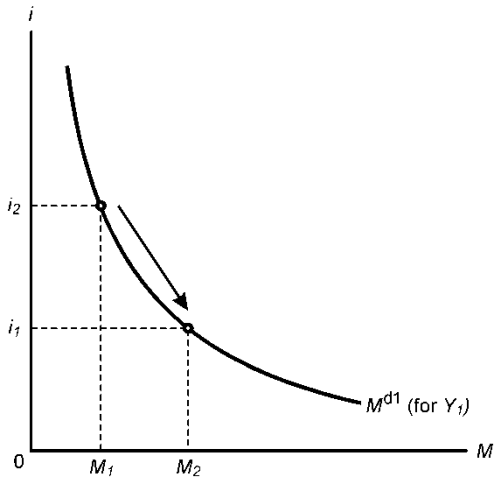
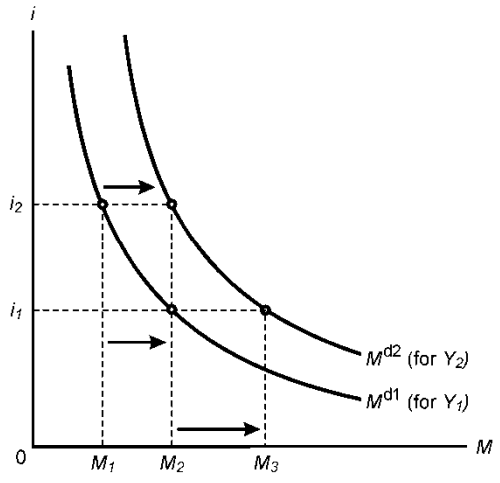
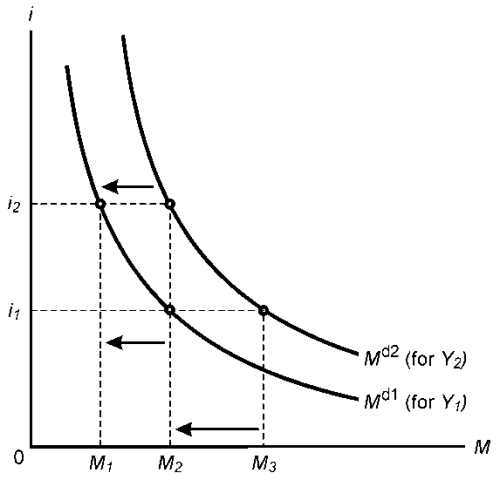
$M^d = RYL(i)$
$\quad\quad + \quad -$

Answers to activity 3.4

1. There is a positive relationship between the demand for money and the level of income, since an increase in income increases the number of transactions people wish to do and for that they require more money.
2. There is a negative relationship between the interest rate and the amount of money

demanded, since an increase in the interest rate increases the opportunity cost of holding money as an asset and people would rather hold bonds and less money

3.

An increase in the interest rate decreases the quantity of money demanded and this is represented by an upward movement along the M^d curve	A decrease in the interest rate increases the quantity of money demanded and this is represented by a downward movement along the M^d curve
	
An increase in income increases the demand for money and the demand for money curve shifts to the right. For each and every interest rate the demand for money is higher	A decrease in income decreases the demand for money and the demand for money curve shifts to the left. For each and every interest rate the demand for money is lower
	

4. a. True.
   b. False. At point b, the demand for money is higher since the level of income is higher.
   c. True. Owing to the higher income, people wish to do more transactions and they

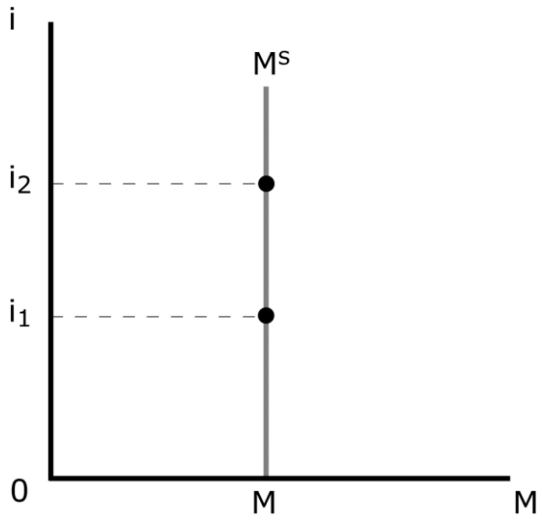
therefore demand more money.

d. True. People wish to do more transactions and therefore need more active balances.
e. False. The level of income is the same and therefore the level of transactions will be the same as well
f. False. People are keeping more money but for passive purposes due to the lower interest rate and not to do more transactions. (Note that M^{d2} for Y_2 stays the same.)
g. False. At point, b people demand a lower quantity of money because the interest rate is higher than at point c.

Answers to activity 3.5

It means that the supply of money is controlled by the central bank (in other words the traditional approach). This implies that the money supply is an exogenous variable in our model.

Since the supply of money is regarded as exogenous, it is presented as a perfectly inelastic curve showing that the interest rate has no impact on the supply of money. A change, for instance, in the interest rate from i_1 to i_2 does not influence the supply of money.



Answers to activity 3.6

1. a. True.
   b. True.
   c. False. Equilibrium in the financial market indicates that the quantity of money demanded is equal to the quantity of money supplied.
   d. False. The interest will change to re-establish equilibrium.

Answers to activity 3.7

1. a. True.
   b. True.
   c. True.

d. True.
e. True.
f. True.

Answers to activities 3.8 and 3.9

Answers to activity 3.8

1. a. True.
   b. True.
   c. True.
   d. False. The money supply is fixed. It is the demand for money curve M^d that shifts to the right.
   e. False. At an interest rate of i_1 there will be an excess demand for money.
   f. True.

Answers to activity 3.9

g. False. It shifts the M^s curve to the right.
h. True.
i. True.

Answers to activity 3.10

1. No, since you will not earn any return on your financial investment. By keeping it as money, you at least have the benefit of liquidity.
2. Definitely not, since you will be making a loss. You pay R101 000 for it but only get back R100 000.
3. Yes, since now you will earn a rate of return.
4. For R100 000.
5. Your rate of return is

$$\frac{\text{R100 000} - \text{R94 000}}{\text{R94 000}} \text{ X } \frac{100}{1} = 6.38\%.$$

6. Your rate of return is

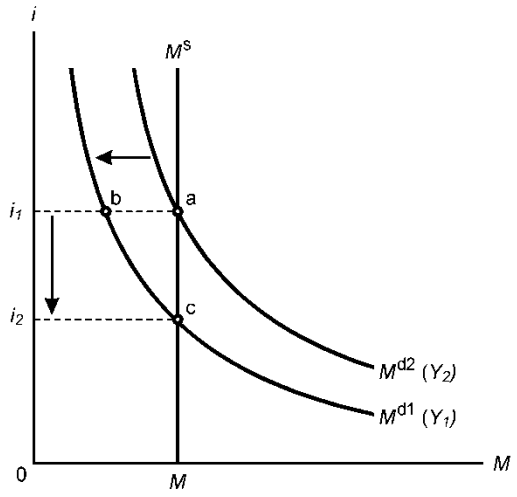
$$\frac{\text{R100 000} - \text{R99 000}}{\text{R99 000}} \text{ X } \frac{100}{1} = 1.01\%.$$

Answers to activity 3.11

1. We start from an equilibrium position in the financial market as represented by point a in the diagram below. At this equilibrium position, financial market participants are not only holding money in order to do transactions (active balances), but some people are also holding money as an asset (passive or speculative balances). A decrease in income decreases the demand for money for transaction purposes. At the existing equilibrium interest rate (i_1), an excess supply of money develops in the economy (distance between point a and point b) because people wish to hold less money for transaction purposes than before (curve M^{d2} shifts to the left to M^{d1}).

   To get rid of this money for transaction purposes, treasury bills are bought and the

supply of treasury bills decreases. A decrease in the supply of treasury bills increases the price of treasury bills and decreases the interest rate. At this lower interest rate, there is an increase in the amount of people wish to hold money as an asset (movement from point b to point c).



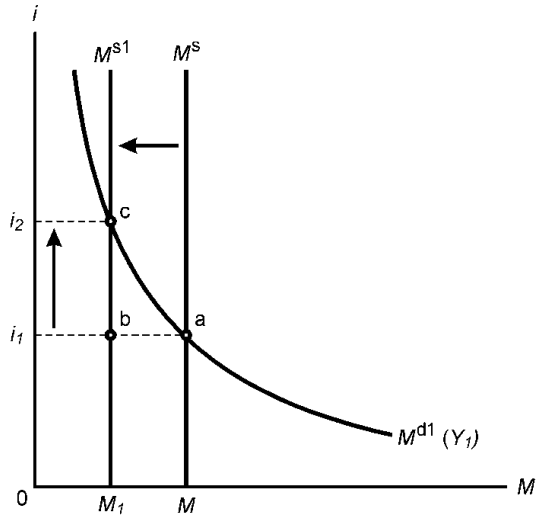
2. In terms of a chain of events, the impact of a decrease in income on the financial market can be represented as follows:

   $Y\downarrow \Rightarrow M^d \downarrow \Rightarrow P_B\uparrow \Rightarrow i\downarrow$

   A decrease in the level of output and income ($Y\downarrow$) decreases the demand for money ($M^d\downarrow$) for transaction purposes. On the bonds market, the supply of bonds decreases and the price of bonds falls ($P_B\uparrow$), and the interest rate thus falls ($i\downarrow$).

Answers to activity 3.12

At the equilibrium position a, the quantity of money demanded equals the quantity of money supplied and there is portfolio equilibrium. In the diagram below a decrease the supply of money from M^s to M^{s1} indicates that, at the current interest rate i_1, the quantity demanded for money exceeds the quantity supplied of money. The excess demand is equal to the distance between point a and point b. A portfolio disequilibrium exists since financial market participants are holding not enough money than they wish at an interest rate of i_1. They will sell bonds to get more money and, as their demand for bonds decreases, the price of bonds also falls and the interest rate increases. As the interest rate rises, they are willing to hold more bonds and an upward movement along the money demand curve occurs. This process continues until equilibrium is reached at point c with a higher equilibrium interest rate.



Answers to activity 3.13

1. a. A contractionary monetary policy is actions by the central to decrease the money supply in order to increase the interest rate while an expansionary monetary policy is actions by the central bank to increase the money supply in order to decrease the interest rate.

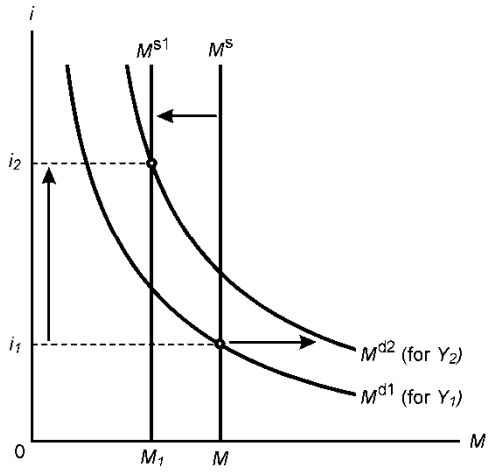
   b. An expansionary monetary policy involves the buying of bonds by the central bank from money market participants. On the bonds market this action increases the price of bonds and consequently the interest rate declines. As money market participants exchange their bonds for money the money supply in the economy increases and at the lower interest rate they are willing to hold more money.

Answers to activity 3.14

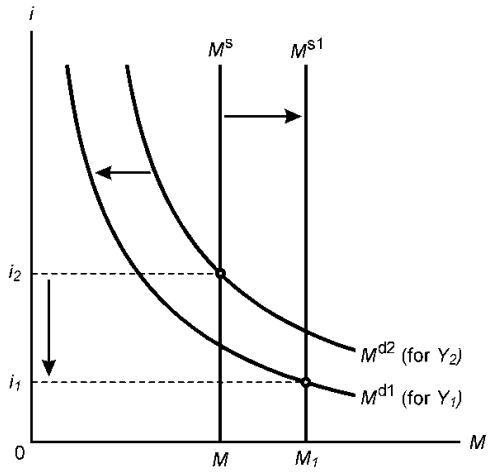
1. a. True.
   b. False. The lower the interest rate, the smaller the demand for bonds and the greater the demand for money.
   c. True.
   d. False. Monetary policy is not effective when the economy is in a liquidity trap.
   e. False. The demand for money for transaction purposes is reflected by $0M_2$ at interest rate i_0.
   f. False. People will be willing to hold more money at the same interest rate.
   g. True.

Answers to activity 3.15

1. a. An increase in income increases the demand for money for transaction purposes and the demand for money curve shifts to the right. Contractionary open market operations decrease the money supply since the central bank sell bonds and the money supply curve shifts to the left. Since both an increase in the demand for money and a decrease in the supply of money increase the interest rate, the equilibrium interest rate is higher.



b. A decrease in income decreases the demand for money for transaction purposes and the demand for money curve shifts to the left. Expansionary open market operations increase the money supply since the central bank buys bonds and the money supply curve shifts to the right. Since both a decrease in the demand for money and an increase in the supply of money decrease the interest rate, the equilibrium interest rate is lower.



2. The impact on the interest rate is indeterminate since the increase in the demand for money increases the interest rate while the increase in the money supply decreases the interest rate.

3. The impact on the interest rate is indeterminate since the decrease in the demand for money decreases the interest rate while the decrease in the money supply increases the interest rate.

Answers to activity 3.16

1. a. True.
   b. False. The nominal money supply is an exogenous variable and the interest rate in an endogenous variable.
   c. True.
   d. True.

Answers to activity 3.17

1. *First assumption*: Money does not consist of currency only. Money consists of both currency (C) and demand deposits (D).
   Second assumption: The money supply is not an exogenous variable. The money supply is now a function of the creation of demand deposits and is no longer exogenously determined by the central bank.

2. A demand deposit is a bank deposit that can be withdrawn without notice ("on demand"). A demand deposit is created when a person deposits a sum of money with a bank, which then creates a demand deposit in favour of that person.

3. The repurchase rate – called the repo rate – is the rate at which private banks borrow money from the South African Reserve Bank.

4. a. True.
   b. True
   c. True.
   d. False. In South Africa, the South African Reserve Bank does this mainly through the repurchase rate.

e. False. If the South African Reserve Bank wishes to decrease the money supply it increases the repo rate, and if it wishes to increase the money supply it decreases the repo rate.

Checklist: Financial market

	Well	Satis-factory	Must redo
Concepts			
I am able explain the following concepts:			
Financial market			
Wealth			
Income			
Money			
Demand for money			
Demand for active balances			
Demand for passive balances			
Treasury bills			
Exogenously determined money supply			
Demand determined money supply			
Equilibrium condition in the financial market			
Equilibrium interest rate			
Monetary policy			
Open market operations			
Treasury bills			
Expansionary monetary policy			

Contractionary monetary policy			
Liquidity trap			
Repo rate (repurchasing rate)			

Relations

I am able to explain the following relations using words, equations and/or a chain of events:

The demand for money			
Effect of a change in output and income on the demand for money			
Effect of a change in the interest rate on the demand for money			
Supply of money			
Equilibrium condition in the financial market			
The price of bonds (treasury bills) and the interest rate			
Effect of a change in output and income on the equilibrium interest rate			
Effect of an expansionary monetary policy on the equilibrium interest rate			
Effect of a contractionary monetary policy on the equilibrium interest rate			

Diagrams

I am able to present and explain the following with the aid of a diagram:

The demand for money			
Effect of a change in income on the demand for money			
Effect of a change in the interest rate on the demand for money			
Supply of money			
Determination of the equilibrium interest rate			
Effect of a change in income on the equilibrium interest rate			
Effect of an expansionary monetary policy on the equilibrium interest rate			
Effect of a contractionary monetary policy on the equilibrium interest rate			
Impact of monetary policy on the interest rate in a liquidity trap			
Effect of a simultaneous change in the demand and supply of money			

Policy

I am able to explain the following:

How monetary policy can be used to bring about:			
- a decrease in the equilibrium interest rate			
- an increase in the equilibrium interest rate			

Application

I am able to discuss the following:

The likely impact of an increase in economic growth on the financial market in South Africa			
The conduct of monetary policy in South Africa			

Goods and financial markets: The IS-LM model

4

Summary: IS-LM Model in a Closed Economy
Monetary and fiscal polices have different effects on the interest rate so a policy mix can be used to achieve certain objectives. For example, expansionary policies result in an increase in the level of output and income (**Y**↑) but an expansionary monetary policy results in a decrease in the interest rate (**i**↓) whilst an expansionary fiscal policy results in an increase in the interest rate (**i**↑). Note: you must understand the limits to policy. For example, in a liquidity trap monetary policy is not effective.

If the macroeconomic goal is to increase output without a change in the interest rate, then an expansionary fiscal policy combined with an expansionary monetary policy could be used. See diagram 4.21.	If the goal is to decrease the budget deficit (budget deficit is where taxes < government revenue therefore to decrease a deficit either G↓ and/or T↑) whilst not worsening the unemployment problem (i.e. without decreasing output), then a contractionary fiscal policy can be combined with an expansionary monetary policy. See diagram 4.20.

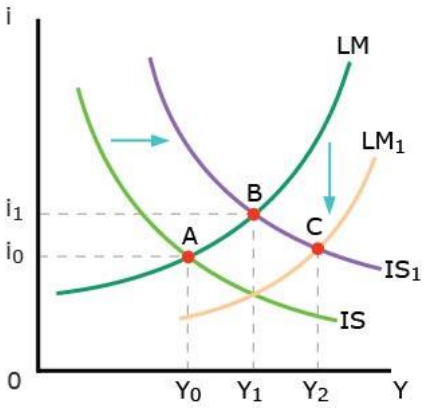
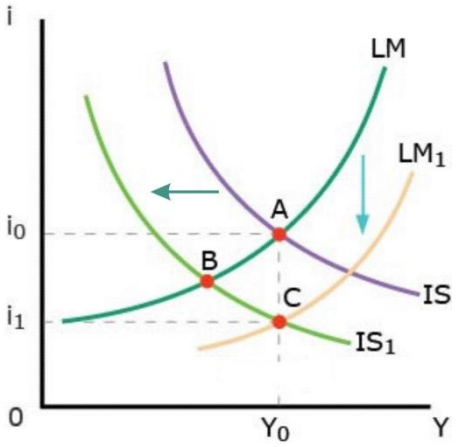

	

Diagram 4.21. Using a policy mix to keep the interest rate the same	Diagram 4.20. The use of a policy mix in the IS-LM model

Prior knowledge Activity 4.1

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Investment refers to the decision by people about the number of bonds they wish to hold.		
b.	In the goods market the level of output and income is determined by the demand for goods and services.		
c.	An increase in the demand for goods and services increases the level of output and income in the economy.		
d.	An increase in the level of output and income increases the level of consumption spending.		
e.	An increase in investment has a more than one-for-one effect on the equilibrium output and income.		
f.	An increase in taxes increases the demand for goods and services and the equilibrium level of output and income increases.		

Activity 4.1

1. Write down the investment relation that shows that investment spending is a positive function of the level of output and a negative function of the interest rate and represent it graphically.

2. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in output and income leads to an increase in the level of investment spending.		
b.	The aim of investment (building a new factory or buying a machine) is to make a profit in the future.		
c.	An increase in the interest rate will decrease investment spending.		
d.	An increase in investment spending increases the demand for goods.		
e.	A shift of the investment curve takes place if the interest rate changes.		
f.	An increase in business confidence and positive expectations will cause a leftward shift of the investment curve.		

Activity 4.2

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in output and income leads to an increase in the level of consumption spending and the level of investment spending.		
b.	In the goods market, equilibrium exists where the demand for goods is equal to the output level.		
c.	In the IS-LM model the level of output determines the demand for goods.		
d.	In the IS-LM model the demand for goods consists of consumption spending by households, investment spending by firms and government spending and can be written as $Z = C(Y - T) + I(Y, i) + G$.		

Activity 4.3

1. Use a chain of events, equations and words to explain why a decrease in the interest rate increases the equilibrium level of income in the goods market.

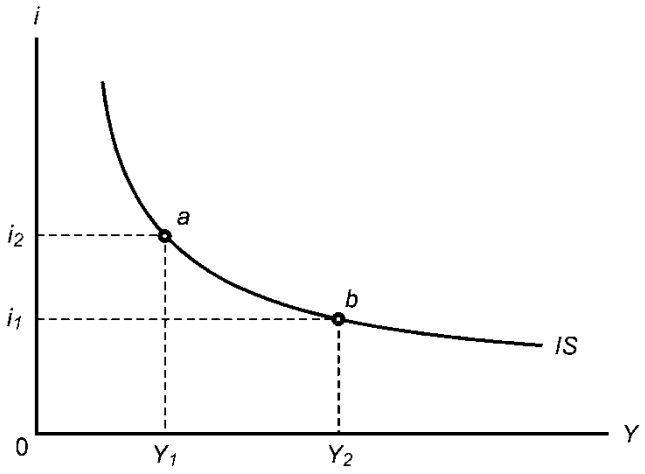
2. Explain why consumption spending decreases as the interest rate rises in this model.

Activity 4.4

Derive the IS curve graphically by assuming a decrease in the interest rate.

Activity 4.5

1. Study the following IS curve and indicates whether the statements that follow it are **true** or **false**:

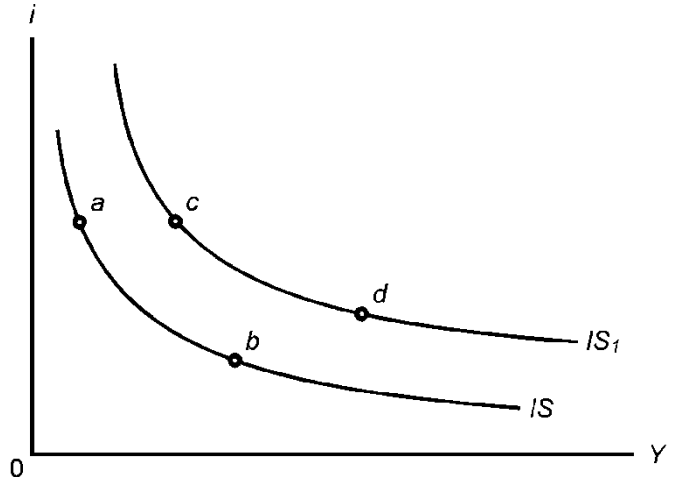


	Statement	True	False
a.	At point a and point b goods market equilibrium exist.		
b.	At points a and b, Y = Z.		
c.	At point a the level of investment spending is lower than at point b.		
d.	At point a the demand for goods is higher than at point b.		
e.	At point a and point b the level of government spending is the same.		
f.	At point b consumption spending is higher than at point a.		
g.	The increase in income from Y_1 to Y_2 is equal to the change in investment spending.		

2. Name 2 variables that determines the steepness of the IS curve and briefly explain the meaning of it on the level of output and income.

Activity 4.6

Study the following diagram and answer the questions:



1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	At points a and b the interest rate is the same.		
b.	At points a and c the interest rate is the same.		
c.	At point b the level of demand for goods is higher than at point a.		
d.	At point c the level of demand for goods is higher than at point a.		

2. Assume that an **increase in government spending** shifts the IS curve to the right:

Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	At point b the level of government spending is higher than at point a.		
b.	At point d the level of government spending is higher than at point c.		
c.	At point c the level of government spending is higher than at point a.		
d.	A movement from point c to point d is caused by an increase in government spending.		

3. Complete the following table by indicating whether the following variables will cause a downward movement along an IS curve, an upward movement along an IS curve, a rightward shift of an IS curve or a leftward shift of an IS curve:

Variable	Impact on IS curve
an increase in the interest rate	
an increase in government spending	
a decrease in taxation	
a decrease in the interest rate	
a loss of consumer and investor confidence due to an economic crisis	

Activity 4.7

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	In nominal terms the equilibrium condition in the financial market is : $M = RYL(i)$		
b.	To get the equilibrium condition in the financial market in real terms the equilibrium condition in nominal terms must be divided by the price level (P).		
c.	Assume M^s = R200m. If the price level increases from say R50 to R60, the real money supply will increase to 3.33.		
d.	The nominal money supply is the money supply expressed in terms of its purchasing power (in terms of goods).		

Activity 4.8

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	There is a negative relationship between the level of output and the demand for money.		
b.	An increase in the level of output increases the demand for money.		

c.	Financial market equilibrium implies that quantity of money supplied is equal to the quantity for money demanded.		
d.	An increase in the demand for money increases the interest rate.		

2. Use a chain of events, equations and words to explain why a decrease in the level of output decreases the equilibrium interest rate in the financial market.

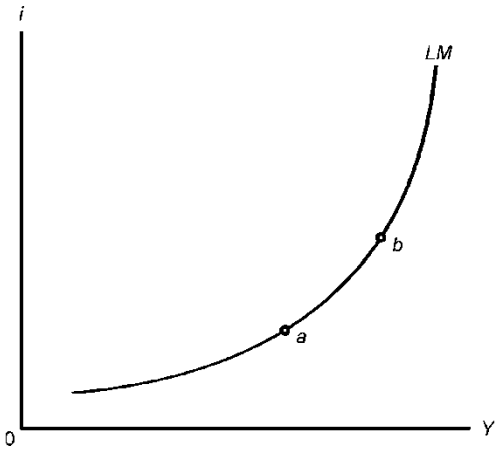
Activity 4.9

1. Graphically derive the LM curve assuming that a decrease in the level of output and income takes place.

2. Define the LM curve.

Activity 4.10

1. Study the following LM curve and indicate whether the statements that follow it are **true** or **false:**



	Statement	True	False
a.	At both point a and point b the financial market is in equilibrium.		
b.	At points a and b, $M^s = M^d$.		
c.	At point a the demand for money is higher than at point b.		
d.	At point b the interest rate is higher than at point a since the money supply is less.		

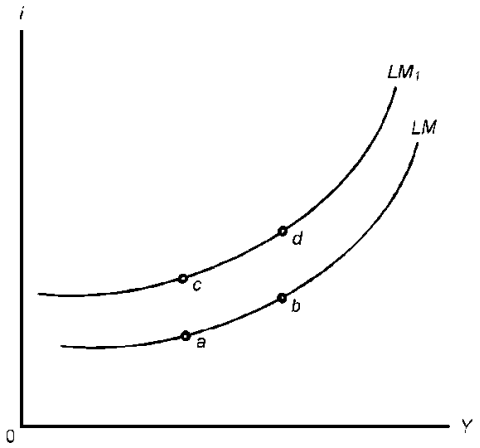
Activity 4.11

1. Name the two variables that have an impact on the slope of the LM curve.
2. Explain what the income sensitivity of the demand for money measures.
3. Explain what the interest sensitivity of the demand for money measures.
4. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	If the demand for money is very sensitive to a change in the interest rate it means that a small rise in the interest rate will cause a relative large decrease in the quantity of money demanded.		
b.	The more sensitive the demand for money for a change in the interest rate the flatter is the LM curve.		
c.	The smaller the income sensitivity of the demand for money, the smaller the increase in the interest rate for a given increase in the level of output and income.		
d.	The income sensitivity of the demand for money plays an important role in the liquidity trap.		

Activity 4.12

1. Study the following diagram and answer the questions:



Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	At points a and b the level of output is the same.		
b.	At point c the money supply is higher than at point a.		
c.	At point d the money supply is the same as at point c.		
d.	At point d the demand for money is higher than the demand for money at point c.		

2. Complete the following table by indicating whether the following variables will cause a downward movement along an LM curve, an upward movement along an LM curve, an upward shift of an LM curve or a downward shift of an LM curve:

Variable	Impact on LM curve
an increase in the level of output	
an increase in the money supply	
a decrease in the level of output	
a decrease in the money supply	

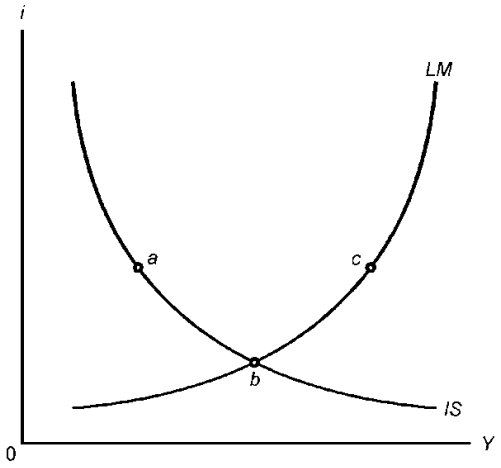
Activity 4.13

Question 1 tests your prior knowledge.

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	According to the IS relation, an increase in the interest rate decreases investment, the demand for goods and the level of output.		
b.	According to the LM relation, an increase in output causes an increase in the demand for money and thus the interest rate rises.		
c.	Any point on an IS curve corresponds to equilibrium in the financial market.		
d.	A change in exogenous variables such as a change in taxation and government spending is represented by a movement along an IS curve.		
e.	A decrease in the interest rate is represented as an upward movement along an IS curve.		
f.	Any point on an LM curve corresponds to equilibrium in the goods market.		
g.	An increase in the money supply shifts the LM curve downwards.		

2. Study the following diagram of an IS-LM model and answer the questions:



Indicate whether the following statements are **true** or **false**:

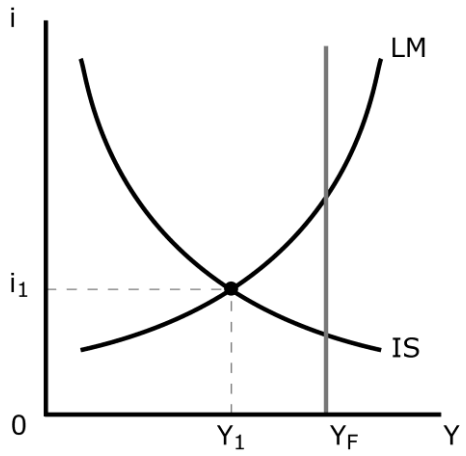
	Statement	True	False
a.	At point a the goods market is in equilibrium but not the financial market.		
b.	At point c both the goods market and the financial market are in equilibrium.		
c.	At point b only the financial market is in equilibrium.		
d.	A movement from point a to point b indicates that the interest rate declines and investment spending increases.		

Activity 4.14

1. List the endogenous variables in the IS-LM model.

2. List the exogenous variables in the IS-LM model.

3. Study the following diagram.



If full employment wants to be reached, what measures can be implemented to move from Y_1 to Y_F? List four measures and briefly explain how they can be used.

4. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The initial impact of a change in taxation is on the financial market.		
b.	A change in government spending only influences the goods market and has no impact on the financial market.		
c.	The initial impact of a change in the money supply is on the financial market after which it influences the goods market.		

Activity 4.15

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in taxation causes a rightward shift of the IS curve.		
b.	A decrease in taxation will have no impact on the level of output and income.		
c.	An increase in money supply will shift the IS curve to the right.		
d.	Contractionary fiscal policy (increase in taxes and/or decrease in government spending) can be used to decrease the demand for goods in the economy.		

Activities 4.16 and 4.17

Use the IS-LM model and a chain of events to explain what happens in the economy if government spending increases.

Activities 4.18

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	A change in the multiplier does not affect the effectiveness of government spending on output and income.		
b.	A relatively more inelastic IS curve indicates a greater interest sensitivity of investment spending.		
c.	The effectiveness of fiscal policy is positively related to the output and income sensitivity of demand for money.		
d.	The slope of the IS curve indicates the income sensitivity of demand for money.		
e.	“Crowding out” of investment spending will occur if the output and income sensitivity of investment spending is low and the interest sensitivity of investment spending is high.		

Activities 4.19 and 4.20

Use the IS-LM model and a chain of events to explain what happens in the economy when the money supply decreases.

Activities 4.21

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	There is a positive relationship between the interest sensitivity of investment spending and the effectiveness of monetary policy.		
b.	A high interest sensitivity of investment can lead to a crowding out of investment spending when government spending increases.		
c.	In a liquidity trap, the money demand curve is perfectly inelastic.		
d.	A lower interest sensitivity of the demand for money means that monetary policy becomes less effective.		

Activities 4.22

Question 1 tests your prior knowledge

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	A decrease in government spending shifts the IS curve to the left.		
b.	An increase in the money supply causes an upward shift of the LM curve.		
c.	A decrease in the money supply increases the interest rate and increases the equilibrium level of output and income.		
d.	A decrease in taxation increases the interest rate and increases the level of output and income.		

2. Compare a contractionary monetary policy with a contractionary fiscal policy by completing the following table indicating the change in the variables:

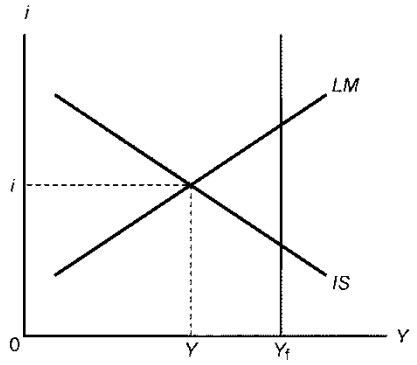
Variable	Contractionary monetary policy	Contractionary fiscal policy
Level of output and income		
Consumption spending		
Investment spending		
Government spending		
Taxation		
Nominal money supply		
Demand for goods		

Activity 4.23

1. Use an events chain and diagrams to explain how the negative impact of a budget deficit reduction on the level of output can be counteracted by an expansionary monetary policy.

2. During the “great recession” both fiscal and monetary policies were used to avoid a depression. Use the IS-LM model to illustrate graphically and explain how fiscal and monetary policies can be used to avoid a depression.

3. Use the following diagram to illustrate graphically and explain how fiscal and monetary policies can be used to achieve full-employment.



Activity 4.24

Explain and illustrate by using two different diagrams the impact of an expansionary fiscal policy in:
(a) The goods market model.
(b) The IS-LM model.
(c) Compare the results in (a) and (b) above.

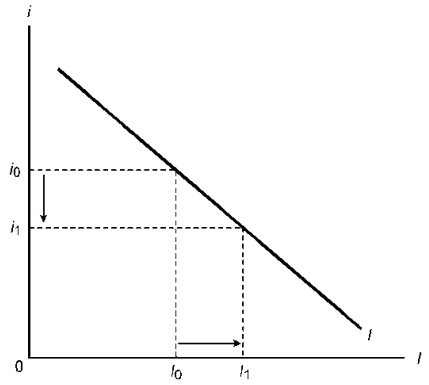
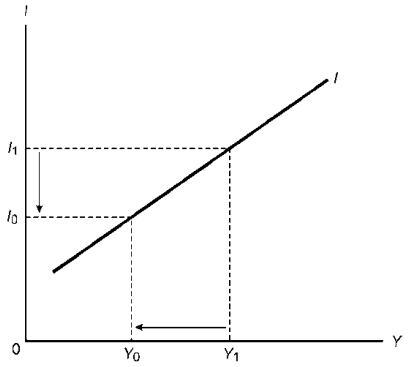
Answers

Answers to prior knowledge activity 4.1

1. a. False. **Investment or real investment** is spending on additions to the capital stock (machinery, structures, inventories, etc.). Such investment is undertaken with the aim of making profits in the future. This is an important definition and should not be confused with financial investment. **Financial investment** is investment in bonds, shares and other financial instruments.
   b. True. The aggregate demand relation for the goods market is: $Y = c_0 + c(Y–T) + \bar{I} + G$.
   c. True.
   d. True. Consumption spending is a positive function of the level of output and income.
   e. True. This is due to the multiplier effect.
   f. False. An increase in taxes decreases disposable income and consumption spending declines, which decreases the demand for goods and hence the equilibrium level of output and income declines.

Answers to activity 4.1

1. I = I(Y,i)
   +,–

Investment as a negative function of the interest rate	Investment as a positive function of output
	

2. a. True.
   b. True.
   c. True.
   d. True.
   e. False. If the interest rate changes an upward or downward movement along the investment curve will take place.
   f. False. An increase in business confidence and positive expectations will cause a rightward shift of the investment curve.

Answers to activity 4.2

1. a. True.
   b. True.
   c. False. In the IS-LM model, the demand for goods determines the level of output.
   d. True.

Answers to activity 4.3

1. The relevant chain of events to use is
   $i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$

   The investment equation that explains the link between $i\downarrow \Rightarrow I\uparrow$ is I = I(Y,i).
   The equation that describes the link between $I\uparrow \Rightarrow Z\uparrow$ is Z = C + I + G.
   The equation that describes the link between $Z\uparrow \Rightarrow Y\uparrow$ is Y = Z = C + I + G.

2. An increase in the interest rate decreases investment spending, the demand for goods and the level of output and income. A decrease in the level of output and income in turn decreases consumption spending since consumption spending is a positive function of the level of output and income.

Answer to activity 4.4

The same steps are followed as in the study guide except that the change in variables is in the opposite direction. In terms of an events chain:

$i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$

Summary: How to derive the IS curve

The IS curve is derived from the ZZ curve in the goods market model.

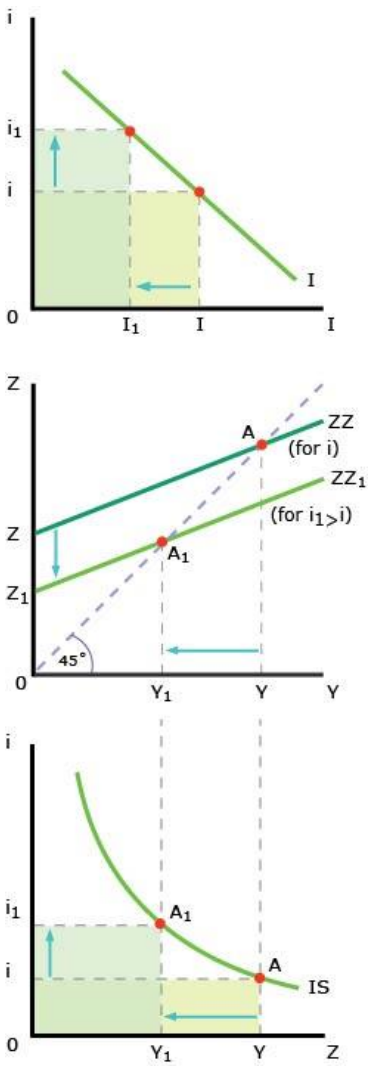


Diagram 4.3 in the study guide: Derivation of an IS curve

By assuming a change in the interest rate that changes investment spending and shifts the ZZ curve which leads to a change in the level of output and income.

A change in any of the **autonomous or exogenous** components of ZZ will **shift** the IS curve. i.e. c_0, $\bar{I}$, G or cT

- An increase in consumer confidence: $c_0\uparrow$ will shift the IS curve to the right
- An increase in investor confidence: $\bar{I}\uparrow$ will shift the IS curve to the right
- Expansionary fiscal policy: $G\uparrow$ and/or $T\downarrow$ will shift the IS curve to the right

Note that both investment and consumption have **endogenous** components. Part of investment reacts to a change in the interest rate and part of consumption spending reacts to changes in income.

A change in the endogenous components result in a **movement** along the IS curve.

Answers to activity 4.5

1. a. True. Any point on an IS curve indicates goods market equilibrium.
   b. True. This indicates goods market equilibrium.
   c. True. At point a the interest rate is higher than at point b and consequently investment spending is lower. Investment spending is also lower since the level of output is lower.
   d. False. The demand for goods is lower at point a than at point b since investment spending is lower at point a.
   e. True. When the IS curve is derived it is assumed that autonomous spending is unchanged.
   f. True. At point b the level of income is higher and therefore consumption spending is higher.
   g. False. The increase in income is a multiple of the increase in investment spending.

2. The steepness of the IS curve depends on the interest sensitivity of investment spending and on the output and income sensitivity of investment spending.

   Interest sensitivity of investment spending

   The interest rate sensitivity of investment spending measures how sensitive investment spending is to a change in the interest rate. If investment spending is very sensitive to a change in the interest rate, a given change in the interest rate will have a greater impact on investment spending and, consequently, the greater the change in the level of output and income will be. This will give us a flatter IS curve.

   Output and income sensitivity of investment spending

   The output sensitivity of investment spending measures how sensitive investment spending is to a change in output and income. If investment spending is very sensitive to a change in output and income, a given change in output and income will have a greater impact on the investment spending and thus on the level of output and income. The IS curve is therefore flatter.

Answers to activity 4.6

1. a. False. The interest rate is lower at point b.
   b. True.
   c. True. The lower interest rate increases investment spending.
   d. True. At point c one or more of the autonomous spending components are higher.

2. a. False. The level of government spending is the same since it is on the same IS curve.
   b. False. The level of government spending is the same since it is on the same IS curve.
   c. True. The shift of the IS curve is due to an increase in government spending.
   d. False. A movement from point c to point d is caused by a decrease in the interest rate.

3.

Variable	Impact on the IS curve
an increase in the interest rate	an upward movement along an IS curve
an increase in government spending	a rightward shift of an IS curve
a decrease in taxation	a rightward shift of an IS curve
a decrease in the interest rate	a downward movement along an IS curve
a loss of consumer and investor confidence due to an economic crisis	a leftward shift of the IS curve

Answers to activity 4.7

1. a. True.
   b. True.
   c. False. If M^s = R200m and the price level increases from R50 to R60, the real money supply will decrease to 3.33 (200/50 = 4 and 200/60 = 3.33).
   d. False. The real money supply is the money supply expressed in terms of its purchasing power (in terms of goods).

Answers to activity 4.8

1. a. False. A positive relationship exists.
   b. True.
   c. True.
   d. True.

2. The relevant chain of events to use is:

   $Y\downarrow \Rightarrow M^d\downarrow \Rightarrow i\downarrow$

   A decrease in the level of output decreases the level of transactions and the demand for money decreases.
   The equation for the demand for money that explains the link between $Y\downarrow \Rightarrow M^d\downarrow$ is $M^d = YL(i)$ and the link between $M^d\downarrow \Rightarrow i\downarrow$ is explained by $M/P = YL(i)$, which means that financial market equilibrium occurs where the quantity of money supplied is equal to the quantity of money demanded.

Answers to activity 4.9

1. The same steps are followed as in the study guide except that the change in variables is in the opposite direction. In terms of an events chain:

   $Y\downarrow \Rightarrow M^d\downarrow \Rightarrow i\downarrow$

2. The LM curve showing combinations of interest rates and income levels where the financial market is in equilibrium, given that the real money supply is fixed.

Summary: How to derive the LM curve

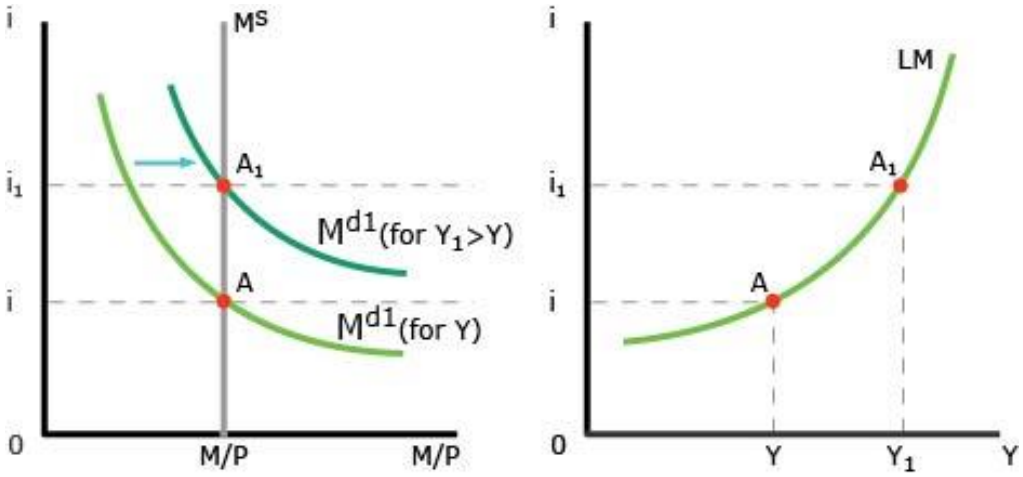


Diagram 4.7 in the study guide: Derivation of an LM curve

The LM curve is derived from the M^d curve in the financial market.
By assuming a change in the level of output and income, which shifts the demand for money curve and results in a change in the interest rate.

A change in the level of output and income (**Y**) is an **endogenous** variable and results in a **movement** along the **LM** curve.

A change in the money supply (**M^s**) is an **exogenous** variable and results in a **shift** of the **LM** curve.
E.g., an increase in the money supply will shift the LM curve downwards (to the right).

Answers to activity 4.10

1. a. True.
   b. True.
   c. False. The demand for money is higher at point b since the level of output is higher.
   d. False. The interest rate is higher since the demand for money is higher. The money supply is the same at both points.

Answers to activity 4.11

1. The income sensitivity of the demand for money and the interest sensitivity of the demand for money.

2. The income sensitivity of the demand for money measures by how much the demand for money (M^d) changes if there is a change in the level of output and income (Y).

3. The interest sensitivity of the demand for money measures how sensitive the demand for money (M^d) is to a change in the interest rate (i).

4. a. True.
   b. True.
   c. True.
   d. False. The interest sensitivity of the demand for money plays an important role in the liquidity trap.

Answers to activity 4.12

1. a. False. The level of output is higher at point b.
   b. False. The money supply is lower and the interest rate is higher.
   c. True. Along an LM curve, the nominal money supply is constant.
   d. True. The level of output is higher at point d and therefore the demand for money is higher and so is the interest rate.

2.

Variable	Impact on LM curve
an increase in the level of output and income	an upward movement
an increase in the money supply	a shift downwards
a decrease in the level of output	a downward movement
a decrease in the money supply	a shift upwards

Answers to activity 4.13

1. a. True.
   b. True.
   c. False. Any point on an IS curve corresponds to equilibrium in the goods market.
   d. False. A change in these exogenous variables shifts the IS curve.
   e. False. A decrease in the interest rate is represented as a downward movement along an IS curve. A change in the exogenous factors will shift the IS curve.
   f. False. Any point on an LM curve corresponds to equilibrium in the financial market.
   g. True.

2. a. True. Point a is on an IS curve that corresponds to a goods market equilibrium position. Since point a is not on an LM curve the financial market is not in equilibrium.
   b. False. Only the financial market is in equilibrium.
   c. False. Both the goods market and the financial market are in equilibrium.
   d. True. It is a movement along an IS curve.

Answers to activity 4.14

1. **Endogenous variables:**
   Output and income (Y)
   Interest rate (i)
   The Y_D part of the consumption function.
   The parts of investment that is dependent on income and the interest rate.

The part of the demand for money that is determined by the interest rate and the level of output and income.

2. **Exogenous variables:**
Autonomous consumption (c_o) and the marginal propensity to consume (c) of the consumption function.
The part of investment that is influenced by expectations, business confidence, and political and social factors
Government spending
Taxation
The supply of money
The part of the demand for money that is influenced by expectations, business confidence, and political and social factors.

3. Any 4 of the following:

- An increase in government spending (which is a fiscal policy measure) shifts the IS curve rightwards and full employment can be reached.
- A decrease in taxes (which is a fiscal policy measure) shifts the IS curve rightwards and full employment can be reached.
- An increase in consumer confidence shifts the IS curve rightwards and full employment can be reached.
- An increase in investor confidence shifts the IS curve rightwards and full employment can be reached.
- An increase in the money supply (which is a monetary policy measure) shifts the LM curve downwards and full employment can be reached.

4. a. False. The initial impact is on the goods market.
b. False. A change in the goods market eventually influences the financial market. The purpose of the IS-LM model is to show this interaction between the goods market and the financial market.
c. True.

Answers to activity 4.15

1. a. False. It will shift the IS curve to the left.
b. False. Since a decrease in taxation will decrease the demand for goods, it will also lead to a decrease in the level of output and income.
c. False. It will cause a downward shift of the LM curve.
d. True.

Answers to activities 4.16 and 4.17

An increase in government spending is an example of an expansionary fiscal policy.

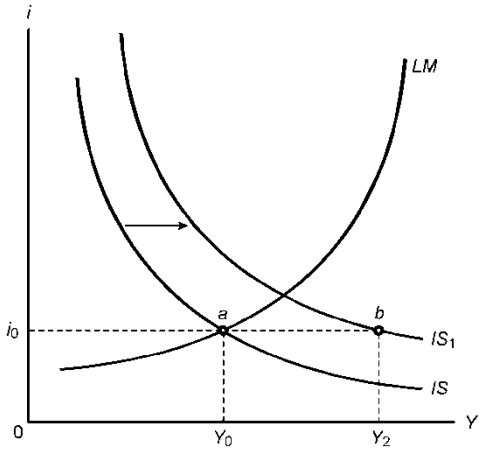
Impact on the goods market

The initial impact is on the goods market where the demand for goods increases. This increase in the demand for goods increases the level of output and income.

$G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$
$Y\uparrow \Rightarrow I\uparrow$
$Y\uparrow \Rightarrow C\uparrow$

The increase in the level of output and income increases the level of sales and the level of investment spending increases. The increase in the level of output and income also increases consumption spending. The multiplier effect is therefore in operation.

If this is presented by the IS-LM model, the IS curve shifts to the right.



Impact on the financial market

The increase in the level of output and income increases the demand for money since there is a higher level of transactions. The increase in the demand for money leads to an increase in the interest rate in the financial market.

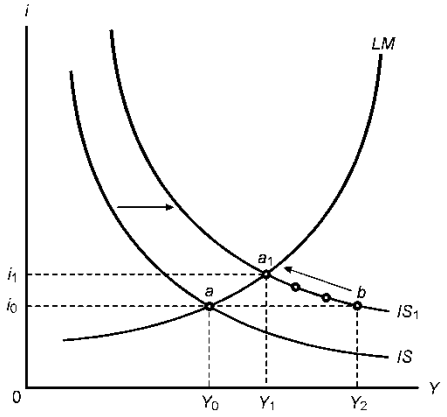
$\Rightarrow Y\uparrow \Rightarrow M^d\uparrow \Rightarrow i\uparrow$

Back to the goods market

The increase in the interest rate decreases investment spending since investment spending is a negative function of the interest rate. This decrease in investment spending decreases the demand for goods and the level of output and income.

$\Rightarrow i\uparrow \Rightarrow I\downarrow$

In terms of the IS-LM model this can be presented as a movement along the IS curve from point b to point a_1.



The end result

$Z\uparrow = C\uparrow + I\uparrow\downarrow + G\uparrow$

The end result is an increase in the level of output and income and an increase in the interest rate. Both consumption and government spending are higher and investment is indeterminate since we do not know which effect dominates.

Answers to activity 4.18

1. a. False. The larger the multiplier, the greater the impact of a change in government spending on output and income.
   b. False. A relatively more elastic (flatter) IS curve indicates a greater interest sensitivity of investment spending.
   c. False. The higher the output and income sensitivity of demand for money, the less effective fiscal policy will be since the rise in the interest rate will be greater causing more crowding out.
   d. False. The slope of the LM curve indicates the income sensitivity of demand for money.
   e. True.

Answers to activities 4.19 and 4.20

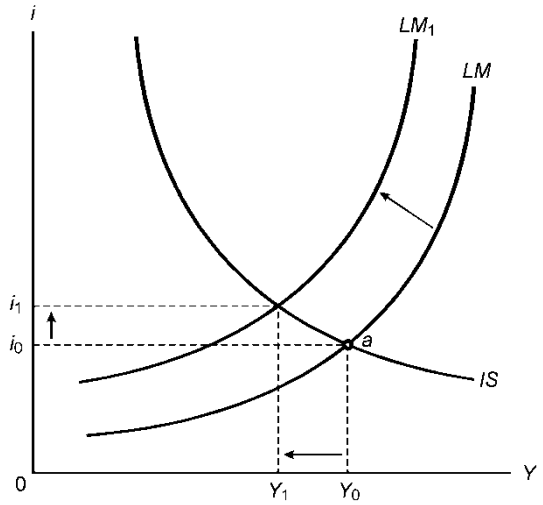
A decrease in the money supply is known as a contractionary monetary policy.

Impact on the financial market

The initial impact is on the financial market where the decrease in the nominal money supply, which decreases the real money supply, causes the interest rate to rise.

$M\downarrow \Rightarrow M/P\downarrow \Rightarrow i\uparrow$

In terms of our IS-LM model, the LM curve shifts upwards.

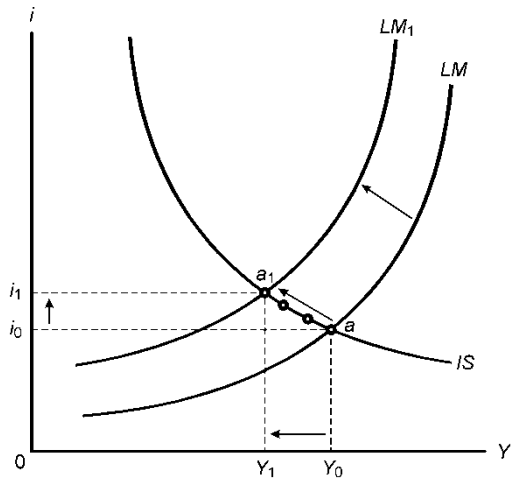


Impact on the goods market

The increase in the interest rate decreases investment spending, the demand for goods and the level of output and income. The decrease in the level of output and income decreases investment further and also decreases consumption spending.
The multiplier process therefore is in operation.

$\Rightarrow i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$
$Y\downarrow \Rightarrow I\downarrow$
$Y\downarrow \Rightarrow C\downarrow$

In terms of the IS-LM model, this is represented by a movement from point a to point a_1 along the IS curve.



The end result

$Z\downarrow = C\downarrow + I\downarrow + G$

The end result is that the equilibrium level of output and income is lower and the interest rate is higher. Both consumption spending and investment spending are lower. Note that government spending is unchanged.

Answers to activity 4.21

1. a. True.
   b. True.
   c. False. The money demand curve would be perfectly elastic in a liquidity trap.
   d. True.

Answers to activity 4.22

1. a. True.
   b. False. It causes a downward shift of the LM curve.
   c. False. The level of output decreases.
   d. True. The IS curve shifts to the right and both the interest rate and the level of output and income increase.
2.

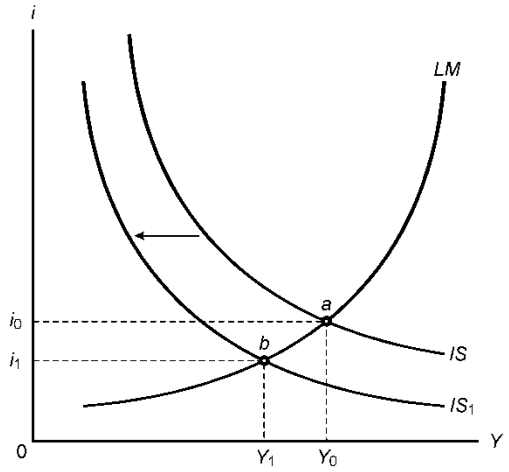
Variable	Contractionary monetary policy	Contractionary fiscal policy
Level of output and income	Lower since the demand for goods is lower	Lower since the demand for goods is lower
Consumption spending	Decreases since Y is lower	Decreases since Y is lower
Investment spending	Lower since i is higher and Y are lower	Indeterminate: It decreases since Y is lower but increases since i is lower
Government spending	Unchanged	Decreases if the contractionary fiscal policy is due to a decrease in government spending
Taxation	Unchanged	Increases if the contractionary fiscal policy is due to the increase in taxation
Nominal money supply	Lower	Unchanged
Demand for goods	Lower since consumption and investment spending is lower	Lower since consumption spending is lower and possible because government spending is lower

Answers to activity 4.23

1. A budget deficit reduction can be achieved through a fiscal contraction that involves an increase in taxes and a decrease in government spending. This will have the effect of decreasing the demand for goods and the level of output and income in the goods market.

   $T\uparrow \Rightarrow Y_D\downarrow \Rightarrow C\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$
   $G\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$

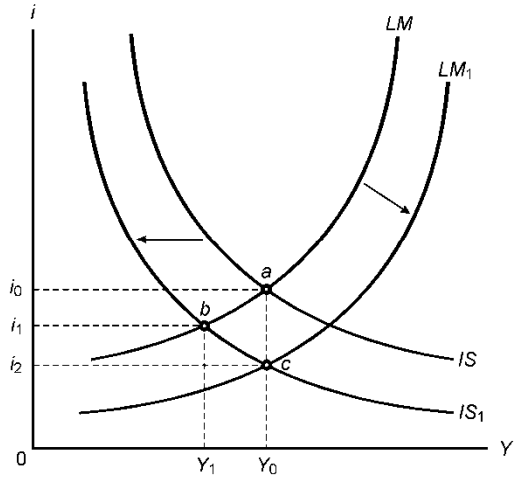
   In terms of the IS-LM model this is represented by a leftward shift of the IS curve and equilibrium moves from point a to point b.



An expansionary monetary policy involves an increase in the nominal money supply. An increase in the nominal money supply increases the real money supply and the interest rate declines. A decline in the interest rate increases investment spending, and the demand for goods and the level of output increase.

$M\uparrow \Rightarrow M/P\uparrow \Rightarrow i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$

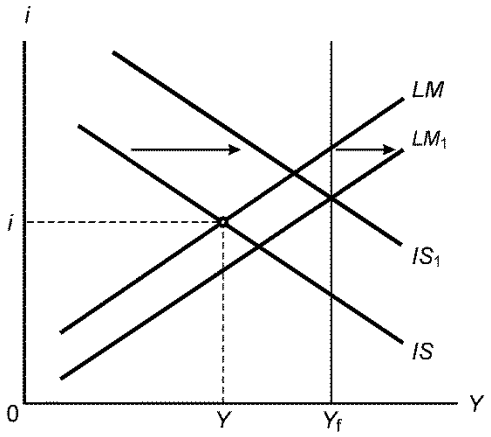
In terms of the IS-LM model, this is represented by a downward shift in the LM curve.



While a budget deficit reduction decreases the level of output from Y_0 to Y_1, an increase in the money supply increases the level of output back to Y_0.

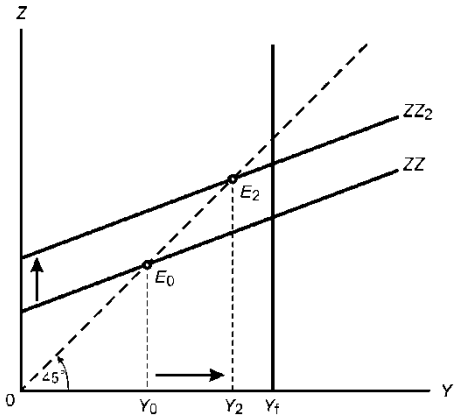
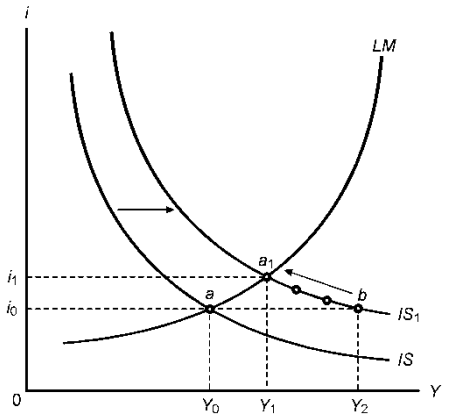
2. This requires an expansionary fiscal and monetary policy. In terms of the IS-LM model, the IS curve shifts to the right and LM curves shifts downwards.

3. This requires an expansionary fiscal and monetary policy.
   An expansionary fiscal policy implies an increase in government spending and/or a decrease in taxes. This is indicated by a rightward shift of the IS curve.
   An expansionary monetary policy implies an increase in the money supply and is indicated by a downward shift of the LM curve.



Answers to activity 4.24

The impact of an expansionary fiscal policy:

(a) Goods market model	(b) IS-LM model
	
In the goods market model the aggregate demand for goods increases and the ZZ curve shift curve shifts upwards. The level of output and income increases since: $G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ ***Or*** $T\downarrow \Rightarrow Y_D\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ Investment and the interest rate are unchanged since they are regarded as exogenous variables.	In the IS-LM model the IS curve shifts to the right. The level of output and income increases since: $G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ ***Or*** $T\downarrow \Rightarrow Y_D\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ Investment increases since $Y\uparrow$ $Y\uparrow \Rightarrow C\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$ **$Y\uparrow \Rightarrow I\uparrow$** The interest rate increases since: $Y\uparrow \Rightarrow M^d\uparrow \Rightarrow i\uparrow$ Which causes: **$i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$**

(c) Comparison (a) and (b) above:
In both models Y↑; however in the IS-LM model interest rate increases i↑ and investment is indeterminate I↑↓

Check list: The IS-LM model

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
IS curve			
Interest sensitivity of investment spending			
Output and income sensitivity of investment spending			
LM curve			
Income sensitivity of the demand for money			
Interest sensitivity of the demand for money			
Simultaneous equilibrium in the goods and financial market			
Fiscal-monetary policy mix			
Exogenous and endogenous variables in the IS-LM model			
Crowding out			
Relations			
I am able to explain the following relations using words, equations and/or a chain of events:			
Investment relation			
Effect of a change in output and income on investment			
Effect of a change in the interest rate on investment			
Equilibrium condition in the goods market			
Effect of a change in output and income on the demand for goods			
Effect of a change in the interest rate on demand for goods and level of output and income			
IS-relation			
Equilibrium in the financial market			
Effect of change in output and income on the equilibrium interest rate			
LM-relation			
Simultaneous equilibrium in the goods and financial markets			
Effect of fiscal policy (change in government spending and/or a change in taxation) on the goods and financial markets			
Determinants of the impact of fiscal policy			
Effect of monetary policy (expansionary or contractionary) on the goods and financial markets			
Determinants of the impact of monetary policy			

Diagrams

I am able to present and explain the following with the aid of a diagram:

Derivation of the IS curve			
Effect of a change in government spending and/or taxation on the IS curve			
Derivation of the LM curve			
Effect of a change in the money supply on the LM curve			
Effect of an expansionary fiscal policy on the level of output and income			
Effect of a contractionary fiscal policy on the level of output and income			
Effect of an expansionary monetary policy on the level of output and income			
Effect of a contractionary monetary policy on the level of output and income			
The use of a fiscal-monetary policy mix			
The impact of fiscal policy on the goods market model and the IS-LM model			

Policy

I am able to:

Explain how fiscal and monetary policy can be used to achieve a higher level of output and income and full employment			
Compare the effects of an expansionary monetary policy with those of an expansionary fiscal policy			
How a fiscal-monetary policy mix can be used to increase output and income while keeping the interest rate the same			

Application

I am able to discuss the following:

How a fiscal-monetary policy mix can be used to decrease the budget deficit and increase the level of output and income in South Africa			
The use of stabilisation policies in a recession			

Openness in goods and financial markets

5

Activity 5.1

Explain the concept of openness in the goods market and the most popular way to express it in South Africa.

Activity 5.2

1. Distinguish between the two ways in which the nominal exchange rate can be defined and give an example of each way.

2. Which way do we follow in this module?

Activity 5.3

1. Choose the correct option in brackets

   a. An increase in the nominal exchange rate implies that the price of the domestic currency (increases, decreases) in terms of a foreign currency.
   b. An increase in the nominal exchange rate between the RSA and the USA implies that the price of a rand (increases, decreases) in terms of dollars.
   c. An increase in the nominal exchange rate leads to (a depreciation, an appreciation) of the domestic currency.
   d. An increase in the nominal exchange rate between the RSA and the USA implies that (more, fewer) rands must be paid for a dollar.
   e. If the nominal exchange rate between the rand and the dollar changes from R1 = $0.20 to R1 = $0.30, the nominal exchange rate (increases, decreases).
   f. If the nominal exchange rate between the rand and the dollar changes from R1 = $0.20 to R1 = $0.10, the rand (appreciates, depreciates).

Activity 5.4

1. Consider the following formula for the real exchange rate between the rand and the dollar:

$$\varepsilon = \frac{EP}{P*}$$

Where:
ε is the real exchange rate between the rand and the dollar
E is the nominal exchange rate between the rand and the dollar
P* is the price of American goods in dollars
P is the price of South African goods in rands

Choose the correct option in brackets:

a. Given that the increase in P* and the increase in P are the same and the rand appreciates against the dollar, the nominal exchange rate (E) is (higher, lower), the real exchange rate (decreases, increases) and a (real depreciation, real appreciation) takes place. American goods are relatively (more expensive, cheaper) than before the change in the nominal exchange rate.
b. Given that the increase in P* and the increase in P are the same and the rand depreciates against the dollar, the nominal exchange rate (E) is (higher, lower), the real exchange rate (decreases, increases) and a (real depreciation, real appreciation) takes place. American goods are relatively (more expensive, cheaper) than before the change in the nominal exchange rate.
c. Given that the nominal exchange rate (E) is unchanged and that the increase in P* is greater than the increase in P, the real exchange rate (decreases, increases) and a (real depreciation, real appreciation) takes place and American goods are relatively (more expensive, cheaper) than before.
d. Given that the nominal exchange rate (E) is unchanged and that the increase in P* is smaller than the increase in P, the real exchange rate (decreases, increases) and a (real depreciation, real appreciation) takes place and American goods are relatively (more expensive, cheaper) than before.

2. Given the following information, calculate the real exchange rate and comment on the change:

<u>Year 1</u>
GDP deflator for South Africa: 140
GDP deflator for the USA: 110
The nominal exchange rate: R1 = $0.20

<u>Year 2</u>
GDP deflator for South Africa: 180
GDP deflator for the USA: 120
The nominal exchange rate: R1 = $0.18

Activity 5.5

1. Explain the concept of openness in financial markets.

2. Explain briefly why openness in the financial market allows a country to have a trade deficit or trade surplus.

Activity 5.6

1. Indicate whether the following will result in an increase or decrease in foreign reserves:

	Increase in foreign reserves	Decrease in foreign reserves
an increase in exports		
an increase in imports		
an increase in capital inflows		
a decrease in capital inflows		
an increase in the deficit on the current account		
a decrease in the surplus on the financial account		

Activity 5.7

1. Suppose you are a South African and have R100 000 available that you will not need for transactions. After doing some research on different financial investment opportunities, you ended up with having to choose between buying one-year South African bonds or one-year USA bonds. Given the following information, will you buy South African bonds or USA bonds?

   Interest rate on a one year South African bond = 11%
   Interest rate on a one year USA bond = 2.5%
   Current exchange rate: R1 = $0.10
   Expected exchange rate: R1 = $0.09

2. Would you change your investment decision if the expected R/$ exchange rate was R1 = $0.08 rather than R1=$0.09 in a years' time?

3. Would you change your investment decision if the expected R/$ exchange rate was R1 = $0.11 rather than R1 = $0.09 in a years' time?

Activity 5.8

1. Explain briefly the interest parity condition.

2. Given the following information answer the following questions:

   Domestic interest rate in South Africa: 3%
   Domestic interest rate in the USA: 5%

   a. If you expect the R/$ exchange rate to be unchanged in a year's time, should you buy RSA bonds or USA bonds?
   b. If you expect the R/$ exchange rate to appreciate by 5% in a year's time, should you buy RSA bonds or USA bonds?
   c. If you expect the R/$ exchange rate to depreciate by 1% in a year's time, should you buy RSA bonds or USA bonds?
   d. What can you conclude about the expected R/$ exchange rate if speculators behave as follows:
      In spite of the difference between the interest rate in South Africa and the USA, speculators prefer to buy South African bonds.

Answers

Answer to activity 5.1

Openness in the goods market refers to the ability of consumers and firms to choose between domestic and foreign goods. The most popular way of measuring the openness of the goods market in South Africa is to express imports and exports as a percentage of GDP.

Answers to activity 5.2

1. One way is to express the price of foreign currency in terms of the domestic currency (e.g. $1 = R) – for instance, $1 = R10.6052.

   The other way is to express it as the price of the domestic currency in terms of foreign currency (e.g. R1 = $) – for instance, R1 = $0.0942933.

2. In this module, we follow the international convention of defining the nominal exchange rate (E) as the price of the domestic currency in terms of foreign currency (R1 = $). For example, R1= $0.0942933 or R1 = $0.20.

Answers to activity 5.3

1. a. An increase in the nominal exchange rate implies that the price of the domestic currency (**increases**, decreases) in terms of a foreign currency.
   b. An increase in the nominal exchange rate between the RSA and the USA implies that the price of a rand (**increases**, decreases) in terms of dollars.
   c. An increase in the nominal exchange rate leads to (a depreciation, **an appreciation**) of the domestic currency.

d. An increase in the nominal exchange rate between the RSA and the USA implies that (more, **fewer**) rands must be paid for a dollar.
e. If the nominal exchange rate between the rand and the dollar changes from R1 = $0.20 to R1 = $0.30, the nominal exchange rate (**increases**, decreases).
f. If the nominal exchange rate between the rand and the dollar changes from R1 = $0.20 to R1 = $0.10, the rand (appreciates, **depreciates**).

Answers to activity 5.4

1. a. Given that the increase in P* and the increase in P are the same and the rand appreciates against the dollar, the nominal exchange rate (E) is **(higher**, lower), the real exchange rate (decreases, **increases**) and a (real depreciation, **real appreciation**) takes place. American goods are relatively (more expensive, **cheaper**) than before the change in the nominal exchange rate.
   b. Given that the increase in P* and the increase in P are the same and the rand depreciates against the dollar, the nominal exchange rate (E) is (higher, **lower**), the real exchange rate (**decreases**, increases) and a (**real depreciation**, real appreciation) takes place. American goods are relatively (**more expensive**, cheaper) than before the change in the nominal exchange rate.
   c. Given that the nominal exchange rate is unchanged and that the increase in P* is greater than the increase in P, the real exchange rate (**decreases**, increases) and a (**real depreciation**, real appreciation) takes place and American goods are relatively **(more expensive**, cheaper) than before.
   d. Given that the nominal exchange rate (E) is unchanged and that the increase in P* is smaller than the increase in P, the real exchange rate (decreases, **increases**) and a (real depreciation, **real appreciation**) takes place and American goods are relatively (more expensive, **cheaper**) than before.

2. <u>Real exchange rate for year 1:</u>

   ε = 0.20 x 140/110
   = 0.2 x 1.27
   = 0.25

   <u>Real exchange rate for year 2:</u>

   ε = 0.18 x 180/120
   = 0.18 x 1.5
   = 0.27

   Despite the decrease in the nominal exchange rate, the real exchange rate increases. This is due to the increase in the domestic price level relative to the increase in the foreign price level.

Answers to activity 5.5

1. Openness in financial markets refers to the ability of financial investors not only to choose between money and domestic financial assets, but also to include foreign financial assets in their portfolio.

2. It allows a country to have a trade deficit or trade surplus. Why? If a country experienced a trade deficit it means that it is buying more from the rest of the world than it is selling to the rest of the world (imports exceed exports). In order to pay for the difference between what it buys and what it sells, the country must borrow from the rest of the world. It borrows by making it attractive (higher returns on investments/ higher interest rates) for foreign financial investors to increase their holdings of domestic assets, in effect to lend to the country.

Answers to activity 5.6

1.

	Increase in foreign reserves	Decrease in foreign reserves
an increase in exports	x	
an increase in imports		x
an increase in capital inflows	x	
a decrease in capital inflows		x
an increase in the deficit on the current account		x
a decrease in the surplus on the capital account		x

Answers to activity 5.7

1. You should buy USA bonds because they have a higher return.

   Return on South African bond:
   R100 000 (1 + 0.11) = R111 000

   Return on USA bond:
   At an exchange rate of R1 = $0.10 your investment in USA bonds, in dollars, is equal to R100 000 x $0.10 = $10 000.Your investment after one year, in dollars, is worth:
   $10 000 (1 + 0.025) = $10 250.

   Converting $10 250 back into rands at the expected exchange rate of R1 = $0.09 gives you $10 250/0.09 = R113 888

   From the calculations, it is clear that you should be buying USA bonds.

2. No, this expected depreciation of the rand means that the USA bonds have an even higher return than at the original expected exchange rate.

   Converting $10 250 back into rands at the expected exchange rate of R1 = $0.08 gives you $10 250/0.08 = R128 125

3. Yes, the expected appreciation of the rand against the dollar was large enough that the return on South African bonds is now higher than the return on USA bonds.

   Converting $10 250 back into rands at the expected exchange rate of R1 = $0.11 gives you $10 250/0.11 = R93 181

Answers to activity 5.8

1. The interest parity condition implies that, through the process of arbitrage, the domestic interest rate (i) must be (approximately) equal to the foreign interest rate (i*) minus the expected appreciation of the domestic currency (E^e).

   What this condition tells you is that, when you have to decide between domestic or foreign financial investment, you should not only consider the difference in the interest rate but also take expected changes in the exchange rate into account.

2 a. USA bonds since the rate of return on USA bonds is higher.

   b. RSA bonds. The difference between the interest rate in the USA and the RSA = 5% – 3% = 2%. If you expect the rand to appreciate by 5% (and by implication the dollar to depreciate by 5%), investment in RSA bonds is more attractive than investment in USA bonds.

   c. USA bonds. The difference between the interest rate in the USA and the RSA = 5% – 3% = 2%. If you expect the rand to depreciate by 1% (and by implication the dollar to appreciate by 1%), investment in USA bonds is more attractive than investment in RSA bonds.

   d. They expect the rand to appreciate in the future and that this appreciation will be more than the interest differential.

Check list: Openness in goods and financial markets

	Well	Satis-factory	Must redo
Concepts			
I am able to describe the following concepts:			
Openness in the goods market, financial market and factor market			
Nominal exchange rate			
Price of foreign currency in terms of the domestic currency			
Price of the domestic currency in terms of foreign currency			
Depreciation of the domestic currency			

Appreciation of the domestic currency			
Real exchange rate			
Appreciation of real exchange rate			
Depreciation of real exchange rate			
Balance of payments			
Current account of the balance of payments			
Trade balance			
Financial account of the balance of payments			
Direct investment			
Portfolio investment			
Change in foreign reserves			
Interest parity condition			

Relations

I am able to describe the following relations using words, equations and/or a chain of events:

Impact of a change in the nominal exchange rate on the real exchange rate			
Impact of an increase in the relative price of domestic goods on the real exchange rate			
Impact of a decrease in the relative price of domestic goods on the real exchange			
Effect of domestic and foreign interest rate on the decision to buy domestic or foreign bonds			
Effect of expected exchange rates on the decision to buy domestic or foreign bonds			

The goods market in an open economy

6

Summary: The Foreign Sector – Current Account	
The foreign sector primarily affects the local economy through the Current Account and the Financial Account of the Balance of Payments.	
Current Account • Two main components are imports and exports • Affects the goods market, IS curve and the trade balance	
Exports (X) are: • Positively related to the level of output of a countries trading partners (**Y*↑ ⇒ X↑**) • Negatively related to the real exchange rate (**ε↑ ⇒ X↓**) • Not affected by the local level of output (**YΔ ≠ X**) i.e. it is an **exogenous** variable. But an increase in exports increases local output (**X↑⇒ Y↑**)	**Imports (IM)** are: • Not affected directly by changes in the level of output in a countries trading partners (**Y*Δ ≠ IM**) • Positively related to the real exchange rate (**ε↑ ⇒ IM↑**) • Positively related to the level of output of the local economy (**Y↑ ⇒ IM↑**). I.e. it is an **endogenous** variable
We assume an increase in the relative price of South African goods (EP) compared with foreign goods (P*) increases the real exchange rate. Therefore there is a positive relationship between E and ε. (**E↑ ⇒ ε↑**) Example: A depreciation will lead to an increase in exports, which will shift the NX curve to the right, improving the trade balance. It will also cause an upward shift of the ZZ curve and a rightward shift of the IS curve, resulting in higher output (E↓ ⇒ X↑ ⇒ NX↑ ⇒ Z↑ ⇒ Y↑). However, this increase in output will also increase imports therefore the trade balance deteriorate, whilst the depreciation will make the imports bill more expensive. If the Marshall-Lerner condition holds, a depreciation will lead to an improvement in the trade balance (the positive effect outstrips the negative).	

Prior knowledge Activity 6.1

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The domestic demand for goods consists of consumption spending, investment spending and government spending.		
b.	An increase in autonomous spending increases the equilibrium level of output and income.		
c.	According to the IS relation, there is a negative relationship between the interest rate and investment spending.		
d.	A higher real exchange rate implies a real depreciation of the domestic currency.		

Activity 6.1

1. Distinguish between domestic demand for goods and the demand for domestic goods.

2. Choose the correct option in brackets.

   a. An increase in taxation (increases, decreases) the disposable income of households and consumption spending (increases, decreases), and the demand for goods (decreases, increases) in the economy.
   b. An increase in government spending (increases, decreases) the demand for goods and (increases, decreases) the equilibrium level of output and income.
   c. The change in government spending has a multiplier effect on the equilibrium level of output and income, which means that the change in the equilibrium output and income is (smaller, larger) than the initial change in government spending.

Activity 6.2

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in the domestic level of output increases the level of imports.		
b.	An increase in the domestic level of output increases consumption spending by households and they will buy more imported goods.		
c.	An increase in the domestic level of output increases the amount of capital goods required by firms and they will import more capital goods.		

d.	An increase in the foreign level of output increases imports.		
e.	A decrease in the real exchange rate decreases imports.		
f.	A real appreciation of the domestic currency increases imports.		

2. Explain why a decline in the level of domestic output decreases imports.

Activity 6.3

Explain how a change in the real exchange rate influences the level of exports.

Activity 6.4

Use the following information to construct an NX curve and indicate the point where NX = 0:
Level of exports = R60 million.
At an income level of R200 million imports are R50 million.
At an income level of R220 million imports are R60 million.
At an income level of R240 million imports are R70 million.

Prior knowledge Activity 6.2

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	In the goods market the demand for goods determines the equilibrium level of output and income.		
b.	The demand for domestic goods includes imports.		
c.	In an open economy the multiplier is smaller than in a closed economy.		
d.	An increase in the domestic level of output increases exports.		
e.	An increase in the real exchange rate increases imports and decreases exports.		

Activity 6.5

1. Use equation 19.4 and Figure 19.2 in the textbook to indicate in the table below the impact of the following on the demand for goods, the equilibrium level of output and income and the trade balance (assume that a trade surplus exists). Also, use a chain of events to describe the impact.

Change in variable	Impact on demand for goods (Z)	Impact on equilibrium level of output and income (Y)	Impact on the trade balance (NX)
Increase in taxation			
Increase in government spending			
Increase in interest rate			

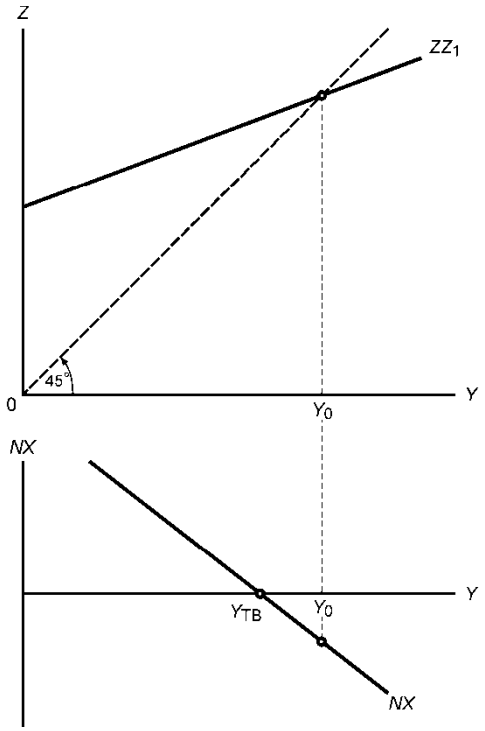
Prior knowledge Activity 6.3

1. Indicate whether the following statements are **true** or **false**:

Statement	True	False
a. An increase in government spending increases the demand for domestic goods.		
b. An increase in government spending leads to an increase in imports.		
c. A change in the equilibrium level of output and income leads to a change in the trade balance.		
d. If exports exceed imports, NX < 0.		

Activity 6.6

1. Using the following diagram, indicate what happens to the level of output and the trade balance if government spending decreases.



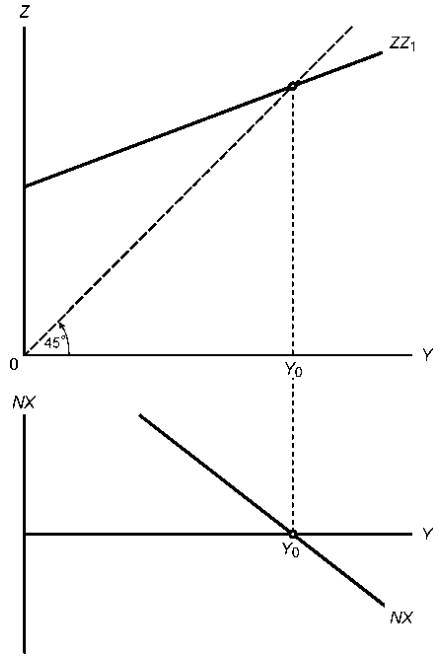
2. Choose the correct alternative:

   In an open economy the multiplier effect of an increase in government spending is smaller than for a closed economy because in an open economy …

   a. households save more.
   b. the level of exports is lower.
   c. some part of an increase in spending is on imported goods.
   d. all of an increase in spending is on domestic goods.
   e. all of an increase in spending is on domestic goods.

Activity 6.7

1. Use the following diagram to indicate what happens to the level of output and the trade balance if exports increase.



Prior knowledge Activity 6.4

Indicate whether the following statements are **true** or **false**:

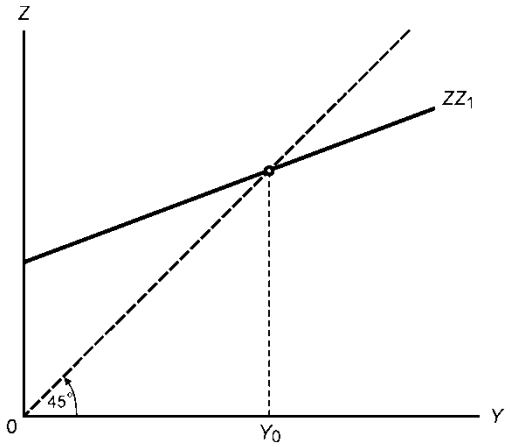
	Statement	True	False
a.	Given that the price level is fixed, a decrease in the nominal exchange rate (a depreciation of the domestic currency) causes an increase in the real exchange rate.		
b.	Given that the price level is fixed, a real depreciation takes place if the domestic currency depreciates.		
c.	A real depreciation increases exports.		
d.	A real depreciation decreases imports.		

Activity 6.8

1. Use the following goods market diagram to show what happens to

   a. the level of output and income and
   b. the trade balance

   in the event of a real depreciation.



2. When does the Marshall-Lerner condition hold?

Answers

Answers to prior knowledge activity 6.1

1. a. True.
   b. True.
   c. True.
   d. False. It implies a real appreciation of the domestic currency.

Answers to activity 6.1

1. The **domestic demand for goods** is the sum of consumption spending, investment spending and government spending (C + I + G) while the **demand for domestic goods** is the demand for domestic goods by households, firms, and government, both domestic and foreign. It is equal to the domestic demand for goods plus net exports: (C + I + G – IM/ϵ + X).

2. a. An increase in taxation (increases, **decreases**) the disposable income of households and consumption spending (increases, **decreases**), and the demand for goods (**decreases**, increases) in the economy.
   b. An increase in government spending (**increases**, decreases) the demand for goods and (**increases**, decreases) the equilibrium level of output and income.
   c. The change in government spending has a multiplier effect on the equilibrium level of output, which means that the change in the equilibrium income is (smaller, **larger**) than the change in the initial government spending.

Answers to activity 6.2

1. a. True.
   b. True.

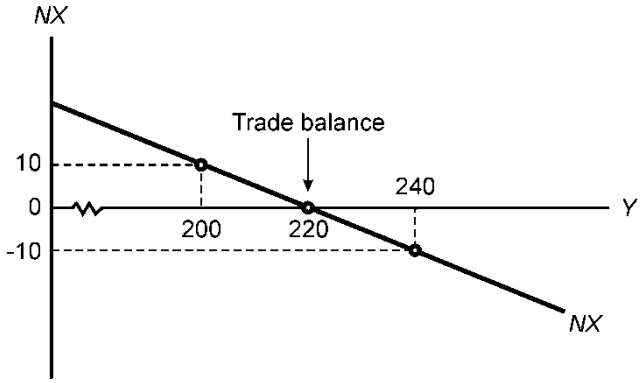
c. True.
d. False. Imports are a positive function of the **domestic level of output** and not the foreign level of output.
e. True. A decrease in the real exchange rate means imports are now more expensive than before.
f. True.

2. As the domestic level of output decreases consumption spending by households declines and they buy less domestic and imported goods. Since firms are producing fewer goods, they need fewer intermediate and capital goods and they therefore import fewer of these goods.

Answer to activity 6.3

The real exchange rate determines the relative price of exports. An increase in the real exchange rate increases the price of exports and exports therefore decrease. A decrease in the real exchange rate decreases the price of exports and exports therefore increase.

Answer to activity 6.4



Trade balance occurs where NX = 0. In our example this is at an income level of R220 million where X = IM = R60 million.
At an income level of R200 million X = R60 million and IM = R50 million and a trade surplus of R10 million exists.
At an income level of R240 million X = R60 million and IM = R70 million and a trade deficit of R10 million exists.

Answers to prior knowledge activity 6.2

1. a. True.
b. False. It excludes imports. It is the domestic demand that includes imports.
c. True.
d. False. It increases imports.
e. True. An increase in the real exchange rate causes imports to be cheaper and exports more expensive. Imports increase and exports decrease.

Answers to activity 6.5

1.

Change in the variable		Impact on demand for goods (Z)	Impact on the equilibrium level of output and income (Y)	Impact on the trade balance (NX)
(a)	Increase in taxation	decreases	decreases	increases
(b)	Increase in government spending	increases	increases	decreases
(c)	Increase in interest rate	decreases	decreases	increases

Chain of events:

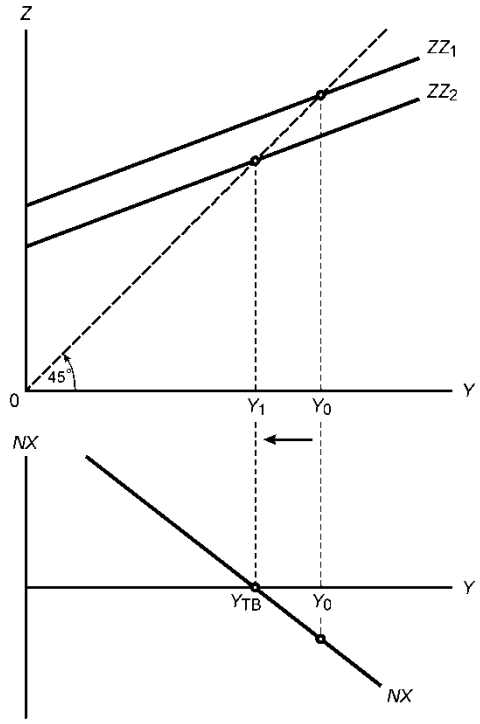
(a) $T\uparrow \Rightarrow Y_D\downarrow \Rightarrow C\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow \Rightarrow IM\downarrow \Rightarrow NX\uparrow$
(b) $G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow \Rightarrow IM\uparrow \Rightarrow NX\downarrow$
(c) $i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow \Rightarrow IM\downarrow \Rightarrow NX\uparrow$

Answers to prior knowledge activity 6.3

1. a. True.
   b. True. An increase in government spending increases the level of output. An increase in the level of output increases the level of imports.
   c. True.
   d. False. NX > 0 since exports exceed imports.

Answers to activity 6.6

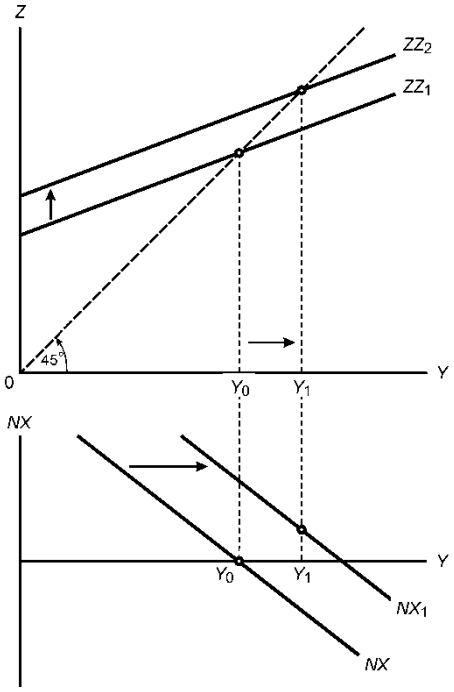
1. The level of output decreases and the trade deficit decreases as imports decrease.



2. In an open economy the multiplier effect of an increase in government spending is smaller than for a closed economy because in an open economy **some part of an increase in spending is on imported goods**.

Answer to activity 6.7

An increase in exports increase the demand for goods and the level of output increases and the trade balance improves. Note that due to the increase in exports there is a new NX curve.

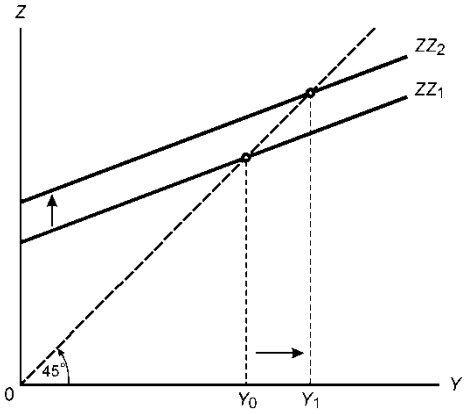


Answers to prior knowledge activity 6.4

1. a. False. A decrease in the nominal exchange rate implies a decrease in the real exchange rate.
   b. True. A depreciation of the domestic currency implies that the price of foreign currency is higher. The nominal exchange rate is lower as well as the real exchange rate.
   c. True. Exports are now relatively cheaper.
   d. True. Imports are now relatively more expensive.

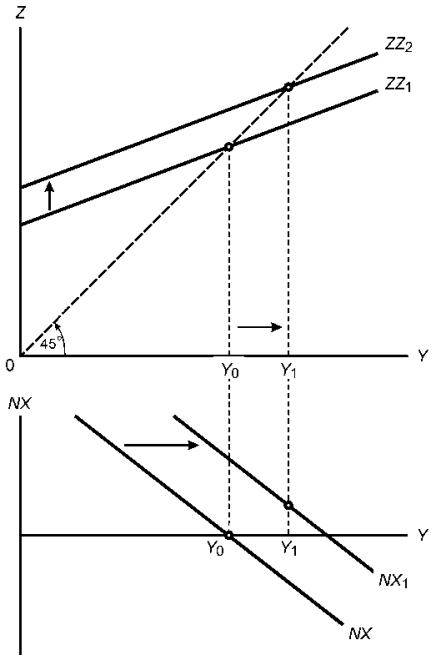
Answers to activity 6.8

1a. A depreciation causes an increase in exports and the demand for goods, and the level of output increases. In the goods market diagram this is presented by an upward shift of the ZZ curve.



A depreciation also causes spending to be switched from foreign goods to domestic goods. (Technically this is represented by an increase in the slope of the ZZ curve. This increase in the slope of the ZZ curve indicates that at each and every level of output less is imported than before.)

b.



Due to the real depreciation, exports increase and the NX curve shifts to the right and a trade surplus occurs due to the Marshall-Lerner condition.

2. For the Marshall-Lerner condition to hold, a real depreciation must eventually lead to an increase in net exports (an improvement in the trade balance). For this to occur, the positive effect on the trade balance must outstrip the negative effect.

Checklist: The goods market in an open economy

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
Domestic demand for goods			
Demand for domestic goods			
NX curve			
Marshall-Lerner condition			
Relations			
I am able to explain the following relations using words, equations and/or a chain of events:			
Import function			

Effect of a change in output and income on imports			
Effect of a change in the real exchange rate on imports			
Export function			
Effect of a change in foreign levels of output on exports			
Effect of a change in the real exchange rate on exports			
Equilibrium output in the goods market in an open economy			
Effect of an increase in domestic demand on the trade balance			
Effect of a decrease in domestic demand on the trade balance			
Effect of an increase in foreign demand on the trade balance			
Effect of a decrease in foreign demand on the trade balance			
Effect of a depreciation on the trade balance and level of output			

Diagrams

I am able to present and explain the following with the aid of a diagram:

Difference between DD and ZZ curve			
Derivation of the NX curve			
Effect of an increase in domestic demand on the level of output and the trade balance			
Effect of a decrease in domestic demand on the level of output and the trade balance			
Effect of an expansionary fiscal policy on the level of output, trade balance and budget balance			
Effect of a decrease in foreign demand on the level of output and the trade balance			
Effect of an increase in foreign demand on the level of output and the trade balance			
Effect of a depreciation on the level of output and the trade balance			

Policy

I am able to explain the following:

How fiscal policy can be used to achieve a trade balance given a trade deficit			
How fiscal policy can be used to achieve a trade balance given a trade surplus			

Application

I am able to discuss the following:

Given an increase in the trade deficit in South Africa indicate what can be done to ensure a decrease in the trade deficit			

Output, the interest rate, and the exchange rate: the IS-LM model for an open economy

7

The Foreign Sector – Financial Account

Financial Account

- We look at capital flows, i.e. investment that follows the highest rate of return (interest)
- Affects the financial market, LM curve and the exchange rate
- An increase in the interest rate creates an inflow of capital and leads to an appreciation of the local currency because an increase in the domestic interest rate relative to that of the rest of the world increases the attractiveness of domestic bonds since the rate of return offered on domestic bonds is higher than that offered in the rest of the world therefore there is an increased demand for the local currency, which appreciates.
- A decrease in the interest rate creates an outflow of capital and leads to a depreciation of the local currency

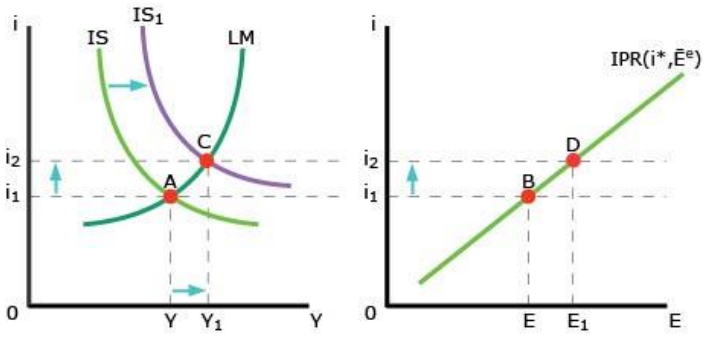


Diagram 7.3 in the study guide: Increase in government spending and exchange rate

Example: an increase in government spending (IS shifts to the right) will lead to a rise in the interest rate which increases the nominal exchange rate and the domestic currency appreciates. An upward movement along the interest parity relation in the above diagram represents this. As the domestic currency appreciates, exports decrease and the trade balance deteriorates.
The appreciation of the currency also causes imports to be cheaper, and imports thus increase, which contributes to a further worsening of the trade balance.

The rise in domestic output itself contributes to an increase in imports, which also causes a decline in the trade balance.

$i\uparrow \Rightarrow Capital_{inflow} \Rightarrow E\uparrow \Rightarrow X\downarrow \Rightarrow NX\downarrow$

$E\uparrow \Rightarrow IM\uparrow \Rightarrow NX\downarrow$

$Y\uparrow \Rightarrow IM\uparrow \Rightarrow NX\downarrow$

Prior knowledge Activity 7.1

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Net exports are the difference between exports and imports.		
b.	If the trade balance is equal to zero then net exports is also zero.		
c.	If exports exceed imports, net exports are positive and a trade surplus exists.		
d.	The trade balance improves if exports increase and imports decrease.		
e.	According to the IS relationship for an open economy, as output increases net exports decreases.		
f.	An increase in the interest rate causes an increase in investment spending since investment spending is a positive function of the interest rate.		
g.	If the exchange rate between the rand and the dollar changes from R1 = \$0.22 to R1= \$0.16, an appreciation of the rand has taken place since the value of the rand has increased in terms of the dollar.		

Activity 7.1

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	In an open economy we work with nominal variables and therefore our equilibrium condition can be written as $Y = C(Y–T) + I(Y,i) + G + NX(Y,Y^*,E)$.		
b.	Net exports (NX) refer to the difference between exports and imports.		
c.	$i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$.		
d.	A decrease in E causes an increase in exports and net exports increase.		
e.	A positive relationship exists between the nominal exchange rate and exports.		

f.	An appreciation of the exchange rate causes an increase in exports and a decrease in imports.		
g.	An appreciation of the exchange rate causes an improvement in net exports.		

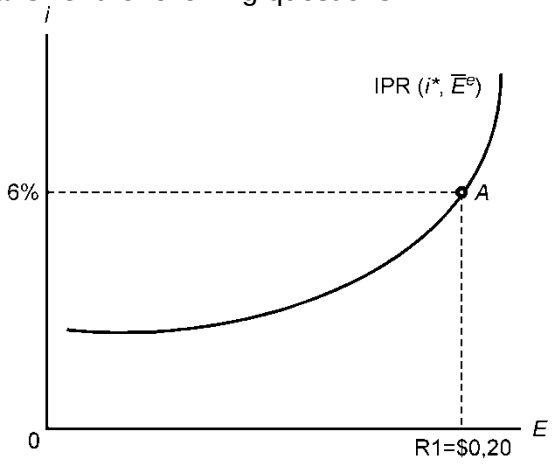
Prior knowledge Activity 7.2

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	Equilibrium in the financial market requires that the quantity of money supplied must be equal to the quantity of money demanded.		
b.	The equilibrium condition in the financial market is $M^s = M^d$.		
c.	An expansionary monetary policy increases the interest rate in the financial market.		
d.	An increase in output increases the demand for money and the interest rate.		
e.	An increase in output shifts the LM curve downwards.		
f.	Interest parity implies that the domestic interest rate approximately equals the foreign interest rate minus the expected rate of appreciation of the domestic currency.		

Activity 7.2

1. Given that at point A in the following diagram, the domestic interest rate is equal to the foreign interest rate and the nominal exchange rate is equal to the expected nominal exchange rate, answer the following questions:



a. Use equation 20.5, which expresses the interest parity condition in terms of the nominal exchange rate, and substitute it with the values given in the above figure.

b. Calculate what the nominal exchange rate would be if the domestic interest rate decreases to 4% and indicate whether this implies a depreciation or an appreciation of the value of the rand.

c. Indicate on the above graph what happens to the nominal exchange rate if the domestic interest rate decreases to 4%.
d. Explain why the nominal exchange rate changes when the domestic interest rate is lower than the interest rate in the rest of the world.

Prior knowledge Activity 7.3

1. Study the following equation, which represents the goods market equilibrium for an open economy:
$Y = C(Y–T) + I(Y,i) + G + NX(Y,Y^*,E)$

Indicate whether the following statements are **true** or **false**:

Statement	True	False
a. An increase in the interest rate increases investment spending, the demand for goods and the level of output and income.		
b. An increase in government spending increases the demand for goods.		
c. An increase in the level of output and income decreases net exports.		
d. A decrease in E causes an increase in exports and net exports increase.		
e. An increase in the foreign level of output increases the level of exports and improves the trade balance.		

2. Study the following equation, which represents financial market equilibrium for an open economy:
$M/P = YL(i)$

Indicate whether the following statements are **true** or **false**:

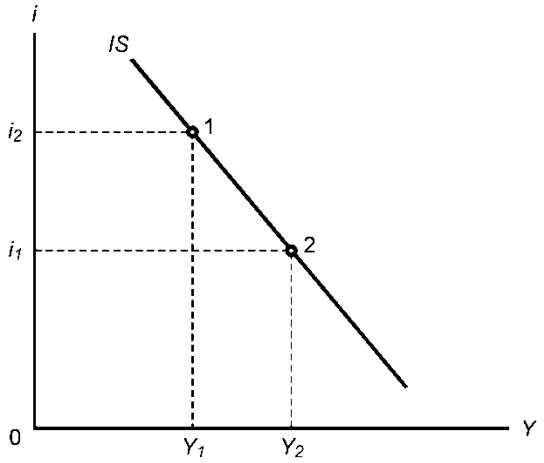
Statement	True	False
a. An increase in the level of output increases the demand for money and the interest rate rises.		
b. A decrease in the money supply causes a decrease in the interest rate.		
c. An increase in the interest rate causes a decrease in the quantity of money demanded.		

3. Choose the correct option in brackets:

An increase in the domestic interest rate (i) causes domestic bonds to become (more attractive, less attractive) to foreign investors and consequently the demand for (the domestic currency, the foreign currency) increases, and the nominal exchange rate (increases, decreases) and the domestic currency (appreciates, depreciates).

Activity 7.3

Study the following figure of an IS curve for an open economy and answer the questions:



1. Indicate whether the following variables are higher, the same, or lower at point 2 than at point 1.

Variable	Higher	The same	Lower
government spending			
taxes			
consumption			
investment			
nominal exchange rate			
exports			

2. Draw an IS-LM model for an open economy and indicate the following:

   simultaneous equilibrium in the goods and financial markets
   the equilibrium level of output and income
   the equilibrium interest rate

3. Use the above IS-LM model for an open economy and an interest parity relation to show what the equilibrium exchange rate will be.

Prior knowledge Activity 7.4

1. Indicate whether the following statements are **true** or **false**:

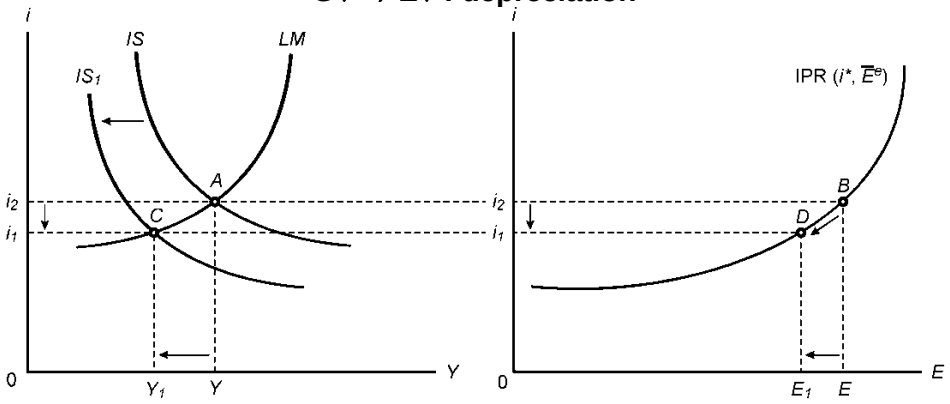
Statement	True	False
a. Fiscal policy refers to changes in the money supply.		
b. An increase in government spending is part of an expansionary fiscal policy.		
c. An increase in government spending shifts the IS curve to the left.		
d. An increase in the level of output causes an increase in the interest rate.		

e.	A decrease in capital inflows causes the nominal exchange rate to decrease and the domestic currency depreciates.		

Activity 7.4

1 The following diagram represents the end result of a decrease in government spending. The changes in the different variables are summarised in the table. Explain with the aid of diagrams and equations the changes in these variables.

G↓ ⇒ E↓ : depreciation



Variable	Change
output and income (Y)	decreases
consumption (C)	decreases
interest rate (i)	decreases
investment (I)	uncertain
nominal exchange rate (E)	decreases
exports (X)	increases
imports (IM)	decreases
trade balance (NX)	improves

Prior knowledge Activity 7.5

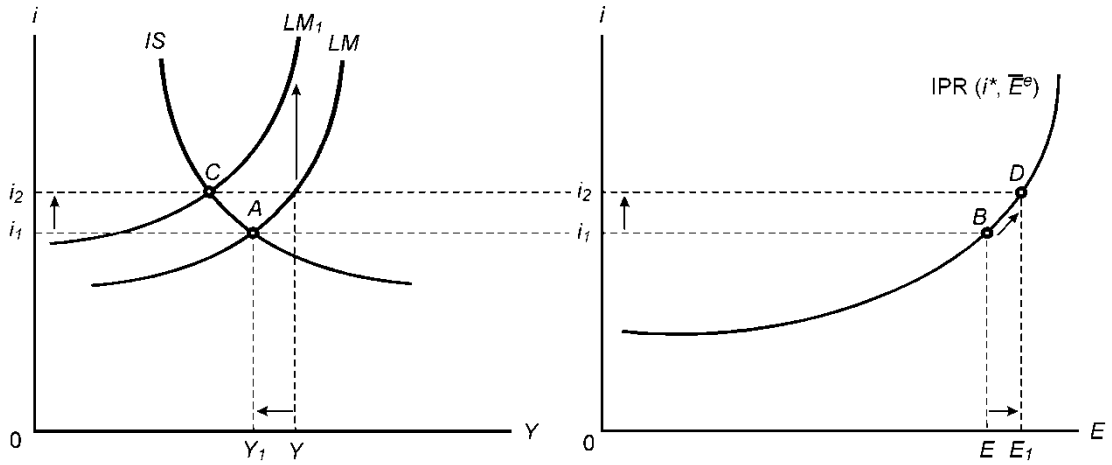
1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in the money supply is regarded as expansionary fiscal policy.		
b.	An increase in the money supply shifts the money supply curve to the right.		
c.	A decrease in the money supply shifts the LM curve upwards.		
d.	An increase in the domestic interest rate relative to interest rates in the rest of the world causes a capital inflow.		

e. An increase in capital inflows causes the nominal exchange rate to increase and the domestic currency appreciates.

Activity 7.5

1. The following diagram represents the end result of a decrease in the money supply. The changes in the different variables are summarised in the table. Explain with the aid of diagrams and equations the change in these variables.



Variable	Change
interest rate (i)	increases
investment (I)	decreases
consumption spending (C)	decreases
nominal exchange rate (E)	increases
exports (X)	decreases
trade balance (NX)	decreases
demand for goods (Z)	decreases
output and income (Y)	decreases

Activity 7.6

Use an IS-LM model for an open economy to explain and compare the impact of an expansionary fiscal policy with that of an expansionary monetary policy on the following variables:

- Interest rate
- Level of output and income
- Exchange rate
- Budget balance
- Trade balance

Answers

Answers to prior knowledge activity 7.1

1. a. True.
   b. True.
   c. True.
   d. True.
   e. True.
   f. False. An increase in the interest rate causes a decrease in investment spending since a negative relationship exists between investment and the interest rate.
   g. False. A depreciation occurred because the value of the rand declined. A rand is exchanged for less dollars.

Answers to activity 7.1

1. a. True.
   b. True.
   c. True.
   d. True.
   e. False. A negative relationship exists.
   f. False. An appreciation of the exchange rate increases the price of exports and decreases the price of imports. Consequently, exports decrease and imports increase.
   g. False. Net exports worsen because exports decrease and imports increase.

Answers to prior knowledge activity 7.2

1. a. True.
   b. True.
   c. False. The interest rate decreases in the financial market.
   d. True.
   e. False. The increase in the nominal money supply shifts the LM curve downwards.
   f. True.

Answers to activity 7.2

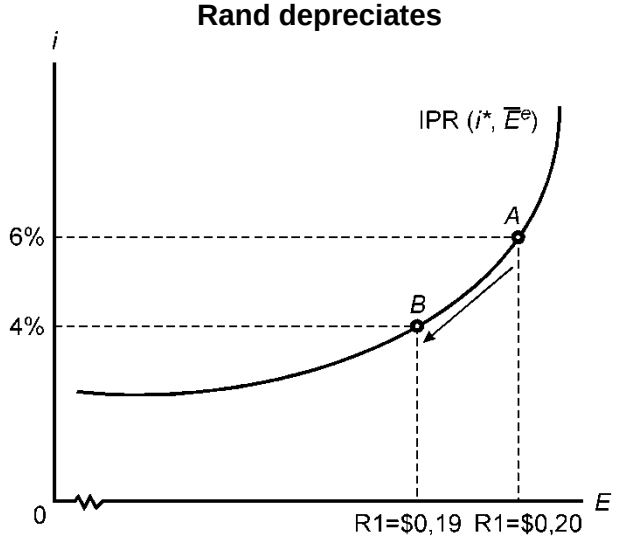
1a. $0.20 = \frac{1+0.06}{1+0.06}$ X 0.20

b. $\mathrm{E} = \frac{1+0.04}{1+0.06}$ X 0.20

= 0.19

It depreciates.

c. **Rand depreciates**



d. A lower domestic interest rate relative to the interest rate in the rest of the world causes a capital outflow and the demand for foreign currency increases causing the rand to depreciate.

Answers to prior knowledge activity 7.3

1. a. False. Investment spending will decrease.
   b. True.
   c. True.
   d. True.
   e. True.

2. a. True.
   b. False. It causes an increase in the interest rate.
   c. True.

3. An increase in the domestic interest rate (i) causes domestic bonds to become **(more attractive**, less attractive) for foreign investors and consequently the demand for (the **domestic currency**, the foreign currency) increases and the nominal exchange rate (**increases**, decreases**)** and the domestic currency **(appreciates**, depreciates).

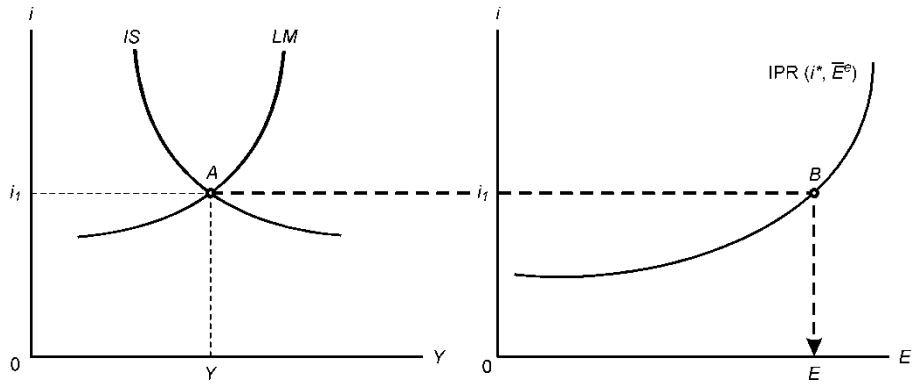
Answers to activity 7.3

1. Chain of events: i↓ ⇒ E↓ ⇒ X↑ ⇒ Z↑ ⇒ Y↑
   i↓ ⇒ I↑

Variable	Higher	The same	Lower
government spending		x	
taxes		x	
consumption	x		
investment	x		

nominal exchange rate			x
exports	x		

2 and 3.



Point A is the equilibrium in both the goods and financial market. The equilibrium interest rate is i_1, the equilibrium output and income is Y and the equilibrium exchange rate is E.

Answers to prior knowledge activity 7.4

1 a. False. Fiscal policy refers to changes in government spending and/or taxes.
b. True.
c. False. It shifts the IS curve to the right.
d. True.
e. True.

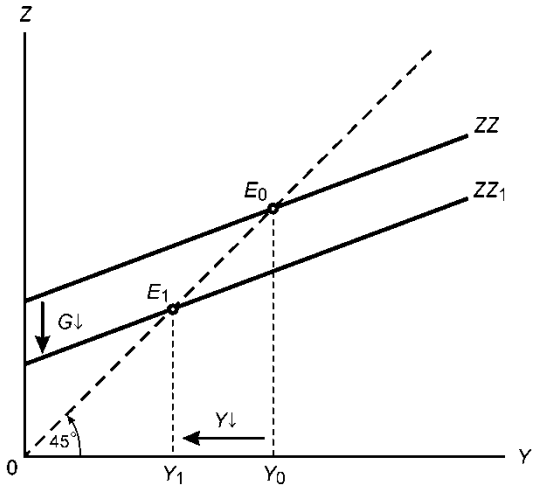
Answers to activity 7.4

- **The decrease in Y and C**

The level of output Y is determined by the demand for goods in the economy and is given by the following equation:

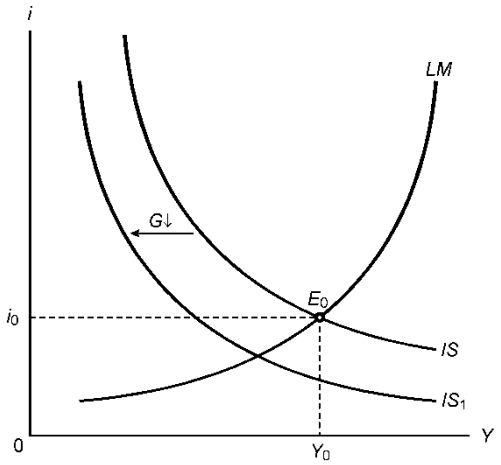
$$Y = Z = C(Y–T) + I(Y,i) + G + NX(Y,Y^*,E)$$

A decrease in government spending decreases the demand for goods and the level of output and income decreases. In terms of the goods market model in learning units 2 and 4 this can be represented as follows:



The decrease in government spending shifts the ZZ curve downwards and the equilibrium level of output and income declines. The decrease in consumption spending is caused by the decrease in output and income since C = C(Y–T) and it is for this reason that the decrease in output and income is a multiple of the decrease in government spending.

In terms of an IS curve this is represented by a leftward shift in the IS curve.

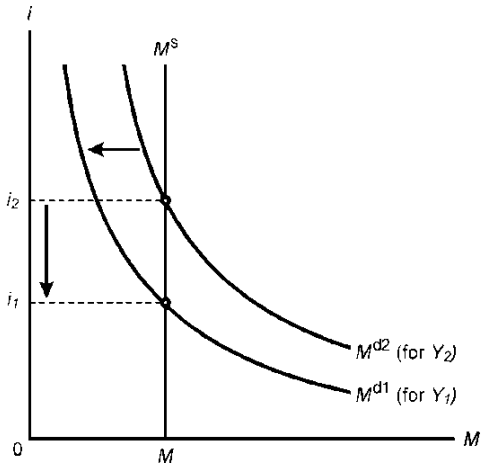


- **The decrease in the interest rate**

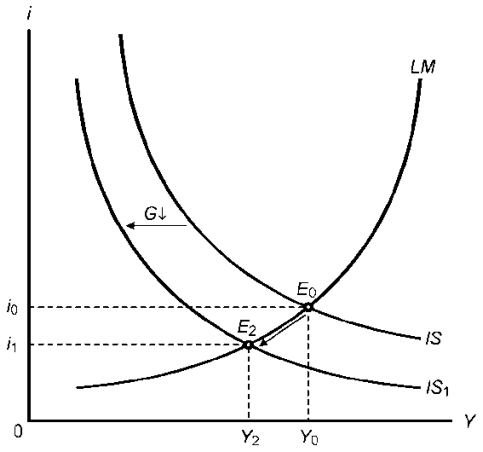
In the financial market the interest rate is determined by the quantity supplied of and the quantity demanded for money. The demand for money is a positive function of the level of output Y and a negative function of the interest rate, and is given by the equation $M^d = YL(i)$.

As the level of output declines the demand for money for transaction purposes declines and on the financial market the interest rate drops. In terms of the financial market model in learning unit 3 it can be presented as follows:

A decrease in income decreases the demand for money (demand for money curve shifts downwards) and the interest rate falls



In terms of an IS-LM model, this is represented by a downward movement along an LM curve from E_0 to E_2.



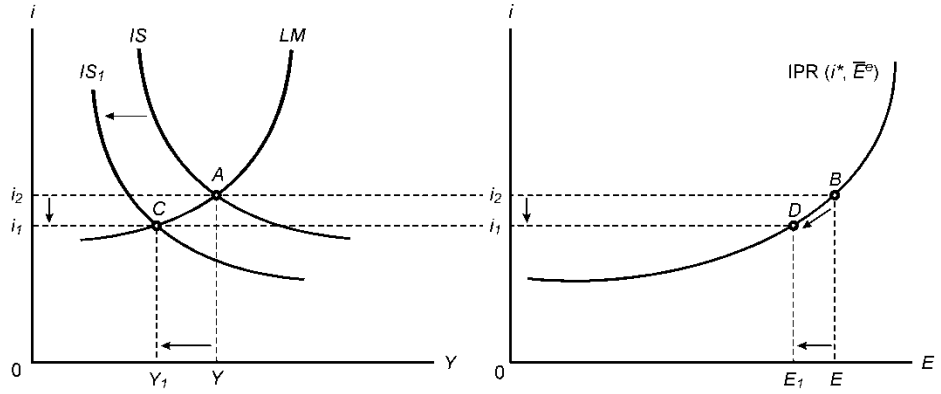
- **Change in investment spending**

Investment is positively related to the level of output and negatively related to the interest rate, and is given by the equation I = I(Y,i). A decrease in the interest rate increases investment spending while a decrease in output and income decreases investment spending and the change in investment is uncertain.

- **Decrease in the exchange rate**

As the domestic interest rate declines relative to interest rates in the rest of the world, a capital outflow occurs. The reason a capital outflow occurs is that the rate of return on foreign bonds exceeds the rate of return on domestic bonds. This causes a decrease in the demand for the domestic currency and the domestic currency depreciates, which implies a decrease in the nominal exchange rate. The relationship between the domestic interest rate and the exchange rate can be derived from the interest parity relation presented in the following diagram.

G↓ ⇒ E↓ : depreciation



A decrease in the domestic interest rate from i_2 to i_1 causes a depreciation in the exchange rate from E to E_1.

- **Increase in exports**

The depreciation of the domestic currency decreases the price of exports and consequently exports increase. Exports are a positive function of the foreign output levels and a negative function of the exchange rate, and are presented by the equation X = X(Y*,E). Remember that a decrease in E implies a depreciation of the domestic currency since the price of domestic currency in terms of the foreign currency is lower.

While the increase in exports does increase the demand for goods it is not enough to offset the decrease in the demand for goods due to the decrease in government spending and consumption spending.

- **Decrease in imports**

Imports is a positive function of the domestic level of output and a positive function of the exchange rate, and is given by the equation IM = IM(Y,E). As the level of output and income decreases, due to the decrease in government spending and consumption spending, imports decline. The decrease in the nominal exchange rate, owing to the depreciation of the domestic currency, increases the price of imports and imports consequently decline further.

- **Net exports (Trade balance)**

Net exports are the difference between exports and imports. Since exports increase and imports decrease net exports increase. The net export function is given by NX = NX(Y,Y*,E). The trade balance improves.

Answers to prior knowledge activity 7.5

1. a. False. It is regarded as expansionary monetary policy.
   b. True.
   c. True.
   d. True.
   e. True.

Answers to activity 7.5

- **The increase in the interest rate (i)**

The change in the interest rate is the result of a decrease in the nominal money supply. In terms of the LM curve, this causes an upward shift of the LM curve.

- **The decrease in investment (I)**

The increase in the interest rate as well as the decrease in output decreases investment spending. To explain this you can use the equation I = I(Y,i).

- **Decrease in consumption spending (C)**

The decrease in consumption spending is the result of the decrease in output and income (Y).

- **Increase in the nominal exchange rate (E)**

The increase in the nominal exchange rate is the result of the increase in capital inflows due to the higher domestic interest rate. To explain this you can use equation 20.5 and figure 20-1 in the textbook.

- **The decrease in exports (X)**

The decrease in exports is the result of the appreciation of the domestic currency, which makes exports more expensive and consequently exports decrease. You can use equation 19.3 in the textbook to explain this.

- **The decrease in the trade balance (NX)**

The trade balance worsens due to the decline in exports. You can use figure 19-5(b) to explain this. Note that an appreciation of the domestic currency shifts the NX curve downwards.

- **The decrease in the demand for goods (Z)**

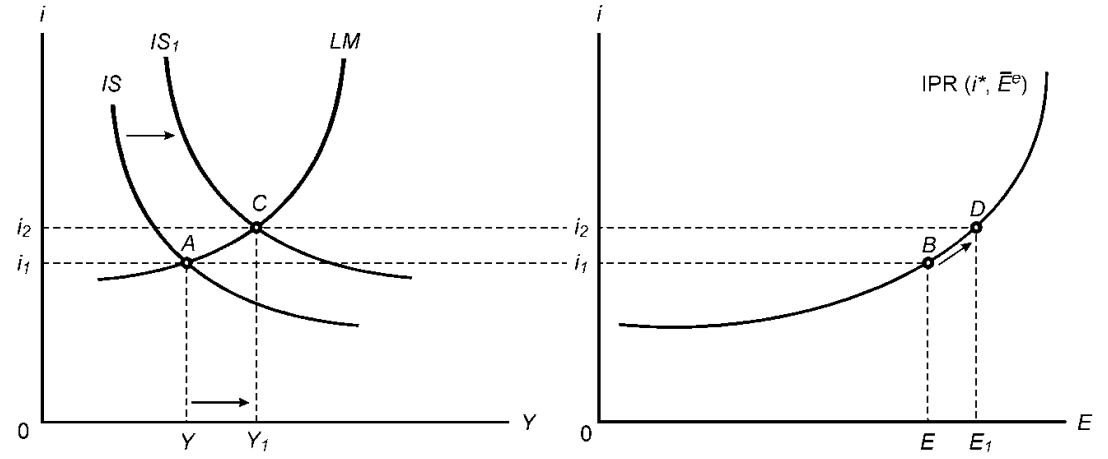
The decrease in the demand for goods is the result of a decrease in investment spending and exports. You can use equation 19.1 to explain this.

- **The decrease in output and income (Y)**

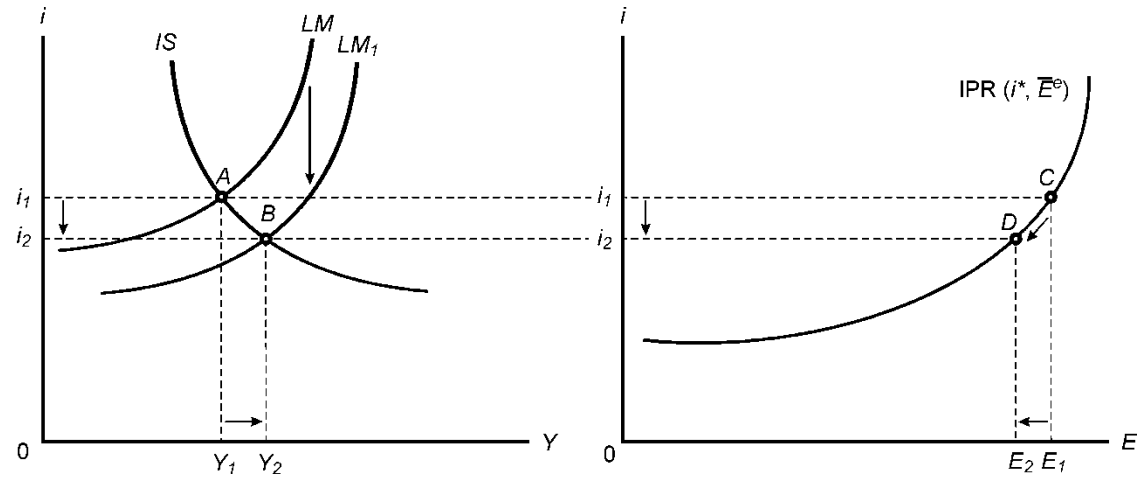
The decrease in output and income is the result of the decrease in the demand for goods (Z). You can use equation 19.1 and figures 19-2 and 19-3 to explain this. Note that a decrease in investment and a decrease in exports will shift the ZZ curve downwards. In terms of the IS-LM model this increase in the interest rate, which is followed by a decline in the demand for goods and output, is represented by an upwards movement along the IS curve.

Answers to activity 7.6

Expansionary fiscal policy



Expansionary monetary policy



Variables	Expansionary fiscal policy	Expansionary monetary policy	Comparison
Interest rate	Higher	Lower	In the case of an expansionary fiscal policy, the increase in the demand for money leads to an increase in the interest rate. In the case of an expansionary monetary policy, the increase in the money supply causes a decrease in the interest rate.

Level of output and income	Higher	Higher	In both cases, Y is higher. In the case of fiscal policy, it is higher since either government spending is higher and/ or taxes are lower. In the case of monetary policy, it is higher since the interest rate is lower which increases investment spending.
Exchange rate	Appreciate	Depreciate	In the case of an expansionary fiscal policy, the exchange rate appreciates because of the increase in the interest rate. The exchange rate depreciated in the case of an expansionary monetary policy because the decrease in the domestic interest rate relative to the world interest rate causes a capital outflow and consequently the exchange rate depreciated.
Budget balance (Government spending and/or taxes)	Worsens	Unchanged	In the case of an expansionary fiscal policy the government spending is higher and/or taxes lower.
Trade balance	Worsens	Improves	In the case of an expansionary fiscal policy where the exchange rate appreciates the trade balance worsens since exports are now more expensive and imports are cheaper. In the case of an expansionary monetary policy where the exchange rate depreciates the trade balance improves since exports are cheaper and imports are more expensive.

Checklist: The IS-LM model for an open economy

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
Equilibrium in the goods market			
Equilibrium in the financial market			
Interest parity condition			
Relations			
I am able to explain the following relations using words, equations and/or a chain of events:			
Equilibrium condition in the goods market			
The effect of the following on the demand for goods:			
- An increase in the interest rate			
- A decrease in the interest rate			
- A depreciation of the nominal exchange rate			
- An appreciation of the nominal exchange rate			
Equilibrium condition in the financial market			
Effect of an increase in the domestic interest rate on the nominal exchange rate			
Effect of an increase in the domestic interest rate on the level of output in the goods market			
Effect of a decrease in the domestic interest rate on the level of output in the goods market			
The effect of a change in government spending on the:			
- goods market			
- financial market			
- exchange rate			
- trade balance			
- budget balance			
The effect of a change in the money supply on the:			
- financial market			
- goods market			
- exchange rate			
- trade balance			
Diagrams			
I am able to present and explain the following with the aid of a diagram:			
Simultaneous equilibrium in the goods and financial markets			
The effect of an increase in government spending on an open economy			
The effect of a decrease in government spending on an open economy			
The effect of an increase in the money supply on an open economy			
The effect of a decrease in the money supply on an open economy			

Comparing the impact of fiscal policy and monetary policy			

Policy

I am able to explain the following:

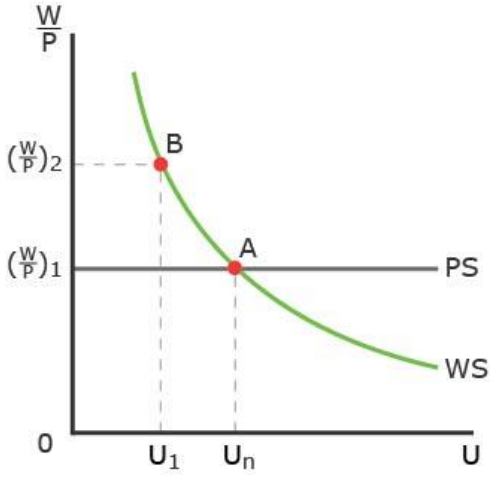
The impact of an expansionary fiscal policy on an open economy			
The impact of a contractionary fiscal policy on an open economy			
The impact of an expansionary monetary policy on an open economy			
The impact of a contractionary monetary policy on an open economy			

Application

I am able to discuss the following:

Why an increase in the budget deficit of South Africa causes a deterioration of its trade balance on its balance of payments			
Why monetary contraction causes a deterioration of the trade balance			

The labour market 8

Summary: The Labour Market	
Up until now, we have only looked at the demand side. We now introduce the **supply side**. In the labour market we assume that the actual price level is equal to the expected price level ($P = P^e$).	
WS curve	**PS curve**
A change in the **unemployment rate** will lead to a **movement** along the wage-setting relation (WS curve). A change in any of the other factors that affect the **bargaining position** of workers will **shift** the WS curve. E.g., An improvement in workers bargaining position shifts the WS curve upwards and the natural rate of unemployment is higher.	A change in the **mark-up** will lead to a **shift** of the price-setting relation (**PS curve**). E.g., An increase in the mark-up shifts the PS curve downwards and the natural rate of unemployment increases.
 Diagram 8.8 in the study guide: Unemployment rate and targeted real wage	At the equilibrium position (point A), the targeted real wage implied by wage setting is equal to the real wage implied by price setting. At the equilibrium point, the rate of unemployment is equal to the natural rate of unemployment.

Activity 8.1

1. Define the unemployment rate and distinguish between the strict (or official) rate of unemployment and the expanded (or broad) unemployment rate.

2. List the three broad categories economists divide unemployment into.

3. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The higher the population growth rate the higher the potential labour force.		
b.	The participation rate is defined as the ratio of the labour force to the civilian population.		
c.	The so-called "out of the labour force" people can also be referred as the discouraged workers.		

4. Which of the following will increase the unemployment rate?

   a. An increase in the number of new entrants in the labour market.
   b. An increase in the number of people employed.
   c. A decrease in the number of economically active people.

5. Briefly explain how an increase in the unemployment rate affects the position of workers in the economy.

Activities 8.2 and 8.3

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	The more expensive it is for a firm to replace a worker the greater the bargaining power of the worker.		
b.	The easier it is to find a replacement for a worker the greater the bargaining position of the worker.		
c.	A low unemployment rate makes it more attractive for workers to quit.		
d.	An increase in the demand for labour increases the bargaining position of labour.		
e.	An increase in the price level increases the real wage.		
f.	If workers expect an increase in the price level they will bargain for a higher nominal wage.		
g.	Given the unemployment rate, an increase in unemployment benefits might increase the nominal wage that labour bargain for.		

2. Briefly explain why lower unemployment might lead to higher nominal wages.

3. Briefly explain why an increase in the expected price level causes an increase in nominal wage demands.

Activity 8.4

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in marginal cost implies that each additional unit costs more to produce.		
b.	If the marginal product of labour declines it implies that each additional unit of labour produces more units.		
c.	An increase in the mark-up per unit increases the price per unit.		
d.	An increase in labour cost per unit decreases the mark-up per unit.		
e.	A decrease in labour cost decreases the price per unit.		

2. Based on the following information:
   Labour cost per unit: R100
   Mark up: 20%

   Calculate:
   a. the price per unit
   b. the price per unit if labour cost increases to R120 per unit
   c. the price per unit if the mark-up decreases to 10%

Activity 8.5

1. Use the information in the table to construct a wage-setting curve and explain why it is downward sloping.

Unemployment rate	Bargained (targeted) real wage
5%	0.96
10%	0.83
15%	0.63

2. Show what happens to the above wage-setting curve if labour legislation provides workers with more bargaining power.

Activity 8.6

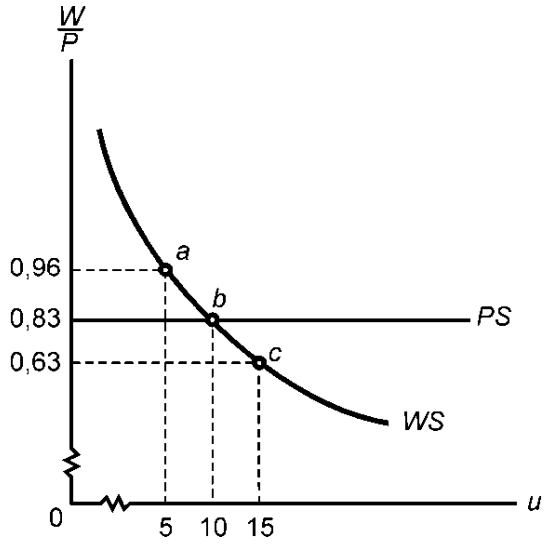
1. Use the following information to calculate and draw the real wage implied from the price-setting relation:

   The nominal wage is R100 and the mark-up 10%.

   a. Show what happens to the implied real wage if the nominal wage increases to R110.
   b. Show what happens to the implied real wage if the mark-up increases to 20%.
   c. Show what happens to the implied real wage if the mark-up decreases to 5%.

Activity 8.7

1. Use the following diagram to answer the questions that follow it:



   a. At which point is the implied real wage equal to the bargained real wage?
   b. What is the natural rate of unemployment?
   c. What is the implied real wage at the natural rate of unemployment?
   d. What is the bargained real wage at the natural rate of unemployment?
   e. At which point is the bargained real wage higher than the implied real wage?
   f. At which point is the bargained real wage lower than the implied real wage?
   g. Show what would happen to the natural rate of unemployment if the bargaining power of workers were eroded by labour legislation.
   h. Show what would happen to the natural rate of unemployment if firms were forced by anti-monopolistic legislation to decrease their mark-up.

2. Name two factors that will increase the natural level of unemployment.

Activity 8.8

Given the following information, calculate the natural level of output:

natural rate of unemployment: 10%
economically active population: 14 million
production function: each employed worker produces one unit

Answers

Answers to activity 8.1

1. The unemployment rate is defined as the ratio of the unemployed to the labour force.

   The strict (or official) unemployment will include those people within the economically active population who:
   - did not work during the seven days prior to the interview
   - want to work and are available to start work within a week of the interview
   - have taken active steps to look for work or to start some form of self-employment in the four weeks prior to the interview

   The expanded (or broad) unemployment rate includes discouraged job seekers, in other words, those who said they were unemployed but had not taken active steps to find work in the four weeks prior to the interview.

2. Frictional unemployment, cyclical unemployment and structural unemployment.

3. a. True.
   b. False. It is defined as the ratio of the labour force to the non-institutional civilian population.
   c. True.

4. Only a.

5. An increase in the unemployment rate implies that workers are more likely to lose their jobs and if they are unemployed the probability of finding a job is lower.

Answers to activities 8.2 and 8.3

1. a. True.
   b. False. The lower the bargaining position of the worker.
   c. True. The probability of finding another job is higher.
   d. True. An increase in the demand for labour decreases the unemployment rate and the bargaining position of workers strengthens.
   e. False. An increase in the price level decreases the real wage.
   f. True. They will try to protect their real wage.
   g. True.

2. Lower unemployment increases the bargaining position of workers and they are able to negotiate for a higher wage. In terms of efficiency considerations, it might be in the interest of firms to increase wages to induce workers to stay with the particular firm and not to resign in order to work for another firm.

3. An increase in the expected price level implies that given the nominal wage the expected real wage decreases. In order to prevent real wages from decreasing workers will try to negotiate for higher nominal wages.

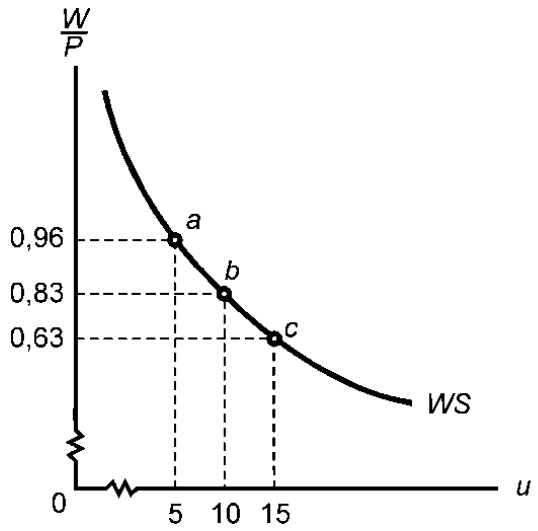
Answers to activity 8.4

1. a. True.
   b. False. Each additional unit of labour produces less.
   c. True.
   d. False. It is possible but in this study unit, we take the mark-up as given.
   e. True.

2. a. Price per unit = (1 + 0.2)100 = R120
   b. Price per unit = (1 + 0.2)120 = R144
   c. Price per unit = (1 + 0.1)100 = R110

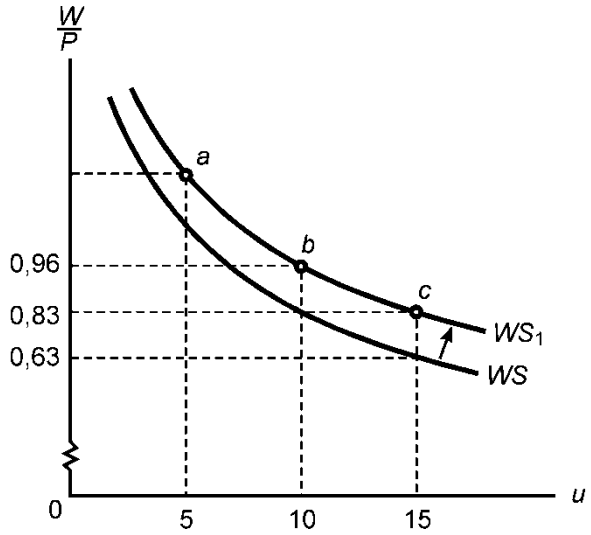
Answers to activity 8.5

1.



The curve is downward sloping since an increase in the unemployment rate erodes the bargaining position of workers.

2.

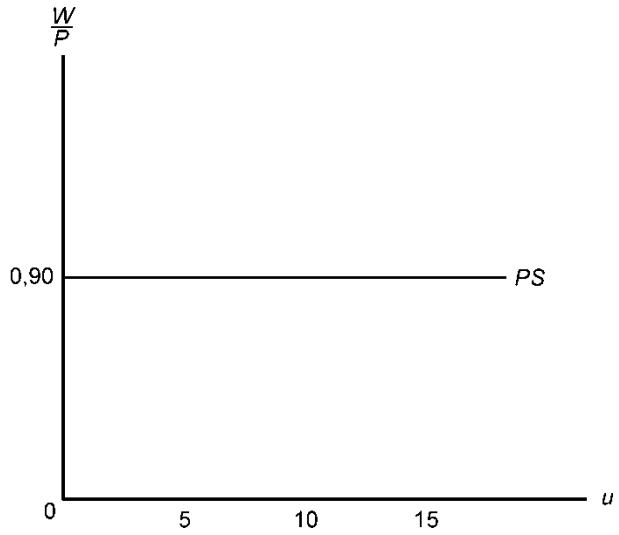


An increase in the bargaining position of workers resulting from other factors (excluding the unemployment rate) shifts the WS curve upwards indicating that at each unemployment rate workers will be able to bargain for a higher real wage.

Answers to activity 8.6

1a. The following equation is used to calculate the implied real wage:

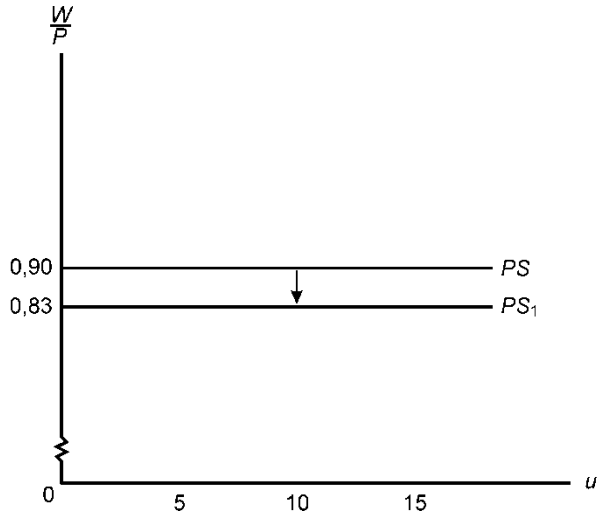
$$\mathrm{W/P} = \frac{1}{1 + \mathrm{m}} = \frac{1}{1 + 0.1} = 0.90$$



b. The implied real wage is unchanged.
c. The implied real wage decreases to

$$\mathrm{W/P} = \frac{1}{1 + \mathrm{m}} = \frac{1}{1 + 0.2} = 0.83$$

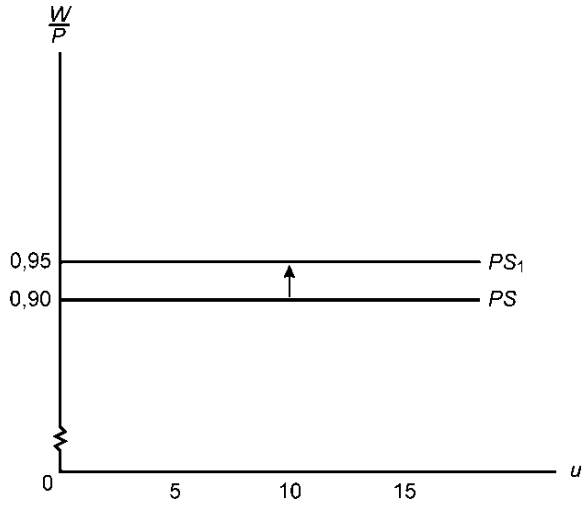
Increase in the mark-up: PS curve will shift downwards



d. The implied real wage increases to

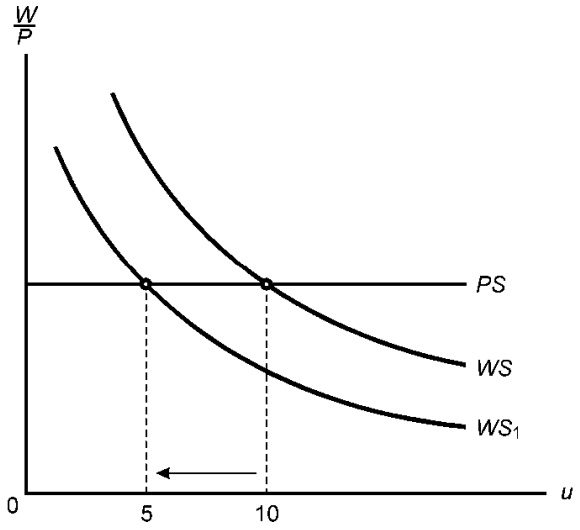
$$W/P = \frac{1}{1 + m} = \frac{1}{1 + 0.05} = 0.95$$

Decrease in the mark-up: PS curve will shift upwards

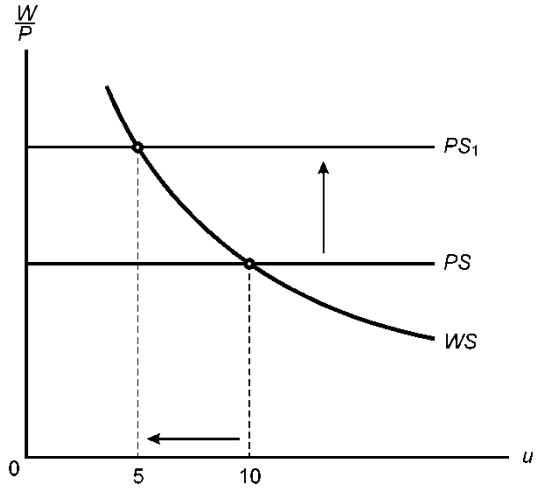


Answers to activity 8.7

1. a. Point b.
   b. 10%.
   c. 0.83.
   d. 0.83.
   e. Point a.
   f. Point c.
   g. The WS curve shifts downwards and the natural rate of unemployment decreases.



h. The PS curve shifts upwards and the natural rate of unemployment decreases.



2. An increase in unemployment benefits.
An increase in the mark-up of firms.

Answers to activity 8.8

The natural rate of unemployment (u_n): 10%
The economically active population (labour force): 14 million
The production function: each employed worker produces one unit (Y = N)

Given the information the number of unemployed is 10% x 14 million = 1.4 million workers.

The natural level on employment (N_n) is therefore:
economically active population − number of unemployed = natural level of employment
14 million − 1.4 million = 12.6 million workers.

Given the production function (each employed worker produces one unit), the natural level of output (Y_n) is also 12.6 million units.

Natural level of output Y_n is therefore:

$Y_n = N_n = L (1 - u_n)$
$= 14 (1 – 10\%)$
$= 14 (0.9)$
$= 12.6$ million

Check list: The labour market

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
Economically active population			
Unemployment			
Unemployment rate			
Nominal wage			
Real wage			
Expected price level			
Natural rate of unemployment			
Natural rate of employment			
Natural rate of output			
Relations			
I am able explain the following relations using words, equations and/or a chain of events:			
Effect of change in output on unemployment			
Wage setting relation			
Effect of a change in the bargaining power of labour on their wage setting behaviour			
Effect of a change in the unemployment rate on the wage setting behaviour of labour			
Effect of a change in the expected price level on the wage setting behaviour of labour			
Price setting relation			
Effect of a change in the mark-up on the price setting relation			
Effect of a change in nominal wages on the price level			
Effect of the following on the natural rate of unemployment:			
- a change in the mark-up			
- a change in the bargaining position of labour due to labour laws			

Diagrams

I am able to present and explain the following with the aid of a diagram:

The wage-setting relation			
Effect of a change in unemployment on the wage setting behaviour of labour			
The price-setting relation			
Effect of a change in the mark-up on the price setting behaviour of labour			
Determination of the natural rate of unemployment			
Changes in the natural rate of unemployment			

Policy

I am able to explain the following:

What can be done to decrease the natural rate of unemployment			
How the demand for goods can be used to decrease the wage demands of labour			

The AS-AD model 9

Summary: The AS curve

The AS (Aggregate Supply) relation captures the effects of output and income (Y) on the price level (P) and is derived from the behaviour of wages ($W = P^eF(u,z)$) and prices ($P = (1 + m)W$) in the labour market.

Remember that actual prices are only assumed to be equal to the expected price level ($P = P^e$), in the short run. That is why we distinguish between the short run and the medium run when dealing with the AS-AD model.

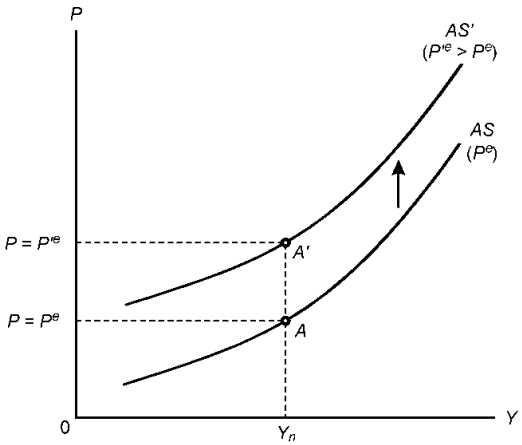


Diagram 9.3 in the study guide: Shift of an AS curve

The AS curve will **shift** if the **expected price level** changes.
E.g. An increase in P^e shifts the AS curve upwards (to the left).

The AS curve will also **shift** if the **mark-up** by firms changes.
E.g., An increase in the mark-up by firms shifts the AS curve upwards.

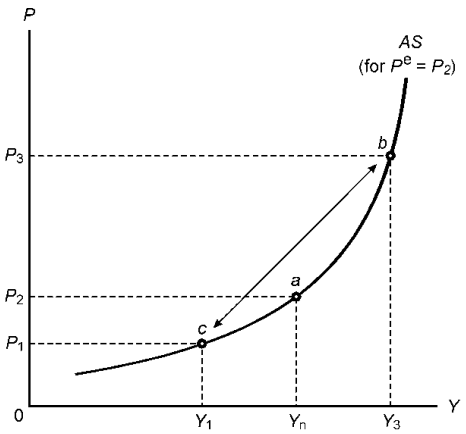


Diagram 9.4 in the study guide: Movement along an AS curve

A **movement** along the AS curve could be due to a change in **the level of output and income, employment, unemployment, nominal wages** and the **price level**.

Summary: How to Derive the AD curve

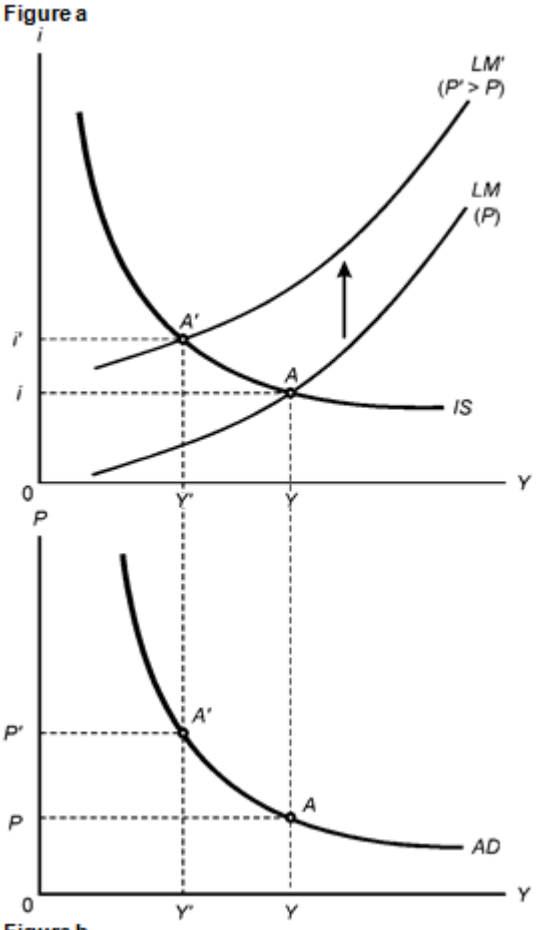


Figure b
Diagram 9.5: Derivation of an AD curve

Fiscal and Monetary policy are known as demand management policies and each will influence the AD (Aggregate Demand) curve.

Therefore shifts in both the IS (through fiscal policy) and the LM (through monetary policy) curves will shift the AD curve.

We assume that prices are flexible in the AS-AD model (up until now we have assumed they are fixed). This means that the real money supply is equal to the nominal money supply divided by prices (M/P).

To derive the AD curve we assume a change in the price level. An increase in the price level implies that the real money supply (M/P) is lower therefore, the **LM curve shifts upwards** (to the left).

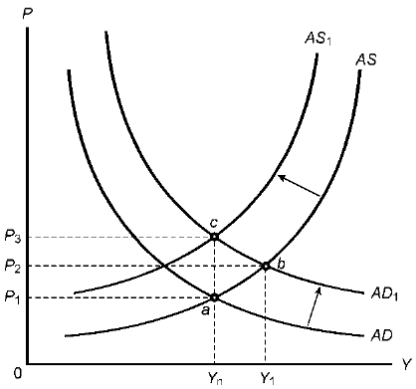
In the financial market: $P\uparrow \Rightarrow M/P\downarrow$
As the real money supply decreases, the interest rate increases therefore in the goods market: $i\uparrow \Rightarrow I\downarrow \Rightarrow Z\downarrow \Rightarrow Y\downarrow$ that is represented by a **movement up the IS curve** from A to A‘.

Expansionary fiscal and monetary policies will **shift** the AD curve to the right.

Summary: Expansionary Fiscal Policy in the AS-AD Model

You need to understand the short run and medium run effects of fiscal policy on the various variables in the AS-AD model and you be able to explain policy changes on the AS-AD model through a chain of events and by illustration of the curves.

Impact of an expansionary fiscal policy



An expansionary fiscal policy (G↑ and/or T↓) will shift the AD curve to the right to AD_1. **Goods Market: G↑ ⇒ Z↑ ⇒ Y↑**. The increase in output affects the **Financial Market: Y↑ ⇒ M^d↑ ⇒ i↑**. Back to the **Goods Market i↑ ⇒ I↓ but Y ↑ ⇒ I↑** therefore investment spending is indeterminate. The increase in output also affects **the Labour Market: Y↑ ⇒ N↑ ⇒ u↓ ⇒ W↑ ⇒ P↑**. This increase in prices results in a movement up the AS curve to point b. This is the **short run** equilibrium position. At this point, the level of output and income is higher and the actual prices are higher than the expected price level.

The expected price level is revised upwards. **Labour Market: P^e↑ ⇒ W↑ ⇒ P↑** When this happens, the AS curve will shift and a new equilibrium will be reached, this is the **medium run equilibrium**. In this case the AS curve shifts upwards to AS_1 because price expectations were revised upwards. The higher prices affect the **Financial and Goods Market: P↑ ⇒ M/P↓ ⇒ i↑ ⇒ I↓ ⇒ Z↓ ⇒ Y↓**. In the medium run, the economy returns to the natural level of output and employment. The new equilibrium is at point c, with higher prices than before.

Impact of an Expansionary Fiscal Policy

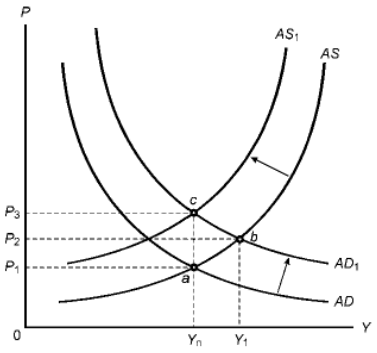
Variable	Short Run	Medium Run
Expected Price Level (P^e)	Unchanged	Higher
Actual Price Level (P)	Higher	Higher
Nominal Wages (W)	Higher	Higher

Real Wages (W/P)	Unchanged	Unchanged
Real Money Supply (M/P)	Unchanged	Lower
Nominal Money Supply (M^s)	Unchanged	Unchanged
Interest rate (i)	Higher	Higher
Investment Spending (I)	Indeterminate	Lower
Level of output and income (Y)	Higher	Back to Y_n / Unchanged

Summary: Expansionary Monetary Policy in the AS-AD Model

You need to understand the short run and medium run effects of monetary policy on the various variables in the AS-AD model and you be able to explain policy changes on the AS-AD model through a chain of events and by illustration of the curves.

Impact of an expansionary monetary policy



An expansionary monetary policy ($M^s\uparrow$) will shift the AD curve to the right to AD_1. **Financial Market: $M^s\uparrow \Rightarrow M/P\uparrow \Rightarrow i\downarrow$**; the decrease in interest rates affects the goods market. **Goods Market: $i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$**; the increase in output will increase the level of employment which will increase the bargaining power of workers, as a result nominal wages increase and firms respond by increasing the price level. **Labour Market: $Y\uparrow \Rightarrow N\uparrow \Rightarrow u\downarrow \Rightarrow W\uparrow \Rightarrow P\uparrow$**. A movement up reflects this increase in prices the AS curve to point b. This is the **short run equilibrium position.** At this point, the level of output and income is higher and the actual prices are higher than the expected price level.

The expected price level is revised upwards. **Labour Market: $P^e\uparrow \Rightarrow W\uparrow \Rightarrow P\uparrow$** When this happens, the AS curve will shift and a new equilibrium will be reached, this is the **medium run equilibrium**.

	In this case the AS curve shifts upwards to AS_1 because price expectations were revised upwards. The higher prices affect the **Financial and Goods Market: P↑ ⇒ M/P↓ ⇒ i↑ ⇒ I↓ ⇒ Z↓ ⇒ Y↓**. In the medium run, the economy returns to the natural level of output and employment. The new equilibrium is at point c, with higher prices than before.

Neutrality of Money: Note that in the medium run, **money is neutral** meaning that only the nominal variables change. The real variables are unchanged because the increase in M^s is completely offset by an increase in the price level.

Impact of an Expansionary Monetary Policy

Variable	Short Run	Medium Run
Expected Price Level (P^e)	Unchanged	Higher
Actual Price Level (P)	Higher	Higher
Nominal Wages (W)	Higher	Higher
Real Wages (W/P)	Unchanged	Unchanged
Real Money Supply (M/P)	Higher	Back to initial level/ Unchanged
Nominal Money Supply (M^s)	Higher	Higher (Assuming authorities do not change M^s again, it will be at the same level as the short run)
Interest rate (i)	Lower	Back to initial level/ Unchanged
Investment Spending (I)	Higher	Back to initial level/ Unchanged
Level of output and income (Y)	Higher	Back to Y_n / Unchanged

Prior knowledge Activity 9.1

1. Choose the correct option in brackets.

   a. An increase in the level of output implies a/an (increase, decrease) in the level of employment and a/an (decrease, increase) in the unemployment rate.
   b. A decrease in the unemployment rate (decreases, increases) the bargaining position of workers and they are able to negotiate (higher, lower) wages.
   c. An increase in the expected price level (increases, decreases) nominal wages.
   d. An increase in nominal wages (increases, decreases) the price level.
   e. The higher the mark-up the (lower, higher) the real wage implied by price setting.
   f. The natural rate of unemployment is the rate of unemployment where the real wage chosen by wage setting is (equal to, higher than, lower than) the real wage implied by price setting.
   g. The higher the natural rate of unemployment the (lower, higher) the natural level of employment and the (lower, higher) the natural level of output.

Activity 9.1

1. Use equation 7.2 in the textbook to indicate whether the following will lead to an increase or a decrease in the price level:

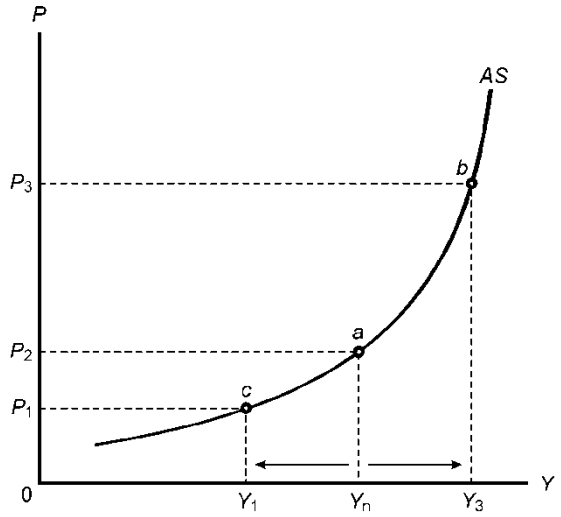
Statement	Increase in P	Decrease in P
a. an increase in expected prices		
b. a decrease in the mark-up		
c. an increase in unemployment		
d. an increase in the bargaining position of workers		
e. a decrease in output		

2. Indicate whether there is a positive or negative relationship between the following variables and the price level:

Variables	Negative relationship	Positive relationship
a. expected price level		
b. wages		
c. the mark-up		
d. the unemployment rate		
e. employment level		
f. level of output and income		

Activity 9.2

1. Consider the following AS curve and answer the questions that follow:



Choose the correct options in brackets:

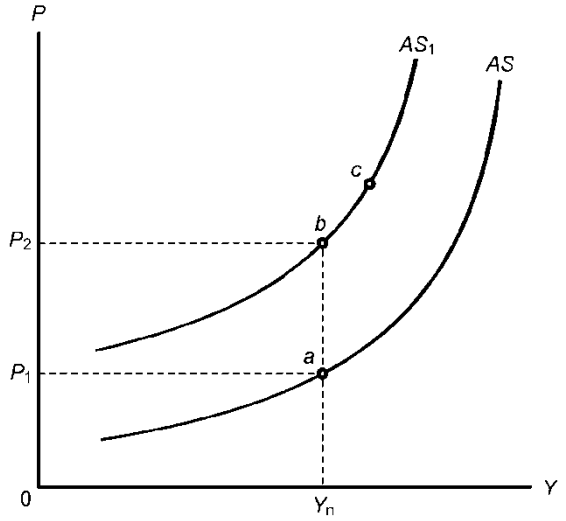
Compared to point a the …

a. level of unemployment is (higher, lower, the same) at point b.
b. level of employment is (higher, lower, the same) at point b.
c. nominal wage is (higher, lower, the same) at point b.
d. price level is (higher, lower, the same) at point b.
e. expected price level is (higher, lower, the same) at point b.
f. real wage paid by firms is (higher, lower, the same) at point b.
g. level of output is (higher, lower, the same) at point b.
h. level of unemployment is (higher, lower, the same) at point c.
i. level of employment is (higher, lower, the same) at point c.
j. nominal wage is (higher, lower, the same) at point c.
k. price level is (higher, lower, the same) at point c.
l. expected price level is (higher, lower, the same) at point c.
m. real wage paid by firms is (higher, lower, the same) at point c.

2. Use an events chain to show what happens to the price level if the rate of unemployment increases.

Activity 9.3

Study the following AS curves and answer the questions that follow:



1. Choose the correct option in brackets

   Compared to point a the …

   a. expected price level is (higher, lower, the same) at point b.
   b. price level is (higher, lower, the same) at point b.
   c. natural unemployment rate is (higher, lower, the same) at point b.
   d. natural level of employment is (higher, lower, the same) at point b.
   e. nominal wage is (higher, lower, the same) at point b.
   f. real wage is (higher, lower, the same) at point b.

   Compared to point b the …

   g. expected price level is (higher, lower, the same) as at point c
   h. level of unemployment is (higher, lower, the same) as at point c
   I. nominal wage is (higher, lower, the same) as at point c
   j. real wage is (higher, lower, the same) as at point c.

Prior knowledge Activity 9.2

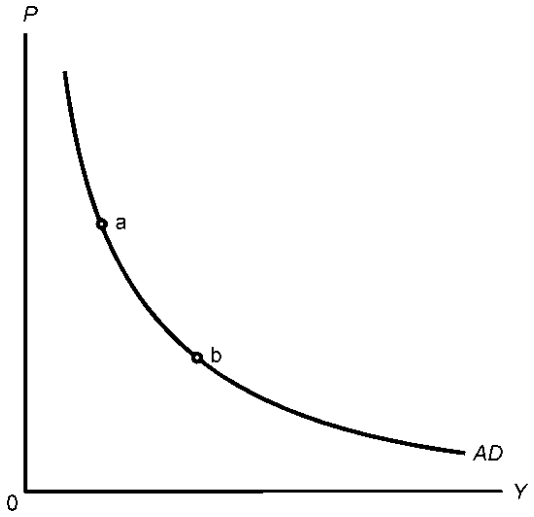
1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	According to the IS relation, an increase in the interest rate decreases investment spending and the equilibrium level of output and income decreases.		
b.	In the goods market the level of output and income is determined by the demand for goods and services.		

c.	An increase in the demand for goods and services increases the level of output and income in the economy.		
d.	An increase in the real money supply causes an increase in the interest rate in the financial market.		
e.	A decrease in the real money supply causes a shift of the LM curve upwards.		
f.	A change in the real money supply does not affect the goods market.		

Activity 9.4

1. Indicate whether the following statements are **true** or **false**.

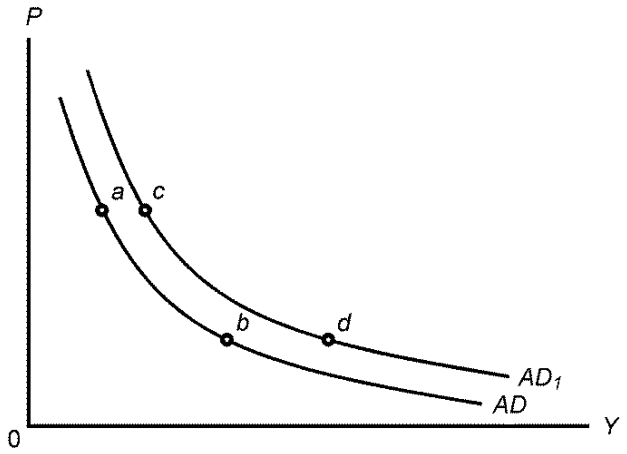


Comparing point a with point b the …

	Statement	True	False
a.	level of government spending is higher at point b.		
b.	level of taxation is lower at point b.		
c.	nominal money supply is higher at point b.		
d.	real money supply is higher at point b.		
e.	interest rate is higher at point b.		
f.	level of investment is higher at point b.		
g.	demand for goods is higher at point b.		

2. Use an events chain to explain why a decrease in the price level increases the level of output and income.

Activity 9.5



1. Assuming that the rightward shift of the AD curve is due to an **increase in the nominal money supply**, indicate whether the following statements are **true** or **false**:

   Comparing point a with point c the …

	Statement	True	False
a.	level of government spending is higher at point c.		
b.	level of taxation is lower at point c.		
c.	nominal money supply is higher at point c.		
d.	real money supply is higher at point c.		
e.	interest rate is higher at point c.		
f.	level of investment is higher at point c.		
g.	demand for goods is higher at point c.		

2. Assuming that the rightward shift of the AD curve is due to **an increase in government spending**, indicate whether the following statements are **true** or **false**:

   Comparing point a with point c the …

	Statement	True	False
a.	level of government spending is higher at point c.		
b.	level of taxation is lower at point c.		
c.	nominal money supply is higher at point c.		
d.	real money supply is higher at point c.		
e.	demand for goods is higher at point c.		
f.	interest rate is higher at point c.		

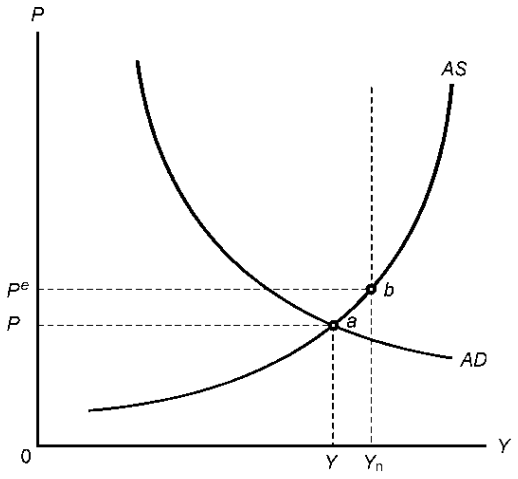
Prior knowledge Activity 9.3

Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	According to the AS relation, an increase in output and income increases the unemployment rate and the price level increases.		
b.	According to the AS relation, an increase in the expected price level eventually increases the actual price level.		
c.	An increase in the expected price level causes a shift of the AS curve upwards.		
d.	According to the AD relation an increase in the price level decreases the level of output and income.		
e.	A decrease in the price level causes a shift of the AD curve to the left.		
f.	An increase in the price level decreases the real money supply.		

Activity 9.6

Given the following diagram, explain the adjustment process from the short run to the medium run.



Prior knowledge Activity 9.4

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An expansionary monetary policy implies that the central bank sells bonds in the financial market.		

b.	An increase in the nominal money supply increases the real money supply.		
c.	An increase in the nominal money supply shifts the AD curve to the left.		
d.	At the natural level of employment the expected price level is equal to the actual price level.		
e.	If the level of output is above the natural level of output the expected price level is lower than the actual price level.		
f.	An increase in the expected price level shifts the AS curve downwards.		

Activity 9.7

Use the AS-AD model to describe the impact of a decrease in the money supply on the economy.

Prior knowledge Activity 9.5

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	A decrease in government spending, given that taxes are unchanged, decreases the budget deficit.		
b.	A decrease in government spending decreases the demand for goods.		
c.	A decrease in government spending shifts the AD curve to the left.		
d.	A decrease in the price level increases the real money supply.		
e.	At the natural level of employment the expected price level is greater than the actual price level.		
f.	A decrease in the expected price level shifts the AS curve downwards.		

Activity 9.8

Use the AS-AD model to describe the impact of an increase in government spending (an expansionary fiscal policy) on the economy.

Prior knowledge Activity 9.6

1. Indicate whether the following statements are **true** or **false**:

	Statement	True	False
a.	An increase in the natural level of unemployment increases the natural level of employment and output.		

b.	An increase in the mark-up of firms increases the natural level of unemployment.		
c.	If the level of unemployment is lower than the natural level of unemployment the real wage implied by price setting is lower the bargained real wage.		
d.	If the level of unemployment is lower than the natural level of unemployment labour will be able to bargain for higher nominal wages.		
e.	At the natural level of employment the expected price level is higher than the actual price level.		
f.	An increase in the expected price level will increase nominal wages and the AS curve will shift upwards.		

Answers

Answers to prior knowledge activity 9.1

1. a. An increase in the level output implies an **increase** in the level of employment and a **decrease** in the unemployment rate.
   b. A decrease in the unemployment rate **increases** the bargaining position of workers and they are able to negotiate **higher** wages.
   c. An increase in the expected price level **increases** nominal wages.
   d. An increase in nominal wages **increases** the price level.
   e. The higher the mark-up the **lower** the real wage implied by price setting.
   f. The natural rate of unemployment is the rate of unemployment where the real wage chosen by wage setting is **equal** to the real wage implied by price setting.
   g. The higher the natural rate of unemployment the **lower** the natural level of employment and the **lower** the natural level of output.

Answers to activity 9.1

1. a. An increase in expected prices increases wages and the price level rises.
   b. A decrease in the mark-up results in a lower price level.
   c. An increase in unemployment lowers the bargaining position of workers and wages decrease, which eventually results in a lower price level.
   d. An increase in the bargaining position of workers increases wages and the price level rises.
   e. A decrease in output increases unemployment and the bargaining position of workers declines, which leads to lower wages and a lower price level.

2.

Variables		Negative relationship	Positive relationship
a.	expected prices		x
b.	wages		x
c.	the mark-up		x
d.	the unemployment rate	x	
e.	employment level		x
f.	level of output and income		x

Answers to activity 9.2

1. a. The level of unemployment is (higher, **lower**, the same) at point b.
   b. The level of employment is (**higher**, lower, the same) at point b.
   c. The nominal wage is (**higher**, lower, the same) at point b.
   d. The price level is (**higher**, lower, the same) at point b.
   e. The expected price level is (higher, lower, **the same**) at point b.
   f. The real wage is (higher, lower, **the same**) at point b.
   g. The level of output is (**higher**, lower, the same) at point b.
   h. The level of unemployment is (**higher**, lower, the same) at point c.
   i. The level of employment is (higher, **lower**, the same) at point c.
   j. The nominal wage is (higher, **lower**, the same) at point c.
   k. The price level is (higher, **lower**, the same) at point c.
   l. The expected price level is (higher, lower, **the same**) at point c.
   m. The real wage paid is (higher, lower, **the same**) at point c.

2. $u\uparrow \Rightarrow W\downarrow \Rightarrow P\downarrow$

Answers to activity 9.3

1. Compared to point a the …

   a. expected price level is (**higher**, lower the same) at point b
   b. price level is (**higher**, lower, the same) at point b
   c. natural unemployment rate is (higher, lower, **the same**) at point b
   d. level of employment is (higher, lower, **the same**) at point b
   e. nominal wage is (**higher**, lower, the same) at point b
   f. real wage is (higher, lower, **the same**) at point b

   Compared to point b the …

   g. expected price level is (higher, lower, **the same**) as at point c
   h. level of unemployment is (higher, **lower**, the same) as at point c
   i. nominal wage is (**higher**, lower, the same) as at point c
   j. real wage is (higher, lower, **the same**) as at point c

Answers to prior knowledge activity 9.2

1. a. True.
   b. True.
   c. True.
   d. False. An increase in the real money supply causes a decrease in the interest rate.
   e. True.
   f. False. A change in the real money supply changes the interest rate, which in turn affects investment spending in the goods market.

Answers to activity 9.4

1. a. False. It stays the same since government spending is an exogenous factor and is therefore unchanged when the AD curve is derived.
   b. False. It stays the same since taxation is an exogenous factor and therefore unchanged.
   c. False. It stays the same since the nominal money supply is an exogenous factor and therefore unchanged.
   d. True. The price level is lower and at a lower price level, the real money supply is higher.
   e. False. The interest rate is lower since the real money supply is higher.
   f. True. A lower interest rate implies higher investment.
   g. True. A higher investment implies a higher demand for goods.

2. The relevant events chain is

   $P\downarrow \Rightarrow M/P\uparrow \Rightarrow i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$

   A decrease in the price level increases the real money supply and the interest rate will decrease in the financial market. This decrease in the interest rate causes an increase in investment spending and the demand for goods increases. As a result, the equilibrium level of output and income increases.

Answers to activity 9.5

1. a. False. The level of government spending did not change.
   b. False. The level of taxation did not change.
   c. True. By assumption, the nominal money supply is higher.
   d. True. An increase in the nominal money supply increases the real money supply given the same price level.
   e. False. The interest rate is lower due to the higher real money supply.
   f. True. The investment is higher due to the lower interest rate.
   g. True. Demand for goods is higher due to the higher level of investment spending. (Chain of events: $M\uparrow \Rightarrow M/P\uparrow \Rightarrow i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$)

2. a. True. By assumption, the level of government spending is higher.
   b. False. The level of taxation did not change.
   c. False. The nominal money supply did not change.
   d. False. Both the nominal money supply and the price level are unchanged. The real money supply is unchanged.

e. True. The demand for goods is higher due to an increase in government spending.
f. True. The interest rate is higher due to an increase in the demand for money. (Chain of events: $G\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow \Rightarrow M^d\uparrow \Rightarrow i\uparrow$)

Answers to prior knowledge activity 9.3

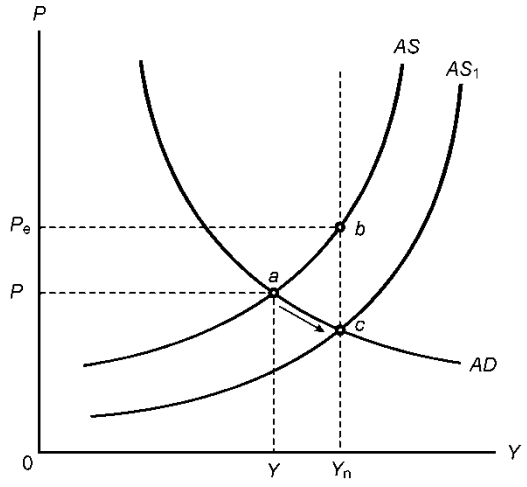
1. a. False. An increase in output decreases the unemployment rate.
   b. True. An increase in the expected price level causes an increase in nominal wages and the price level increases.
   c. True. At each and every output level, the price level is higher.
   d. True. An increase in the price level decreases the real money supply and the interest rate rises, which causes a decrease in investment, demand for goods and output.
   e. False. It is a downward movement along an AD curve.
   f. True.

Answers to activity 9.6

At point a the level of output is lower than the natural level of output and the expected price level is higher than the actual price level. As workers revise their price expectations downwards, they decrease their nominal wage demands. Firms react to this decrease in the nominal wages by decreasing the prices of goods and services. This decrease in the price level affects the financial market where the real money supply increases, which in turn causes a decrease in the interest rate and an increase in investment spending and consequently the demand for goods and the level of output increase. In terms of an events chain this can be presented as follows:

$P^e\downarrow \Rightarrow W\downarrow \Rightarrow P\downarrow \Rightarrow M/P\uparrow \Rightarrow i\downarrow \Rightarrow I\uparrow \Rightarrow Z\uparrow \Rightarrow Y\uparrow$

This process continues until the natural level of employment is reached at point c. In terms of the AS-AD model, the decrease in the expected price level is represented by a shift of the AS curve downwards. The impact on the financial and goods markets is represented by a downward movement along the AD curve from point a to point c.



Answers to prior knowledge activity 9.4

1. a. False. The central bank buys bonds in order to increase the nominal money supply.
   b. True.
   c. False. It shifts the AD curve to the right.
   d. True.
   e. True.
   f. False. It shifts the AS curve upwards.

Answer to activity 9.7

It is the opposite of the impact of an increase in the money supply (as described in the study guide).

Answers to prior knowledge activity 9.5

1. a. True.
   b. True.
   c. True.
   d. True.
   e. False. At the natural level of employment, the expected price level is the same as the actual price level.
   f. True.

Answer to activity 9.8

It has the opposite effect of a decrease in government spending (as described in the study guide).

Answers to prior knowledge activity 9.6

1. a. False. An increase in the natural level of unemployment decreases the natural level of employment and output.
   b. True. The price-setting relationship shift downwards.
   c. True. See study unit 9.
   d. True. The lower unemployment the higher the bargaining power of labour.
   e. False. The expected price level is the same and the actual price level.
   f. True.

Checklist: The AS-AD model

	Well	Satis-factory	Must redo
Concepts			
I am able to explain the following concepts:			
AS curve			
AD curve			
Short run			
Medium run			
Neutrality of money			
Relations			
I am able explain the following relations using equations and/or a chain of events:			
AS relation			
Effect of a change in output on the price level			
Effect of a change in expected price level on the price level			
AD relation			
Effect of a change in the price level on the level of output and income			
Adjustment from the short to the medium run if the expected price level is lower than the actual price level			
Adjustment from the short to the medium run if the expected price level is higher than the actual price level			
Effect of fiscal policy in the short and the medium run on the goods market, the financial market and the labour market			
Effect of monetary policy in the short and the medium run on the goods market, the financial market and the labour market			
Diagrams			
I am able to present and explain the following with the aid of a diagram:			
The AS curve			
Effect of a change in the expected price level on the AS curve			
The AD curve			
Derivation of the AD curve			
Effect of a change in government spending, taxation and money supply on the AD curve			
Effect of an expansionary fiscal policy in the AS-AD model			
Effect of a contractionary fiscal policy in the AS-AD model			
Effect of an expansionary monetary policy in the AS-AD model			
Effect of a contractionary monetary policy in the AS-AD model			

Policy

I am able to explain the following:

Why monetary and fiscal policy does not affect the level of output in the medium run			
Why monetary policy is regarded as neutral in the medium run			

Application

I am able to discuss the following:

The likely impact of an expansionary fiscal and monetary policy on the price level in the South African economy			