Tutorial letter 201/1/2018

Macroeconomics

ECS2602

Department of Economics

First semester

Answers to Assignment 01

Answers to Assignment 02

Answers to Self-assessment Assignment 04

BARCODE

Dear student

Let us formally welcome you to the Macroeconomics module and wish you well in all your endeavours. Please take note of our contact telephone numbers.

Listed below are the contact details of the lecturers responsible for the module.

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1. HOW MUCH TIME MUST I SPEND STUDYING ECS2602?

ECS2602 is a semester module with a credit value of 12 that must be completed for a B Com degree in Economics. Each credit is equivalent to 10 notional hours. This means that to be successful, the **average** student must spend 120 notional hours on this module. The notional hours includes time that is spent studying the learning units, completing the activities in TL102, doing assignments, preparing for the examination, and writing the examination. Students whose capabilities are below average must therefore spend more than 120 notional hours studying ECS2602 in order to be successful.

That boils down to 30 work days (4 hours per day) or 60 work days (at least 2 hours per day) that must be devoted to this module in order for the average student to pass it.

Each module is designed in this way. In other words, you cannot plan your semester based on completing assignments only.

2. ANSWERS TO ASSIGNMENT 01

(Unique number: 718019)

The first assignment was based on learning units 1 to 3. If you experience any problems with these sections, work through the activities in TL102 again.

The correct answers are:

Question	*Option*	*Question*	*Option*	*Question*	*Option*
1	5	**13**	4	**25**	5
2	2	**14**	2	**26**	3
3	3	**15**	3	**27**	5
4	3	**16**	2	**28**	2
5	3	**17**	2	**29**	1
6	1	**18**	2	**30**	3
7	2	**19**	3	**31**	2 & 4 (same)
8	1	**20**	1	**32**	3
9	5	**21**	4	**33**	1
10	4	**22**	4	**34**	1
11	3	**23**	3	**35**	2
12	3	**24**	5		

Question 1 is based on learning unit 0 of the study guide.

1. The correct option is 5. Macroeconomics deals with the economy as a whole and not the behaviour and decisions of individual consumers, households and firms, as in microeconomics. Furthermore, macroeconomics involves determining and exploring the relationship between aggregate concepts (variables), and not determining the prices of individual goods and services through the interaction of demand and supply. All of the statements except for statement 5 refer to macroeconomic issues. Statement 5 is looking at the price of one product in one industry therefore, it is a microeconomic issue.

Question 2 is based on learning unit 1 of the study guide.

2. The correct option is 2. Statements a, c and d are correct. The GDP is the total value of all final goods and services produced within the boundaries of a country during a particular period (usually one year). GDP is an official measure of how much output was produced in a country or region during a specified period. Statement b is incorrect since GDP measures the production of **new goods and services** and therefore does not include second hand goods and services. Statement e is incorrect since imports do not form part of GDP, only final goods and services produced within the boundaries of the specific country's GDP.

Questions 3 to 24 are based on learning unit 2 of the study guide.

3. The correct option is 3. Refer to the section at the end of the study guide labelled "Summary: Exogenous vs endogenous variables" and make sure that you understand the difference between an exogenous and endogenous variable and how these variables affect the various models. The level of output and income is endogenous in the goods market so even though marginal propensity to consume and investment spending are both exogenous, statements 1 and 2 are incorrect. Statement 4 is incorrect. It is only in the IS-LM model that investment spending has an endogenous component, in the goods market it is fully exogenous.

4. The correct option is 3. **Expenditure on the GDP** is the total value of spending on final goods and services within the borders of a country, **including exports** but **excluding imports**. Expenditure on the GDP is the total value of spending **on** South African produced goods and services – it is therefore the total value of spending **on** South African produced goods and services, i.e. it is the demand for domestic goods. **GDE** is the total value of spending on final goods and services within the borders of a country, **including imports** but **excluding exports** – it is therefore the total value of spending **in** South Africa, i.e. it is the domestic demand for goods. Study section 2.1 of learning unit 2 in the study guide and make sure that you understand the difference between GDP, GDE and expenditure on GDP as these differences will become important when we look at an open economy.

5. The correct option is 3. Statements b and c are correct. Compare statements a and b. Expenditure on the gross domestic product is the total value of spending on final goods and services within the borders of a country, **excluding imports** but **including exports**. Expenditure on the GDP is the total value of spending **on** South African produced goods and services. Therefore, GDP represents the demand for domestic goods. Statement d is incorrect since the domestic demand for goods includes imports and excludes exports.

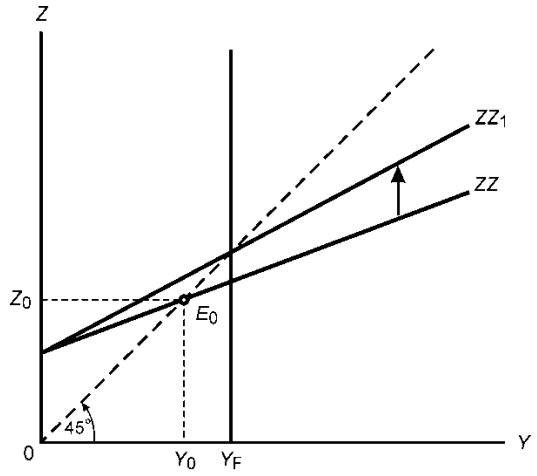
6. The correct option is 1. Only statement e is incorrect. If the demand for goods increases ($Z\uparrow$), the level of output and income (Y) increases. If the level of output and income increases more people will be employed and therefore the level of employment increases while the level of unemployment decreases. Statement e is incorrect. In our goods market model an increase in the demand for goods increases the level of output and income increases. As the level of output and income increases, savings increase since savings are a positive function of income.

7. The correct option is 2. All the chain of events except c is correct. For c to be correct is should have been as follows: $T\downarrow \rightarrow Y_D\uparrow \rightarrow C\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$.

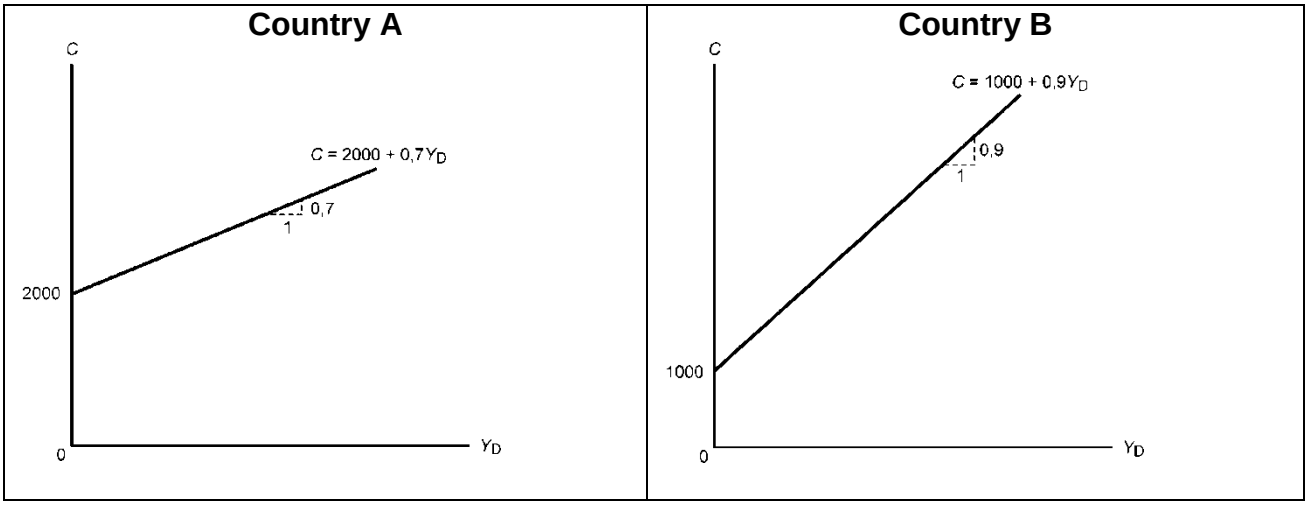
8. The correct option is 1. Statements a, b, c and d are correct. A positive relationship exists between income and consumption; if $Y\uparrow \rightarrow C\uparrow$ and $Y\downarrow \rightarrow C\downarrow$. A change in the marginal propensity to consume will change the proportion of income that is spent on consumption. Assuming a marginal propensity to consume of 0.8, consumption spending will be 0.8 x (R80 million) = R64 million but if the marginal propensity to consume (c) increases to 0.9, households will spend 0.9 x (R80 million) = R72 million.

9. The correct option is 5. Statement a is incorrect. Autonomous consumption (and not induced consumption) is equal to R100 if income is R400. Statement b is correct. The multiplier is equal to 4 since 200/50 = 4. Statement c is correct. Statement d is incorrect. If there is a change in the marginal propensity to consume, the **slope** of the Z curve will change (swivel upwards or downwards) and the equilibrium level of output and income will increase or decrease. Statement e is incorrect. Any change in consumer confidence will have an effect on the goods market model. For example, a positive change in consumer confidence will shift the Z curve upwards and the equilibrium level of output and income will increase.

10. The correct option is 4. The demand for goods curve will swivel upwards if the marginal propensity to consume increases, thus resulting in a steeper curve. This change results in a higher equilibrium level of output and income. The diagram will look as follows:



11. The correct option is 3. Statement a is correct. In country A autonomous consumption is 2 000 while in country B it is 1 000. It is therefore higher in country A.
Statement b is incorrect. Induced consumption is that part of consumption that depends on income. To know what the induced consumption is we need not only to know what the marginal propensity to consume is but also what the income is. We can therefore not conclude that it is definitely higher in country B. Statement c is incorrect. What total consumption is depends on what the level of output and income is. Since we do not know what the level of output and income is, we do not know what the total consumption is.
Statement d is incorrect. Graphically presented the diagrams will look as follows:



The slope of the consumption curve for country b is steeper.
Statement e is incorrect. The consumption spending formula is $\mathbf{C = c_o + cY_D}$:
Therefore:
Country A = 2 000 + 0.7(5 000) = 2 000 + 3 500 = 5 500 and for
Country B = 1 000 + 0.9(5 000) = 1 000 + 4 500 = 5 500. It is the same for both countries.

12. The correct option is 3. According to our goods market model the only variable that will increase the multiplier is an increase in the marginal propensity to consume.
The formula to calculate the multiplier is 1/1–c. If the marginal propensity to consume = 0.8, the value of the multiplier is 1/1–0.8 = 1/0.2 = 5. If the marginal propensity to consume increases to 0.9, the value of the multiplier is then 1/1–0.9 = 1/0.1 = 10.

13. The correct option is 4. An **increase in government spending (G), investment spending (I) and consumption spending (C)** will cause an increase in the demand for goods, which increases the level of output and income and moves the economy closer to full employment (ZZ curve shifts upwards). A **decrease in taxes (T)** will cause an increase in the demand for goods and the level of output and income and the ZZ curve shifts upwards. Improved investment confidence and consumer confidence will shift the investment and consumption curve upwards respectively, which will shift the ZZ curve upwards. Therefore, only statements c, d and e are correct. Statement a is incorrect. There will be a movement along the ZZ curve. Statement b is incorrect. An increase in the marginal propensity to consume will cause a steeper slope of the ZZ curve.

14. The correct option is 2. Only statement a is correct. The diagram represents the goods market model, only fiscal policy is applicable to the goods market model and to reach full employment expansionary fiscal policy (G↑ and/or T↓) must be implemented. Monetary policy is dealt with in the financial market model and it is in the IS-LM and AS-AD models that we look at the effect of fiscal and monetary policy combined.

15. The correct option is 3. Statement a is correct. Government spending is an exogenous variable in the goods market model. Statement b is incorrect. An increase in government spending will increase income but this increase in income **will not** lead to a further increase in government spending because it is a fully exogenous variable and therefore not affected by a change in income. Consumption spending has an endogenous and an exogenous component in our model. An increase in autonomous consumption (an exogenous variable) would lead to an increase in income and this increase in income would lead to an increase in disposable income and an increase in induced consumption (an endogenous variable) which will lead to an increase in consumption spending but by less than one to one (operating through the marginal propensity to consume). Statement c is correct. Expansionary fiscal policy leads to an increase in the demand for goods and an increase in the level of output and income, through an increase in government spending and/or a decrease in taxes: $G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$ AND/OR $T\downarrow \rightarrow Y_D\uparrow \rightarrow C\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$. The ZZ curve will shift upwards. Statement d is correct. A budget deficit exists if G > T and a budget surplus exists if T > G.

16. The correct option is 2. First, **calculate the multiplier**: The formula for the multiplier is 1/1–c. Given a marginal propensity to consume of 0.6, the value of the multiplier is 2.5. The increase in government spending is 200. Therefore, the increase in the level of output and income will be 200 x 2.5 = 500. The increase in taxes is given as 240 and therefore output and income will decrease by cT = 0.6(240) = 144 x 2.5 = 360. The net impact on the level of output and income will be an increase of 500 – 360 = 140.

17. The correct option is 2. The formula to calculate the equilibrium level of output and income is:
$Y = \frac{1}{1 - c} \quad (c_0 + \bar{I} + G - cT)$
Y = 1/1–0.75 ((50 + 230 + 300 – 0.75(100)) (Note that ¾ = 0.75)
Y = 1/0.25 (580 – 75)
Y = 4(505)
Y = 2 020

The equilibrium level of output and income (Y) is R2 020 and G must increase by R245.
The difference between Y_F and Y is equal to R3 000 – R2 020 = R980 and 4 x 245 = 980 or 980/4 = R245. This refers to the multiplier effect.

18. The correct option is 2. Diagram B captures the data given in answer 17 above.

19. The correct option is 3. The formula to calculate the equilibrium level of output and income is:
$Y = \frac{1}{1 - c} (c_0 + \bar{I} + G - cT)$
Y = 1/1–0.75 ((100 + 300 + 200 – 0.75(60))
Y = 1/0.25 (600 – 45)
Y = 4(555)
Y = 2 220

20. The correct option is 1.
The income gap = full employment level of income (Y_F) – equilibrium level of output and income (Y). R2 460 – R2 220 (calculated in question 19) = R240 million.

The required increase in government spending would be the income gap/the multiplier = 240/4 = 60. Therefore statement a is correct.

Taxes affect the level of income and output through disposable income therefore the change in disposable income needs to be 60, since
$\Delta Y_D = cT$ then
60 = 0.75xT
T = 60/0.75
T = 80
Taxes need to decrease by R80 million therefore statement b is correct.

If a combination of an increase in government spending of R30 million and a decrease in taxes of R40 million is used then the effect would be:
Increase in government spending: 30 x 4 = 120. Income increases by R120 million.
Decrease in taxes: 0.75(40) = 30 x 4 = 120. Income increases by R120 million.
Add the two together and you get R240 million, which is the income gap, therefore statement c is correct.

21. The correct option is 4. The formula to calculate the multiplier is 1/1–c: 1/1–0.8 = 1/0.2 = 5.

22. The correct option is 4. Government spending (G = R360 billion) is more than government revenue (T = R241 billion) and therefore a budget deficit of R119 billion occurs.

23. The correct option is 3. To ensure full employment you must also consider the multiplier of 5 (as already calculated). The income gap (or output gap) is given as R100 billion, therefore the required change in autonomous spending is 100/5 = R20 billion. Therefore if government spending is the policy instrument used to ensure full employment, G must increase by R20 billion. Note that a decrease of R20 billion in taxation will increase income but not sufficiently to ensure full-employment because it operates through disposable income first. Therefore the decrease in taxes needed to reach full employment is 20/0.8 = R25 billion, not R20 billion.

Statement 5 is incorrect. If a combination of an increase in government spending of R50 billion and a decrease in taxes of R50 billion is used then the effect would be:
Increase in government spending: 50 x 5 = 250. Income increases by R250 billion.
Decrease in taxes: 0.8(50) = 40 x 5 = 200. Income increases by R200 billion.
Add the two together and you get R450 billion which is the income gap, therefore statement c is incorrect since the income (or output gap) was calculated by the economist as R100 billion.

24. The correct option is 5. Statements c, d and e are correct.
Statement a is incorrect. A balanced budget is one where the change in government spending is equal to the change in taxes ($\Delta G = \Delta T$).

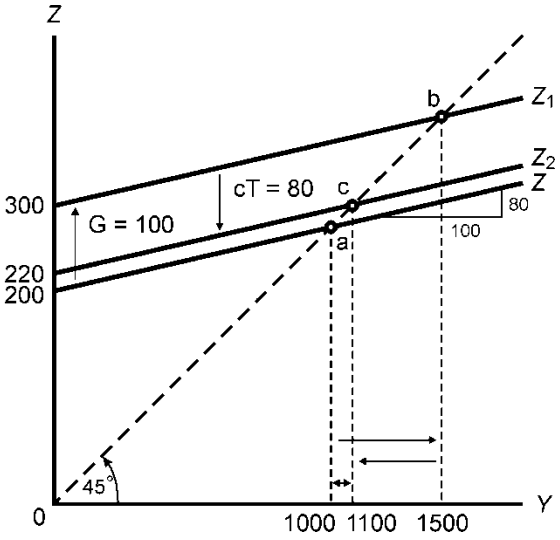
Statement b is incorrect. Assume that c = 0.8.
The value of the multiplier is 1/1–c = 1/1–0.8 = 1/0.2 = 5.
An increase of 200 in government spending increases Y by 200 x 5 = 1 000.
An increase of 200 in taxes decreases Y by 0.8(200) x 5 = 160 x 5 = 800.
The net effect is an increase of 200 (1 000 – 800) in the level of output and income.

Statement c is correct. Assume that c = 0.6.
The value of the multiplier is 1/1–c = 1/1–0.6 = 1/0.4 = 2.5.
An increase of 300 in government spending increases Y by 300 x 2.5 = 750.
An increase of 300 in taxes decreases Y by 0.6(300) x 2.5 = 180 x 2.5 = 450.
The net effect is an increase of 300 (750 – 450) in the level of output and income.

Statement d is correct. The net effect of a balanced budget, in other words where $\Delta G = \Delta T$ will be expansive. In the case of statement b, the net effect was 200 and the expansionary effect in the case of statement c was 300.

Statement e is correct. The balanced budget multiplier is equal to one – that is for every 1-unit increase in government spending, output and income increase by 1 unit.

25. The correct option is 5. Statements b, c and d are correct. Statement a is incorrect. The multiplier is 5 since 80/100 = 0.8 mpc; (1/1–c = 1/1–0.8 = 1/0.2 = 5) or 1 000/200 = 5. Statement b is correct. If government spending increases by R100, the autonomous spending will be now equal to 300 (200 + 100 = 300). Autonomous spending x multiplier = equilibrium level of output and income: 300 x 5 = 1 500. Statement c is correct. The value of the marginal propensity to consume (c) is given as 0.8 (see the diagram); therefore cT = 80 since 0.8(100) = 80. Statement d is correct. Statement e is incorrect. The net effect will be 100 (the difference between 1 100 and 1 000). See the diagram below:

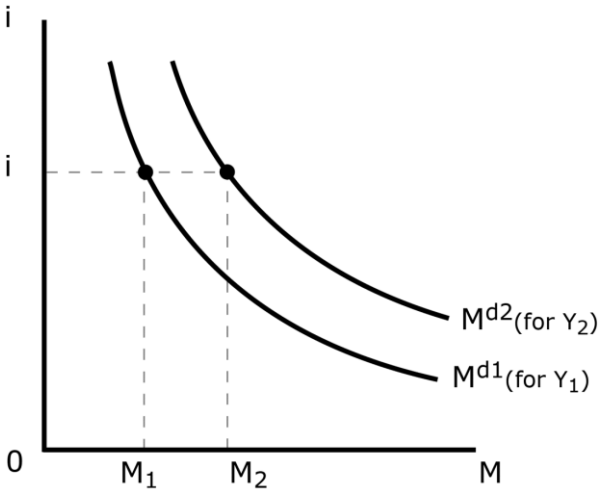


Questions 26 to 35 are based on learning unit 3 of the study guide.

26. The correct option is 3. Statements a, c and d are correct. Statement b is incorrect. The nominal money supply is an exogenous variable and the interest rate in an endogenous variable in the financial market model. Statement c is correct. Statement d is correct. The part of the demand for money that is influenced by a change in the level of output and income (Y) that will shift the money demand curve rightwards or leftwards is an exogenous variable in the financial market model. The part of the demand for money that depends on the interest rate is endogenous in our model.

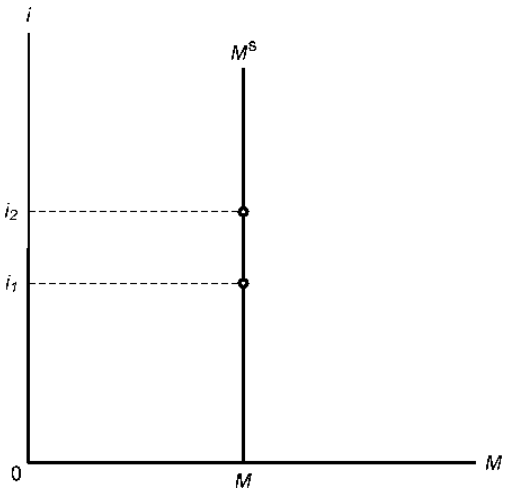
27. The correct option is 5. It is important to differentiate between financial wealth and income. Income is a flow variable meaning it is expressed over a period; it includes salary and interest receipts. Financial wealth on the other hand is a stock variable meaning it reflects the difference between your assets and liabilities at any given time (financial wealth = assets – liabilities). If someone asks you what your income is, you need to state over what period the income is earned in order to answer, for example salary per month or per year. Conversely, if someone asks you how much wealth you have you will answer based on your wealth at that time. Option 1 is incorrect because salaries and interest received from bonds are both incomes. Option 2 is incorrect because salary and dividends received from shares are incomes. Option 3 is incorrect because dividends received from shares are an income. Option 4 is incorrect because it includes salary.

28. The correct option is 2. A positive relationship exists between the level of income and the demand for money. As the level of output and income increases from Y_1 to Y_2 in the diagram below, the demand for active balances increases as financial participants wish to do more transactions. At each interest rate, the quantity of money demanded is therefore higher and a rightward shift of the money demand curve takes place.

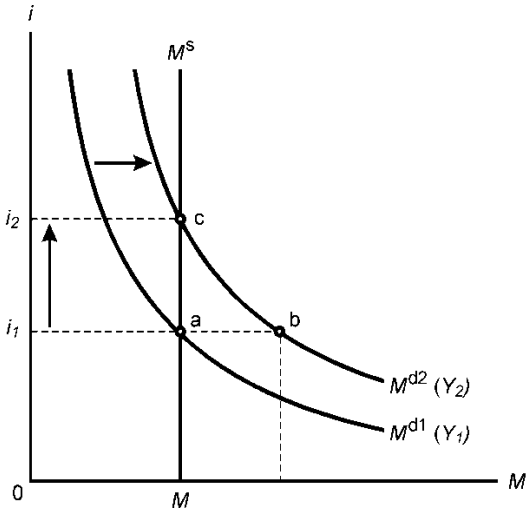


29. The correct option is 1. All the statement are correct. Make sure that you know which factors will cause a movement along and which factors will shift the M^d curve.

30. The correct option is 3. In this module, we follow the traditional approach to the supply of money. This implies that the money supply is controlled by the central bank and is presented graphically by a vertical straight line, which is entirely inelastic concerning the interest rate.

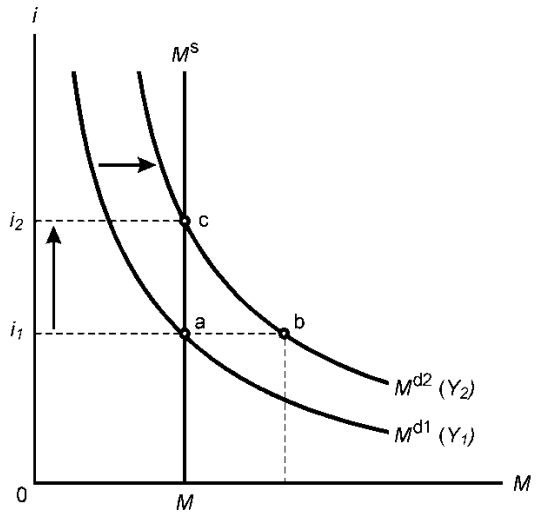


31. Options 2 and 4 are the same. Therefore, question 31 will not be marked.
An increase in the level of income will shift the M^d curve to the right. An increase in income increases the demand for money for transaction purposes. At the existing equilibrium interest rate, i_1 (see the diagram in TL101), an excess demand for money develops in the economy because people wish to hold more money for transaction purposes than before.
This excess demand for money causes an increase in the interest rate as indicated in the diagram below.



32. The correct option is 3. An increase in income increases the demand for money for transaction purposes. At the existing equilibrium interest rate (i_1), an excess demand for money develops in the economy because people wish to hold more money for transaction purposes than before. To acquire this money for transaction purposes, the public sells bonds (for example treasury bills) and the supply of treasury bills increases on the market. An increase in the supply of treasury bills reduces the price of treasury bills and increases the interest rate.

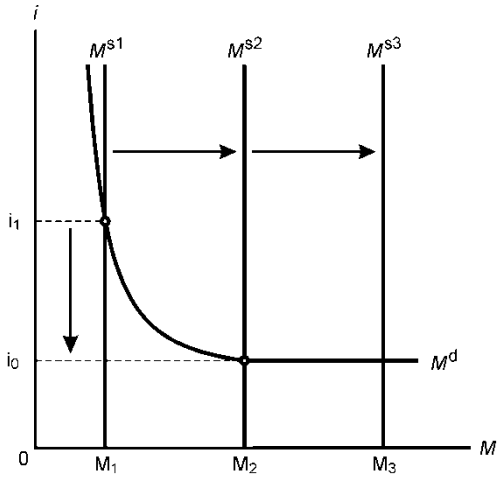
    At this higher interest rate, there is a decrease for money demanded because people wish to hold bonds as an asset (movement from point b to point c).



33. The correct option is 1. Statement a is correct. A negative relationship between the price of treasury bills and the interest rate indicates that as the price of treasury bills increases the interest rate declines and vice versa. An inverse relationship indicates a negative relationship.
    Statement b is correct. If the price of a treasury bill increases the rate of return on it decreases. If the rate of return on a treasury bill with a price of R9 700 is 3% it follows that if the price increase to R9 800 the rate of return will be less than 3%.
    Statement c is correct. Note that a negative relationship exists between the price of bonds and the interest rate. To calculate the rate of return on a treasury bill you need to do the following:
    Nominal return/Price paid x 100
    The nominal return is calculated as follows: Face value *minus* price paid.
    If the price paid is R280 000 the nominal return is R300 000 – R280 000 = R20 000 and the rate of return is 7.14%. [20 000/280 000 x 100 = 7.14%]

Statement d is correct. To calculate the rate of return on a treasury bill you need to do the following:
Nominal return/Price paid x 100
The nominal return is calculated as follows: Face value *minus* price paid.
If the price paid is R138 000 the nominal return is R150 000 – R138 000 = R12 000 and the rate of return is 8.70%. [12 000/138 000 x 100 = 8.70%]
If the price paid increases to R145 000, the rate of return (interest rate) will decrease because a negative relationship exists between the price of bonds (treasury bills) and the interest rate.

34. The correct option is 1. Statement a is correct. Remember that financial market participants are holding the amount of money and bonds they wish to hold, given the level of output and income (positive relationship) and the interest rate (negative relationship). A liquidity trap implies that at a very low or nearly zero interest rate the demand for money curve is completely elastic (horizontal). In this region, known as a liquidity trap (see diagram below) an increase in the money supply through monetary policy has no impact on the interest rate. Statement c is therefore incorrect since there will be no impact on the interest rate if the financial market is in a liquidity trap.



Statements b and d are incorrect because there will be a low demand for bonds due to the low interest rate, the opportunity cost of holding money is very low in a liquidity trap so there will be a high demand for money and a low demand for bonds.

35. The correct option is 2. An increase in income will shift the M^d curve to the right while contractionary open market operations implies a decrease in the money supply, represented by a shift to the left of the M^s curve.

3. ANSWERS TO ASSIGNMENT 02

Unique number: 732547

The second assignment was based on learning units 4, 5 and 6. If you experience any problems with these sections, work through the activities in TL102 again.

The correct answers are:

Question	*Option*	*Question*	*Option*	*Question*	*Option*
1	4	**13**	2	**25**	3
2	1	**14**	2	**26**	3
3	2	**15**	3	**27**	3
4	3	**16**	4	**28**	5
5	2	**17**	3	**29**	5
6	4	**18**	3	**30**	1
7	2	**19**	2	**31**	4
8	4	**20**	5	**32**	1
9	1	**21**	2	**33**	4
10	4	**22**	1	**34**	3
11	3	**23**	2	**35**	1
12	2	**24**	3		

1. The correct option is 4. In the IS-LM model, the most important variables that we wish to explain are the level of output and income (Y) and the interest rate (i). These variables are therefore our endogenous or dependent variables. Any variable that is influenced by these endogenous variables is by implication also an endogenous variable.

   In the IS-LM model the value of the exogenous variables are determined by the model builder, while the values of the endogenous variables are determined by the exogenous variables and the specifications of the model.

Endogenous variables	**Exogenous variables**
$C = c_o + c\mathbf{Y_D}$ The $\mathbf{Y_D}$ part of the consumption function is the endogenous component.	$C = \mathbf{c_o} + \mathbf{c}Y_D$ The autonomous (exogenous) variables in the consumption function are $\mathbf{c_o}$ and **c**.
The part of investment (I) that is dependent on the level of output and income and the interest rate are the endogenous components.	The part of investment (I) that is influenced by expectations, business confidence, and political and social factors is the exogenous component of investment. This is known as autonomous or exogenous investment.
Government spending (G) does not contain an endogenous component.	Government spending (G) is an exogenous variable because its value is not determined by the endogenous variables in the model.
In this specific version of the IS-LM model taxation (T) does not contain an endogenous component. If it is assumed that taxation is a function of the level of output and income, then it would be an endogenous variable.	Taxation (T) is an exogenous component because its value is not determined by the endogenous variables.
The supply of money (M^s) does not contain an endogenous component.	The supply of money (M^s) is entirely exogenous and the quantity of money is determined by the central bank.

Endogenous variables	Exogenous variables
The endogenous component of the demand for money (M^d) is the part of the demand for money that is determined by the interest rate and the level of output and income.	The exogenous component of the demand for money (M^d) is the part that is influenced by expectations, business confidence, and political and social factors.

2. The correct option is 1. All four statements are correct.

3. The correct option is 2. To derive the IS curve, we change the interest rate to determine the effect on the level of output and income. In the goods market the ZZ curve will shift downwards because of the decrease in the investment spending and the level of output and income decreases.

4. The correct option is 3. See the investment diagram in TL101. If the interest rate increases from 6% to 7% investment spending decreases by 500. There is a negative relationship between the interest rate and investment spending.

5. The correct option is 2. See the goods market diagram in TL101. In the goods market autonomous spending decreases from 2 500 to 2 000 if the interest rate increases from 6% to 7%.

6. The correct option is 4. See the goods market diagram inTL101. At an interest rate of 6% the goods market is in equilibrium at an income and output level of 7 500 and at an interest rate of 7% the goods market is in equilibrium at an income and output level of 6 000.

7. The correct option is 2. If the interest rate increases from 6% to 7% the equilibrium level of output and income decreases by 1 500 (from 7 500 to 6 000). The multiplier is equal to 3. A decrease in autonomous spending of 500 leads to a decrease of 1 500 in the equilibrium level of output and income. Therefore 500 x the multiplier = 1 500. The multiplier is therefore = 1 500/500 = 3.

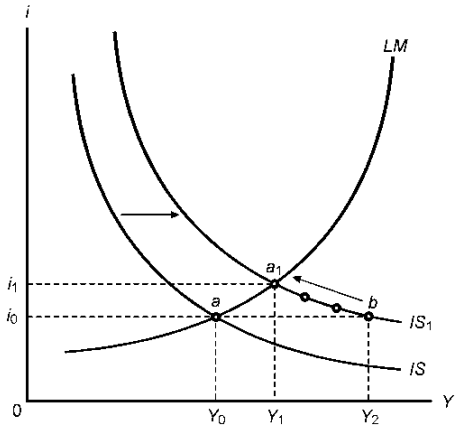
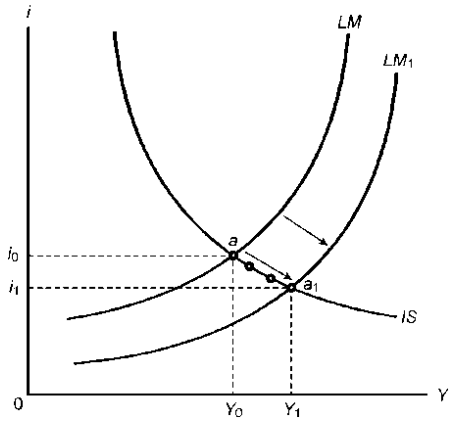
8. The correct option is 4. Statements d and e are correct. An increase in the interest rate causes an upward movement along the IS curve from point b to point a. Statement b is incorrect. A change in taxes will cause a shift of the IS curve (in this case a decrease in taxes will shift the IS curve to the right. Statement c is incorrect. At point a the demand for goods is lower than at point b because at a higher interest rate investment spending is lower, the demand for goods and the level of output and income level are lower.

9. The correct option is 1. Statement a is correct but statement b is incorrect since an increase in investment spending due to a decrease in the interest rate will be represented by a downward movement along the IS curve. Statement e and f are incorrect since the statements refer to the monetary policy. Note that only fiscal policy (G and/or T) is part of the goods market model and will have an effect on the IS curve.

10. The correct option is 4. The movement from point a to point b on the LM curve indicates an increase in the level of output in income (Y) and the chain of events will be as follows:
$Y\uparrow \rightarrow M^d\uparrow \rightarrow P_B\downarrow \rightarrow i\uparrow$. Statement a is therefore incorrect since the demand for money is higher at point b. Statement b is incorrect. The supply of money M^s is exogenous and stays therefore the same. Statement c is correct. Statement d is incorrect. The LM curve will shift downwards if the nominal money supply increases. Statement e is correct.

11. The correct option is 3. An expansionary fiscal policy (the shift of the IS curve to the right) means that government spending has to be increased and/or taxes have to be decreased in order to stimulate economic activity by increasing the demand for goods. An expansionary monetary policy (the shift of the LM curve downwards) is an increase in the nominal money supply in order to stimulate economic activity by increasing the demand for goods.

12. The correct option is 2. To answer this type of question you must make use of chain of events. An expansionary fiscal policy (the shift of the IS curve to the right) means that government spending has to be increased and/or taxes have to be decreased. We use the example of an increase in government spending.
An expansionary monetary policy (the shift of the LM curve downwards) is an increase in the nominal money supply in order to stimulate economic activity by increasing the demand for goods.

Expansionary fiscal policy: **An increase in government spending**	**Expansionary monetary policy** **An increase in the nominal money supply**
The impact is on the goods market first: $G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$ *Impact on the financial market*: $\rightarrow Y\uparrow \rightarrow M^d\uparrow \rightarrow i\uparrow$ $i\uparrow \rightarrow I\downarrow$ $Y\uparrow \rightarrow I\uparrow$ *Then back to the goods market:* $\rightarrow i\uparrow \rightarrow I\downarrow \rightarrow Z\downarrow \rightarrow Y\downarrow$	*The impact is on the financial market first*: $M\uparrow \rightarrow M/P\uparrow \rightarrow i\downarrow$ *Impact on the goods market*: $\rightarrow i\downarrow \rightarrow I\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$ $Y\uparrow \rightarrow I\uparrow$ $Y\uparrow \rightarrow C\uparrow$
	

The reason for the higher interest rate for a shift to the right of the IS curve (an expansionary fiscal policy) is that the demand for money is higher while for expansionary monetary policy (the downward shift of the LM curve) the interest rate is lower since the money supply is higher.

13. The correct option is 2. Investment spending is higher since the interest rate is lower. See the chain of events in the table above.

14. The correct option is 2. Investment spending is indeterminate in the case of an expansionary fiscal policy because the increase in the interest rate decreases investment spending (negative relationship) and the increase in the level of output increases investment spending (positive relationship). See the chain of events in the table above.

15. The correct option is 3. Investment spending is higher in the case of a downward shift of the LM curve (expansionary monetary policy) since the decrease in the interest rate increases investment spending and the increase in the level of output increases investment spending. See the chain of events in the table above.

16. The correct option is 4. The reason why the budget deficit increases in case of an expansionary fiscal policy is that government spending increases and/or taxes decreases while for an expansionary monetary policy, it is unchanged since government spending and/or taxes are unchanged/exogenous. See the chain of events in the table above.

17. The correct option is 3. An increase (or appreciation) of the nominal exchange rate between RSA and the USA implies that fewer rands must be paid for a dollar, leading to lower exports and possibly a trade deficit. Remember that a trade deficit exists when imports exceed exports.

18. The correct option is 3. A trade balance surplus indicates that a country earns more on exports than it spends on imports and this would be reflected as an improvement on the trade balance. If exports exceeded imports, the trade balance will improve.

19. The correct option is 2. The formula to calculate the real exchange rate is:

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

The calculation of the real exchange rate is as follows:

Real exchange rate for year 1:

ε = (0.30 x 150) /120
= 45/120
= 0.375
= 0.38

Real exchange rate for year 2:

ε = (0.28 x 190)/130
= 53.2 /130
= 0.409
= 0.41

Therefore statements a, d and f are correct. 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.

20. The correct option is 5. The interest parity condition tells the investor that when he/she has to decide between domestic or foreign financial investment he/she should consider the difference in the interest rate and the expected changes in the exchange rate.

21. The correct option is 2. Whether financial market participants will buy RSA or USA bonds depends on the difference in the interest rate and the expected changes in the exchange rate. Although the interest rate is higher on RSA bonds, it does not necessarily follow that RSA bonds are a better investment. The difference between the RSA interest rate and the USA interest rate is 2% (8% – 6%). Thus, if the expected depreciation of the rand is 3% financial market participants will buy USA bonds. Why? By holding RSA bonds, the investor will get higher interest payments, but the rand will be worth less in terms of dollars at the end of the period because of the depreciation, making investment in RSA bonds less attractive than investing in USA bonds.

22. The correct option is 1. Statement a is incorrect. The domestic level of output does not influence exports and exports can thus be regarded as exogenous. The change in the output of our trading partners (Y*) has an important effect on our level of exports. See section 6.1 of the study guide. Statement b is therefore correct. Statement c is correct. See the study guide: section 6.1. Statement d is correct. See diagram 6.1 of the study guide. The domestic level of output in the economy (Y) is one of the determinants of imports and a positive relationship exists between the domestic level of output and imports.
Statement e is incorrect. It is the change in the output of our trading partners (Y*) that impact on our level of exports and not the domestic output in the economy.

23. The correct option is 2. Statements a and b are correct. Foreign demand for domestic goods is also known as exports while domestic demand for foreign goods is also known as imports. Statement c is correct. The domestic demand for goods includes imports while exports form part of the demand for domestic goods. Therefore, part of domestic demand falls on foreign/imported goods. Statement d is incorrect. The "domestic demand for goods" and the "demand for domestic goods" are not the same in an open economy. See the explanation above. The "domestic demand for goods" includes imports and excludes exports while the "demand for domestic goods" excludes imports and includes exports.

24. The correct option is 3. This question refers to the determinants of imports and exports. Statement a is incorrect. A negative relationship exists between the real exchange rate and exports. Statement b is correct. A positive relationship exists between domestic level of output and imports. Statement c is correct. A positive relationship exists between the real exchange rate and imports. Statement d is incorrect while statement e is correct. The level of exports will not be determined by the domestic level output (Y), but by the level of output of a country's trading partners (Y*).

25. The correct option is 3. See the discussion of the current account of the balance of payments in section 18.2 in the prescribed book. Only statement 3 is correct. If exports are less than imports a trade deficit occurs. Statements 4 and 5 refer to the difference between government spending and government revenue (taxes).

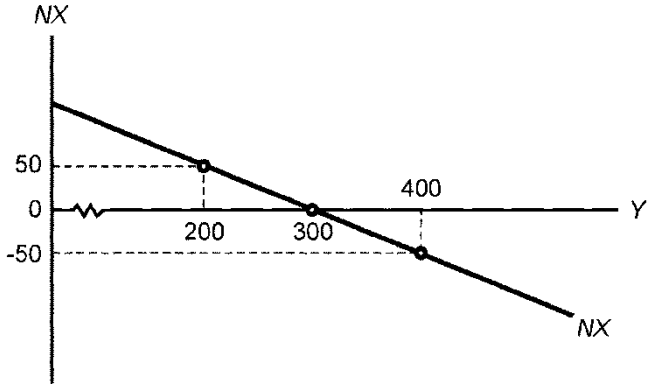
26. The correct option is 3. The NX curve represents the relationship between the level of output and income and the trade balance.

27. The correct option is 3. Diagram C represents the information given.

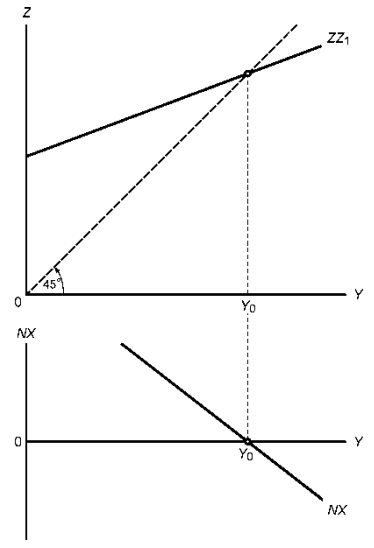
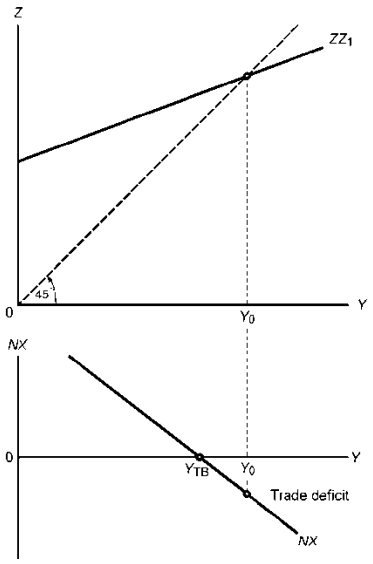
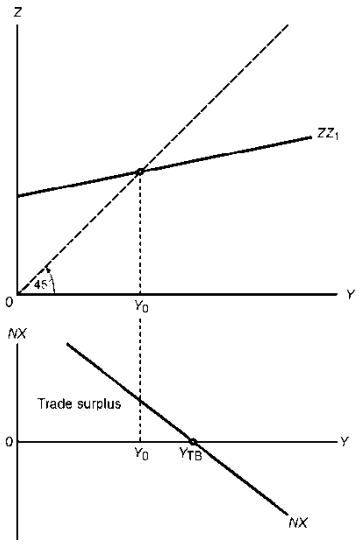
    Given the information, what you need to do is to calculate the net exports for each output and income level.

    Given that X = 100 then:
    At Y = 200 is NX = X–IM = 100 – 50 = 50
    At Y = 300 is NX = X–IM = 100 – 100 = 0
    At Y = 400 is NX = X–IM = 100 – 150 = -50

    You then use this information to draw the NX curve and it should look as follows:



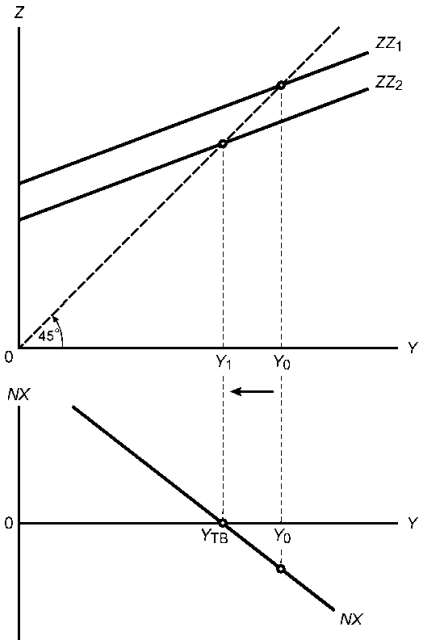
28. The correct option is 5. Equilibrium output is where Y = Z (the intersection point between the ZZ curve and the 45^0 line). Equilibrium output can be associated with three different position as indicated in the diagrams below.

Diagram Trade balance	Diagram Trade deficit	Diagram Trade surplus
		

Statement c is correct while statements a and b are incorrect. Do you know what the difference is between the demand for domestic goods and the domestic demand for goods? The demand for domestic goods (it is produced in South Africa) excludes imports and includes exports while the domestic demand for goods (can be produced in South Africa or in any other country) includes imports. Therefore, the goods market is in equilibrium when domestic output is equal to the demand for domestic goods. See diagram 6.4 in the study guide for the difference between the DD curve and the ZZ curve. Statement d is therefore correct and statement e incorrect.

29. The correct option is 5. At any income level lower than R80 million the level of output and income decreases, imports will be lower since a positive relationship exists between Y and imports and a trade surplus will occurs ($Y\downarrow \rightarrow IM\downarrow \rightarrow NX\uparrow$).

30. The correct option is 1. If government spending decreases, the chain of events will look as follows: $G\downarrow \rightarrow Z\downarrow \rightarrow Y\downarrow \rightarrow IM\downarrow \rightarrow NX\uparrow$. The completed diagram will look as follows:



Note that in this case the trade balance improves to the trade balance position. It can improve to a trade surplus, depending on the size of the downward shift of the ZZ curve.

31. The correct option is 4. Statements b and e are correct. The factor that will shift the NX curve is a change in exports (in other words, a change in foreign demand). If the NX shifts to the left, it means a decrease in exports or a decrease in foreign demand for domestic goods at each level of domestic output.

32. The correct option is 1. When working with depreciation always remember the Marshall-Lerner condition. For the Marshall-Lerner condition to hold, a real depreciation must eventually lead to an increase in net exports.

    The depreciation of the real exchange rate affects the demand for domestic goods through a change in exports and imports – and it increases the import bill.

    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). A depreciation of the domestic currency decreases the price of exports, increases the price of imports, and has therefore both a positive and a negative effect on the trade balance. *Positive effect*: the decrease in the price of exports results in an increase in exports and a decrease in imports and the trade balance improves. *Negative effect*: the increase in the price of imports increases the import bill, which affects negatively on the trade balance. For the Marshall-Lerner condition to hold, the positive effect on the trade balance must outstrip the negative effect (in other words, exports must increase enough and imports must decrease enough to compensate for the increase in the price of imports).

    Thus, a depreciation has both a positive and a negative effect on the trade balance.

Positive effect	Negative effect
A depreciation reduces the price of exports and increases the price of imports. Exports therefore increase, imports decrease, and the trade balance improves.	The rise in the price of imports increases the import bill, which affects negatively on the trade balance.

    Given that the Marshall-Lerner condition holds, a depreciation results in an improvement in the level of output and income and the trade balance. The level of output and income increases since the demand for domestic goods increases.

    The increase in the demand for domestic goods is the result of two things: the rise in exports and expenditure switching. Expenditure switching takes place when the increase in the relative price of imports cause economic participants to switch their expenditure from imported goods to domestic goods.

    Chain of events

    The chain of events for the *positive effect* will be as follows:

    The lower price of exports causes an increase in exports, which, in turn, increases the demand for domestic goods as well as the level of output and income.

    $P_{exports}\downarrow \rightarrow X\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

    The increase in the relative price of imports causes a switching of expenditure from foreign goods (which are now more expensive) to domestically produced goods. This results in a higher demand for domestic goods and a higher level of output and income.

    $P_{imports}\uparrow \rightarrow IM\downarrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

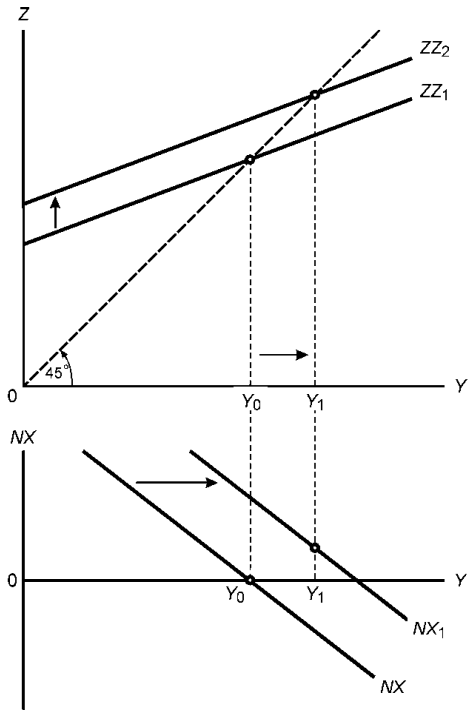
The chain of events for the *negative effect* will be as follows:

$P_{imports}\uparrow \rightarrow$ Imports Bill$\uparrow$

$E\downarrow \rightarrow X\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow \rightarrow IM\uparrow$

Thus, for the Marshall-Lerner condition to hold, depreciation must eventually lead to an increase in net exports and as a result, an increase in the level of output and income. For this to happen, the positive effect on the trade balance (increase in exports and decrease in imports due to the relative price changes) must outstrip the negative effect (increase in the imports bill and the increase in imports resulting from the increase in the level of output and income due to the increase in exports). Therefore, the ZZ_1 curve will shift upwards, the domestic level of output will increase, the NX curve will shift to the right and a trade surplus occurs.

Graphically this can be indicated as follows:

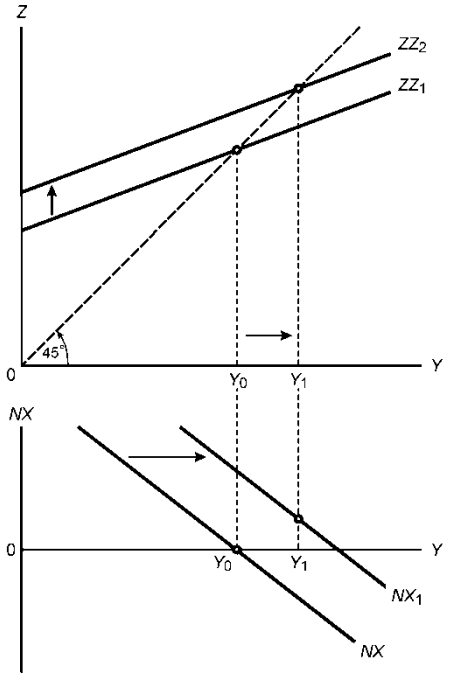


A depreciation causes an upward shift of the ZZ_1 curve to ZZ_2. This increase is due to the increase in exports and to expenditure switching from imports to domestic goods. The higher demand for domestic goods increases the level of output and income and it increases from Y_0 to Y_1.

Since exports are higher, the NX curve shifts to the right to NX_1. According to the new NX_1 curve at the equilibrium income of Y_1 there is now a trade surplus. The depreciation has resulted in an increase in the equilibrium level of output and an improvement in the trade balance.

33. The correct option is 4. The likely impact of a change in the R/$ exchange rate on the level of output and income and the trade balance can be explained as follows: the depreciation of the exchange rate caused an increase in exports and the level of output increased. An upward shift of the demand for goods curve and the level of output and income increases indicate this.

The diagram will look as follows:



34. The correct option is 3. To achieve a higher output level and a trade surplus the ZZ curve must shift upwards and the NX curve must shift to the right. Statement 1 is incorrect since a reduction in taxation will cause a movement along the NX curve and an increase the trade deficit. Statement 2 is incorrect since the ZZ curve will shift downwards decreasing the output level. Statement 3 is correct and statement 4 is incorrect since a depreciation will lead to an increase in exports, shifting the ZZ curve upwards and because of the Marshall-Lerner condition the NX curve will shift to the right and a trade surplus occurs – the positive effect of an increase in exports on the trade balance, outstrips the negative effect of an increase in imports and the trade balance thus improves (NX↑).

35. The correct option is 1. All the statement are correct.

3. ANSWERS TO ASSIGNMENT 03

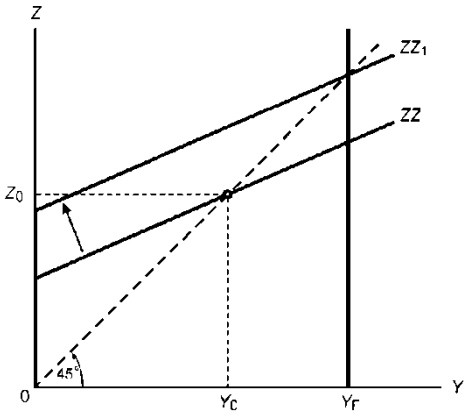
Assignment 03 was a fully online assignment and the feedback for your unique set of questions will be available to you under the "Self Assessment" tab on myUnisa after the closing date for the assignment.

4. ANSWERS TO SELF-ASSESSMENT ASSIGNMENT 04

The fourth self-assessment assignment was based on learning units 1 to 9.

You can expect these type of questions in Section A of the examination paper. Also, work properly through TL103.

Question 1



Please note that the question requires you to make use of the diagram. You must therefore not only describe your answer in words but you also need to show what happens on the diagram.

Your answer should contain the following information:

Explanation:
You must indicate that a decrease in taxes is required to ensure full employment. Note that a decrease in taxes is one of the instruments of expansionary fiscal policy.

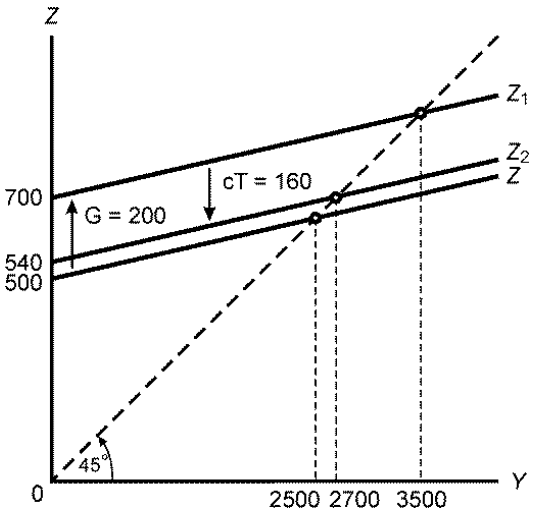
You then need to describe how a decrease in taxes will affect the level of output and income and the employment. For this purpose, you can use the following chain of events.

$T\downarrow \rightarrow Y_D\uparrow \rightarrow C\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

You then need to indicate the impact of a decrease in taxes on the diagram by showing that it shifts the ZZ curve upwards to ZZ_1 and that the full employment level of output and income is reached at Y_F.

You then end your answer with your conclusion namely that it is possible to reach full employment by increasing the demand for goods through a decrease in taxation.

Question 2



To be able to answer this question you need to understand the **balanced budget multiplier**. (See Section 2.6 in the study guide.) In your answer you need to make use of the information provided – that is the 200 increase in government spending and taxation – and explain as well as illustrate on the diagram how this will affect the level of output and income.

In order to answer this question you need to know the values of the marginal propensity to consume and the multiplier. In this question the marginal propensity to consume and the multiplier can be derived using the information given in the diagram. If the given information could not be used to calculate the marginal propensity to consume or the multiplier you would be expected to make an assumption about one and derive the other one given that assumption.

In this instance, however the information does allow us to calculate the marginal propensity to consume and the multiplier thus you cannot make your own assumption about these amounts.

How to calculate the marginal propensity to consume and the multiplier given that the demand for goods is 500 and it corresponds to a level of output and income of 2 500.
We know that the equilibrium level of output and income is equal to the multiplier times autonomous spending.
Therefore: 2 500 = multiplier x 500
Multiplier = 2 500/500
Therefore, the multiplier is equal to 5.

Now that we know the value of the multiplier, we can calculate the marginal propensity to consume
Multiplier = 1 / 1 – marginal propensity to consume
$5 = 1/ 1 – c$
$5 (1 – c) = 1$
$5 – 5c = 1$
$–5c = 1 – 5$
$–5c = –4$
$c = 4/5$
$c = 0.8$

Starting with an increase in government spending (G) the increase in autonomous spending is 200 since G is one of the autonomous spending components. This is illustrated by an upward shift of the demand curve for goods by 200 (from Z to Z_1).

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 (2 500 + 1 000).

The increase of 200 in taxes decreases autonomous spending by c(T): therefore 0.8(200) = 160. This is illustrated by a downward shift of the demand curve for goods by 160 (from Z_1 to Z_2).

The decrease in the level of output and income is therefore 160 x 5 = 800.

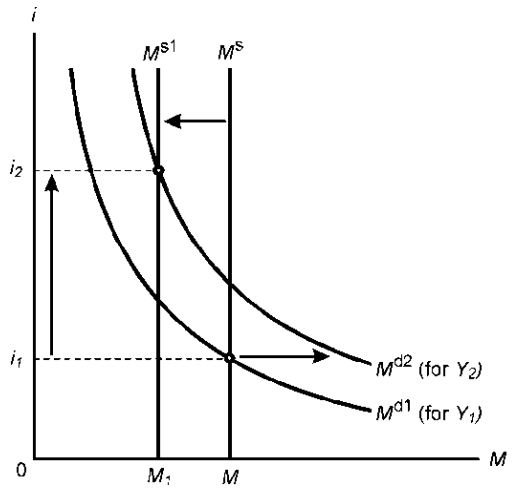
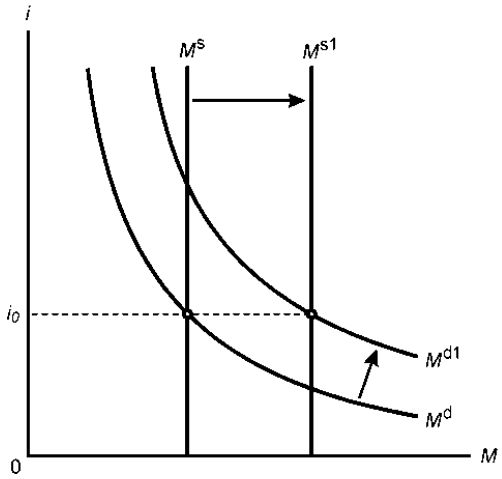
The level of output and income therefore settles at 2 700 (3 500 – 800).

The balanced budget multiplier is equal to 1, therefore the net effect of an equal increase in government spending and taxes will still have expansionary effect on the level of output and income. In this case, the increase in the level of output and income is equal to 200.

Once again, note the difference between the impact of government spending and taxation.

Question 3

In your answer you need to make use of the diagrams to illustrate (to show) and explain. It is also important that your explanation correspond with your diagram.

(a) An increase in income with simultaneous contractionary open market operations by the central bank	**(b) An increase in income with simultaneous expansionary open market operations by the central bank**
	
Impact on the equilibrium interest rate:	**Impact on the equilibrium interest rate:**
Explanation: An increase in income will result in an increase in the interest rate because Y↑ → M^d↑ → i↑ (Illustrated as a shift of the M^d curve to the right) Contractionary open market operations by the central bank consists of the central bank selling bonds (which will reduce the money supply, i.e. it is applying a contractionary monetary policy) which results in an increase in the interest rate because M^s↓: S_B↑ → P_B↓ → i↑ (Illustrated by a shift of the M^s curve to the left) *Conclusion*: **The interest rate (i) will definitely increase as a result.**	*Explanation*: An increase in income will result in an increase in the interest rate because Y↑ → M^d↑ → i↑ (Illustrated as a shift of the M^d curve to the right) Expansionary open market operations by the central bank consists of the central bank buying bonds (which will increase the money supply, i.e. it is applying an expansionary monetary policy) which results in a decrease in the interest rate because M^s↑: D_B↑ → P_B↑ → i↓ (Illustrated by a shift of the M^s curve to the right) *Conclusion*: **The impact on the interest rate (i) is uncertain/ indeterminate** (it can increase or decrease or stay the same since it depends on the relative shifts of the two curves).

Question 4

Investment is usually funded through borrowing. The higher the interest rate, the higher the cost of borrowing and therefore there will be fewer profitable investment opportunities thus investment spending will decrease.

There is a negative (inverse) relationship between the interest rate and investment spending. In terms of a chain of events:

$i\downarrow \rightarrow I\uparrow$
$i\uparrow \rightarrow I\downarrow$

As the level of output (production) increases, the level of sales rises and firms tend to invest more – hence a positive relationship exists between the level of output and the level of investment spending. In terms of a chain of events:

$Y\uparrow \rightarrow I\uparrow$
$Y\downarrow \rightarrow I\downarrow$

Autonomous investment is determined by factors other than the level of output and income and the interest rate. These are factors such as investor confidence, expectations, uncertainty, political and social stability and regulations. Any of these factors apply to South Africa. To explain the relatively low investment in the mining and agricultural sector popular explanations in the financial press are the uncertainties regarding nationalisation of mines and the redistribution of land as well as strikes in the mining industries.

Question 5

Use the following information to derive an IS curve:

- A decrease in the interest rate from 6% to 4% increases investment spending by 200.
- The multiplier is 5.
- In the goods market, autonomous spending before the decrease in the interest rate is 800.

Given the information the first point of the IS curve can be derived as follows:

Autonomous spending is 800 and the multiplier is 5.

The equilibrium level of output and income is therefore 800 x 5 = 4 000. The first point of the IS curve therefore indicates that at an interest rate of 6% the equilibrium level of output and income is 4 000.

The second point is derived as follows:

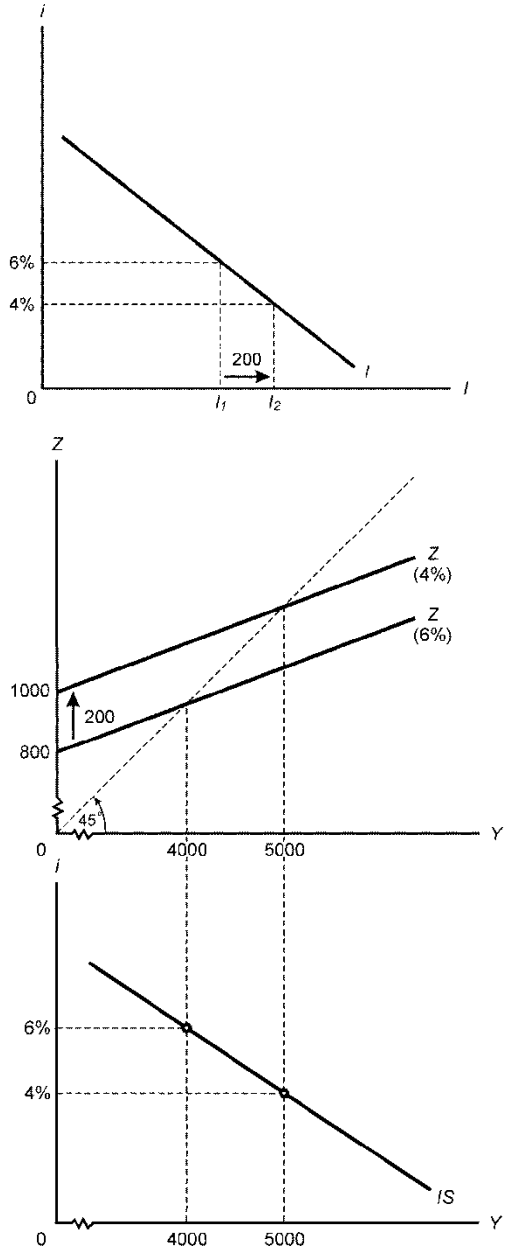
The vertical intercept in the goods market increases by 200 – that is the increase in investment spending due to the decrease in the interest rate – and the vertical intercept is equal to 800 + 200 = 1 000.

The equilibrium level of output and income is therefore 1 000 x 5 = 5 000.

At an interest rate of 4% the equilibrium level of output and income is 5 000.

This is then the second point on the IS curve. The IS curve is then drawn by combining these points.

Graphically the derivation is done as follows:



Question 6

In the study guide, learning unit 4, section 4.4 the derivation of the LM curve is done by assuming that the level of income and output increases. To derive the LM curve by assuming that the level of income and output decreases the variables change in the opposite direction ($Y\downarrow \rightarrow M^d\downarrow \rightarrow i\downarrow$) and the demand for money curve will shift to the left.

Question 7

In the IS-LM model, the most important variables that we wish to explain are the level of output and income (Y) and the interest rate (i). These variables are therefore our endogenous or dependent variables. Any variable that is influenced by these endogenous variables is by implication also an endogenous variable. However, a variable can contain both an exogenous (autonomous) and an endogenous component. For instance, consumption spending (C) has an exogenous (autonomous) component (c_0) as well as an endogenous component (Y_D). The same applies to investment spending.

An exogenous variable has an effect on the endogenous variables, but is in turn not influenced by the endogenous variables.

In the IS-LM model, the model builder determines the values of the exogenous variables, while the values of the endogenous variables are determined by the exogenous variables and the specifications of the model.

Endogenous variables	**Exogenous variables**
$C = c_o + c\mathbf{Y_D}$ The $\mathbf{Y_D}$ part of the consumption function is the endogenous component.	$C = \mathbf{c_o} + \mathbf{c}Y_D$ The autonomous or exogenous variables in the consumption function are $\mathbf{c_o}$ and **c** (the marginal propensity to consume). The $\mathbf{c_o}$ part is known as autonomous or exogenous consumption.
The part of investment spending (I) that is dependent on income and the interest rate are the endogenous components.	The part of investment spending that is influenced by expectations, business confidence, and political and social factors is the exogenous component of investment. This is known as autonomous or exogenous investment spending ($\bar{I}$).
Government spending (G) does not contain an endogenous component.	Government spending (G) is an exogenous variable because its value is **not** determined by the endogenous variables in the model.
In this specific version of the IS-LM model that is used in this module, taxation (T) does not contain an endogenous component. If it is assumed that taxation is a function of the level of output and income, then it would be an endogenous variable.	Taxation (T) is an exogenous variable because its value is not determined by the endogenous variables.
The supply of money (M^s) does not contain an endogenous component.	The supply of money (M^s) is entirely exogenous and the quantity of money supplied is determined by the central bank.
The endogenous component of the demand for money (M^d) is the part of the demand for money that is determined by the interest rate and the level of output and income.	The exogenous component of the demand for money (M^d) is the part that is influenced by expectations, business confidence, and political and social factors.

Question 8

a. A negative relationship exists between the interest rate and investment spending. A decrease in the interest rate from 10% to 6% will increases investment spending. It is represented as a downward movement along the investment curve.

b. While the decrease in the interest rate increases investment spending the nationalisation of mines and factories will probably cause private investment to collapse and the investment curve will shift to the left. The country will end up with a lower interest rate and lower investment spending.

c. Under normal circumstances the decrease in the interest rate will increase investment spending and increase the demand for goods and will have a multiplier impact on the level of output and income. The decrease in autonomous investment due to the nationalisation of mines and factories will, however, decrease the demand for goods and via the multiplier effect decreases the level of output and income. Under these conditions, the lower interest rate will probably not have any impact on the level of investment spending and the economy of Mallarge will probably move into a recession with declining output and income and increased unemployment. Which all lead to further problems and probably an economic depression.

Question 9

To be able to answer this question and critically discuss the given statement you need to understand the impact an **expansionary fiscal policy** has on the level of output and income in the IS-LM model.

In terms of a chain of events, an expansionary fiscal policy has the following impact:

$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

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

The important issue is what happens to investment spending:

$i\uparrow \rightarrow I\downarrow$

$Y\uparrow \rightarrow I\uparrow$

While an increase in the interest rate decreases investment spending, the increase in output and income increases investment spending. How effective an expansionary fiscal policy is in increasing the level of output and income will depend on what happens to investment spending during this process.

If investment spending is very sensitive to the interest rate – in other words, a small rise in the interest rate will cause a relatively large decrease in investment spending then fiscal policy is less effective since the increase in government spending causes an increase in the interest rate, which decreases investment spending. Government spending is now crowding out investment spending.

The less sensitive investment spending is to a change in output and income the less is the increase in investment spending for a given change in output and income. While government spending increases the level of output and income, it does not bring about a significant increase in investment spending.

Expansionary fiscal policy is therefore less effective in increasing the level of output and income the greater the interest sensitivity of investment spending and the less sensitive investment spending is to a change in income.

The statement is therefore incorrect since the impact of expansionary fiscal policy on the level of output and income is **smaller** and not greater.

Question 10

IS-LM model:

In terms of a chain of events, an **expansionary fiscal policy** has the following impact on the level of output and income, interest rate and investment spending:

$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

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

$i\uparrow \rightarrow I\downarrow$

$Y\uparrow \rightarrow I\uparrow$

By how much Y increases for a given increase in G depends on the multiplier effect. The multiplier is therefore one of the variables in the model that will determine the effectiveness of fiscal policy to influence the level of output and income. For example, if the increase in government spending is 100 and the multiplier is 5 the change in Y will be 500 while if the multiplier is smaller say 4 then the increase in Y is only 400.

Since the IS-LM model also includes a financial market, the increase in Y increases the demand for money and therefore the interest rate increases which in return decrease investment spending. The bigger the increase in i for a given increase in Y the less effective expansionary fiscal policy will be.

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

The more sensitive investment spending is to a change in the interest rate, the greater the decrease in investment spending. Therefore, fiscal policy is less effective and the increase in government spending is replacing investment spending (crowding out).

$$i\uparrow \rightarrow I\downarrow$$

However, in this specific IS-LM model the level of output also influences investment spending.

$$Y\uparrow \rightarrow I\uparrow$$

How effective an expansionary fiscal policy is in increasing the level of output and income will depend on what happens to investment spending during this process.

The less sensitive investment spending is to a change in output and income, the smaller the increase in investment spending for a given increase in output and income. Thus while government spending increases the level of output and income, it does not bring about a significant increase in investment spending.

Expansionary fiscal policy is therefore less effective in increasing the level of output and income when investment is less sensitive to a change in income.

Question 11

IS-LM model:

The events chain for **expansionary monetary policy** is as follows:

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

The effectiveness of monetary policy will be influenced by the following factors:

- The extent of the decrease in the interest rate due to a given increase in the money supply. The greater the impact of an increase in the money supply on the interest rate the greater, the increase in investment spending, the demand for goods and the level of output and income will be.
- 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 decrease in the interest rate will lead to a larger increase in investment spending, the demand for goods and the level of output and income.
- The multiplier. The greater the multiplier, the greater the impact of a change in investment spending on the level of output and income

Question 12

Read the question carefully. No diagrams are needed. The similarities and differences must be explained by using chain of events and words.

In the **goods market model** of learning unit 2 the increase in the level of output and income is equal to the multiplier times the change in government spending (autonomous spending). The chain of events is:

$$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$$

In terms of the demand for goods consumption spending and government spending is higher:

$$C\uparrow + I + G\uparrow$$

Investment spending is only an exogenous variable in the goods market model (no endogenous component). Therefore investment spending is unchanged if government spending increases.

In the **IS-LM model,** however there is also an endogenous component of investment spending (the part of investment that is dependent on income and the interest rate). Therefore, an increase in government spending not only leads to an increase in the level of output and income but also to a change in the interest rate and investment spending.

The chain of events for the IS-LM model is:

$$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$$

$$Y\uparrow \rightarrow M^{d}\uparrow \rightarrow i\uparrow$$

$$i\uparrow \rightarrow I\downarrow$$

$$Y\uparrow \rightarrow I\uparrow$$

The impact on the level of output and income is therefore not only determined by the increase in government spending but also by the change in the interest rate, how sensitive investment spending is to a change in the interest rate and how sensitive investment is for a change in income. Therefore, the change in investment spending is indeterminate unless we know how sensitive investment spending is to a change in the interest rate and to a change in income.

The **similarity** between the two models is that in both instances an expansionary fiscal policy increases the level of output and income. The **difference** is that investment spending will be indeterminate in the IS-LM model and unchanged in the goods market. In the IS-LM model, there are more variables that influence the impact of an expansionary fiscal policy on the level of output and income.

Question 13

To answer this type of question you need to use chain of events as a background

Background:

A contractionary monetary policy consists of a decrease in the money supply which is represented by an upwards shift of the LM curve.

The events chain for contractionary monetary policy is as follows:

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

Note: In this module, we follow the traditional approach to money supply, which means that we assume the money supply is controlled by the central bank. A decrease in the money supply (resulting from the central bank selling bonds on the open market) will decrease in the real money supply which results in an increase in the interest rate (because the supply of bonds increases on the bonds market, and so the price of bonds decreases and the return on holding bonds, or interest rate, increases):
$M^s\downarrow$: $S_B\uparrow \rightarrow P_B\downarrow \rightarrow i\uparrow$. In this module, the **central bank does not control the repo rate** or any other interest rate directly (as the SARB does in South Africa). <u>The central bank influences the interest rate through the money supply</u>. Therefore the chain of events cannot start with: i↑ – it starts with a change in $\mathbf{M^s}$.

An expansionary fiscal policy consists of an increase in government spending and/or a decrease in taxation which is represented by a rightward shift of the IS curve.

The events chain for an expansionary fiscal policy is as follows:

$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

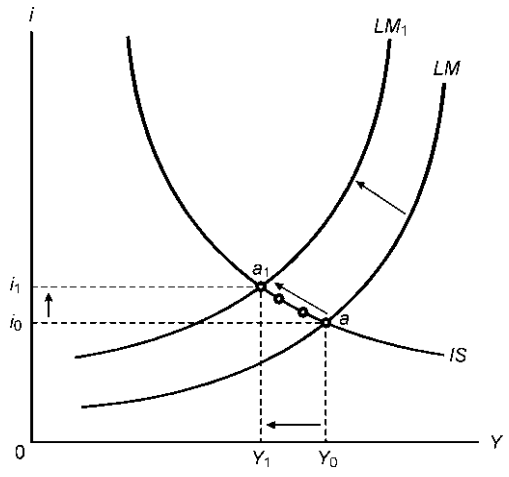
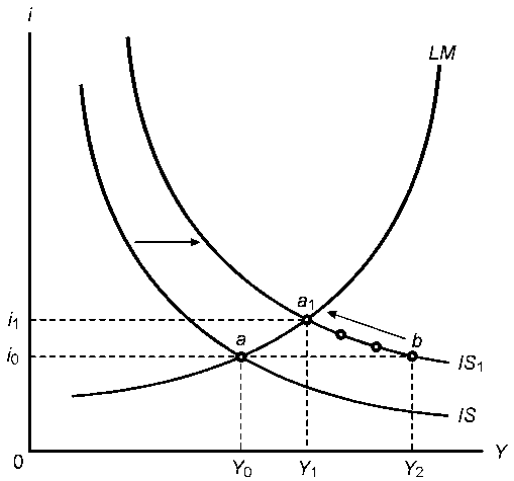
$Y\uparrow \rightarrow M^d\uparrow \rightarrow i\uparrow$

$i\uparrow \rightarrow I\downarrow$

$Y\uparrow \rightarrow I\uparrow$

(Note: the question asks you to look at the impact of an expansionary fiscal policy, in this case we use an increase in government spending but you can also use the chain of events of a decrease in taxes).

Since the question refers to use the IS-LM model it is necessary to a draw the two diagrams indicating contractionary monetary policy and expansionary fiscal policy.

Contractionary monetary policy	**Expansionary fiscal policy**
	

The question did not identify specific variables to compare. Therefore you need to compare all the possible variables or the marks allocated to the question will give you an indication how many variables to compare.

Looking at the chain of events and the diagrams, the results of these policies are:

Variables	Contractionary monetary policy	Expansionary fiscal policy
Money supply	Lower	Unchanged
Budget deficit	Unchanged	Higher
The demand for goods	Lower	Higher
The level of output and income	Lower	Higher
The interest rate	Higher	Higher
Investment spending	Lower	Indeterminate

Comparison of the impact on each variable:

Money supply (M): In the case of a contractionary monetary policy, the money supply is lower (given in the question) while for an expansionary fiscal policy it is unchanged since the money supply is not a variable of monetary policy.

Budget deficit: In the case of a contractionary monetary policy, the budget deficit is unchanged since government spending and taxation are unchanged. In the case of an expansionary fiscal policy, the budget deficit increases since government spending is higher and/or taxation is lower.

The demand for goods (Z): In the case of a contractionary monetary policy, the demand for goods is lower while for an expansionary fiscal policy it is higher. The reason it is lower for a contractionary monetary policy is that the higher interest rate decreases investment spending and the demand for goods. In the case of an expansionary fiscal policy, the demand for goods is higher since the level of output is higher because of the increase in government spending and/or the decrease in taxation.

The level of output and income (Y): In the case of a contractionary monetary policy, the level of output and income is lower while for an expansionary fiscal policy it is higher. The reason it is lower for a contractionary monetary policy is that the higher interest rate decreases investment spending and the demand for goods. In the case of an expansionary fiscal policy, the level of output is higher since the increase in government spending and/or the decrease in taxation increases the demand for goods.

The interest rate (i): In the case of a contractionary monetary policy, the interest rate is higher since the money supply is lower. In the case of an expansionary fiscal policy, the interest rate is higher since the demand for money is higher due to the increase in Y.

Investment spending (I): In the case of a contractionary monetary policy, investment spending is lower since the interest rate is higher. In the case of an expansionary fiscal policy, the change in investment spending is indeterminate since the interest rate is higher – which decreases investment spending – and the level of output is higher – which increases investment spending.

Question 14

14a. The overall effect from 2012 - 2016 was a depreciation of the Rand against the USA dollar.

14b. To help you to understand the possible reasons for the depreciation of the rand, read the following article as an explanation why the rand is falling and make your own summary:

January 18, 2016 6.04am SAST

Fatima Bhoola (Lecturer in Economics, University of the Witwatersrand

Given that South Africa operates within a flexible exchange rate regime, the value of the rand, like any commodity, is determined by the market forces of supply and demand. The demand for a currency relative to the supply will determine its value in relation to another currency.

Theoretically, the demand for a floating currency – and hence its value – changes continually based on a multitude of factors. In the case of the rand, its current weakness can be attributed to a myriad of structural problems facing the local economy.

The main determinants of a currency's value include demand for a country's goods and services. This is closely linked to the growth and national income of its main trading partners.

Equally important is the domestic interest rate. If it is high it is likely to attract foreign capital, causing the exchange rate to strengthen. But high inflation can wipe out the benefit of high interest rates to foreign investors.

Additional factors serve to drive the currency down.

These include a current account deficit. The current account deficit gets bigger when a country spends more on foreign trade than it is earning and has to borrow capital from foreign sources to make up the difference.

This implies that a country requires more foreign currency than it is getting through sales of exports, and it supplies more of its own currency than foreigners demand for its products. This excess demand for foreign currency leads to depreciation in the value of a currency.

Factors such as political instability and poor economic performance can reduce investor confidence. This inevitably forces foreign investors to seek out stable countries with strong economic performance. Thus, a country that is perceived to have positive attributes will attract investment away from countries perceived to have more political and economic risk.

There is a further complication to currency movements. The buying and selling of currencies is no longer driven only by the need to facilitate trade but also by the demand for currencies as financial assets. This means that currencies are bought and sold like any other asset. Decisions by traders – to buy or sell a currency – can have a marked effect.

The impact of the turmoil in China

South Africa's currency lost 26% of its value in the six months after turmoil gripped Chinese markets in June 2015. This was when the People's Bank of China surprised markets by executing a 2% devaluation of the yuan and changing the way it traded its currency. The aim was to weaken the yuan to boost its export competitiveness.

This, coupled with slower economic growth, has aggravated the situation for South Africa as well as other African countries that rely on oil and mineral exports to China. Emerging markets most exposed to lower growth prospects and subdued commodity prices have seen the sharpest falls.

The rand is expected to remain under pressure with many analysts predicting that it will fall further in 2016. It is not alone. Many other emerging market currencies have been dealt the same fate.

But the rand is substantially weaker than it might have been. The sudden reshuffling of the finance ministry was seen as weakening one of the country's key macroeconomic institutions and continues to undermine market confidence.

14c. The article also identifies possible implications of the weak rand:

Implications of the weak rand

The weak rand has a number of implications for the country's growth prospect. Firstly, the weakening currency carries the risk of pushing up inflation because imported goods are more expensive. This means that the South African Reserve Bank faces a difficult decision. It can keep interest rates low but then faces even higher inflation. This will only devalue the rand further.

If the central bank takes more aggressive action by raising interest rates, it risks stifling growth in an economy that is only growing at 1.5%.

The rand's weakening could not have come at a worse time for South Africa. The country is suffering from the worst drought since 1992 which has increased food costs and pushed the farming industry into recession. The price of white corn, a staple food in southern Africa, has more than doubled on the South African Futures Exchange in the past year.

With large parts of the economy already in recession, coupled with worsening debt levels and the threat of credit-rating downgrades, it looks like the economy will contract. This implies that Finance Minister Pravin Gordhan has limited room to boost spending.

The weak rand will also see the cost of imported goods for consumers rise. In addition, while the rest of the world benefits from record low oil prices, the country's weaker currency means it will not able to take full advantage of this and may face higher fuel prices in the near future.

On the flip side, the weaker rand does have some benefits. It is helping mines stay afloat. And gold mines could make profits again as the gold price has held up more than the prices of other minerals. There may also be a boost in tourism.

The weaker rand may also have short-term benefits for sub-Saharan countries importing substantial volumes from South Africa.

Finally there may be a boost for local exporters. But this could be stifled by the rise in the price of imported raw materials which will contribute to higher costs of production for manufacturers.

Is the rand over-traded?

In 2013 the South African rand was ranked as the 18th most-traded currency in the world. Surprisingly, while South Africa accounts for only 0.3% of the world's daily foreign exchange market turnover, the rand accounts for 1.1% of worlds daily currency trading.

This difference is largely due to the daily trade taking place outside South Africa by non-residents. This is partly a result of virtually no exchange control restrictions for foreigners trading the rand but many in place for South Africans who wish to trade in foreign currency.

This has been highlighted as a further problem faced by the central bank in trying to influence the value of the rand.

Source: https://theconversation.com/explainer-how-currency-markets-work-and-why-the-south-african-rand-is-falling-53125

Question 15

a. NX stands for net exports, which is the difference between exports and imports (X–IM) and is synonymous with the trade balance. The three different trade balance positions are: NX is positive when X > IM, NX is 0 when X = IM and NX is negative when X < IM.

The NX curve represents the relationship between the level of output and income (Y) and the trade balance (NX). This relationship indicates that net exports are a decreasing function of output and income. As output and income increases imports increases and since exports are unaffected, NX declines (i.e. the trade balance deteriorates).

b. Given the data what you need to do is to calculate the net exports for each income and output level.

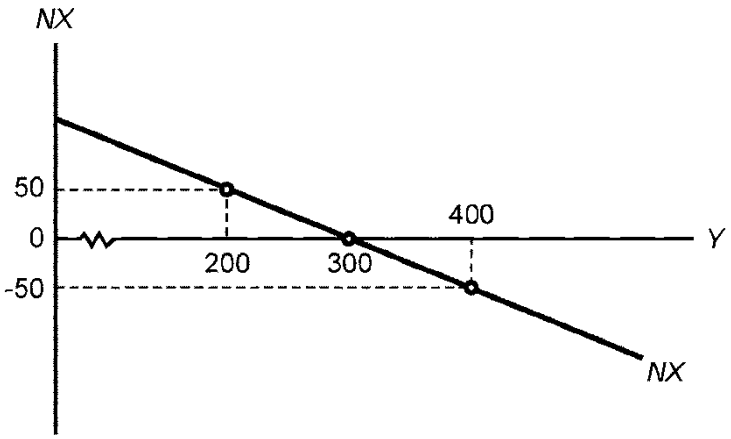
Given that exports (X) = 100 then:

At Y = 200 NX = X – IM = 100 – 50 = 50

At Y = 300 NX = X – IM = 100 – 100 = 0

At Y = 400 NX = X – IM = 100 –150 = -50

You then use this information to draw the NX curve and it should look as follows:



c. An increase in exports changes the relationship and the NX curve shifts to the right.

Question 16

a. The data shows that since 2008 the current account surplus of Brazil changes into a current account deficit.

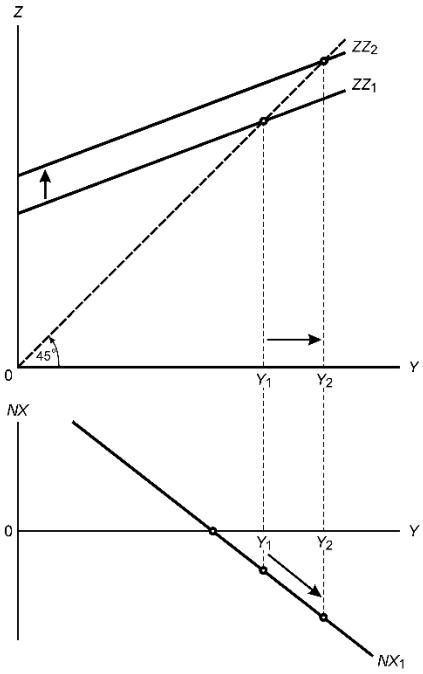
The question states that government spending has been increasing in Brazil since 2008.

In terms of the model an increase in government spending increases the demand for goods and the demand for goods curve shifts upwards (from ZZ_1 to ZZ_2 in the diagram below).

This increased government spending has a multiplier impact on the level of output and income. Income increases and as income increases imports increase. This increase in imports causes deterioration in the current account. The graph shows that in 2008 Brazil already experienced a

small current account/ trade deficit, therefore the initial position on the NX_1 curve of Y_1 reflects a trade deficit.

The increase in imports resulting from an increase in the level of output and income then increases this trade deficit represented as a movement along NX_1 from Y_1 to Y_2. This then partly explains the increase in the current account deficit of Brazil.



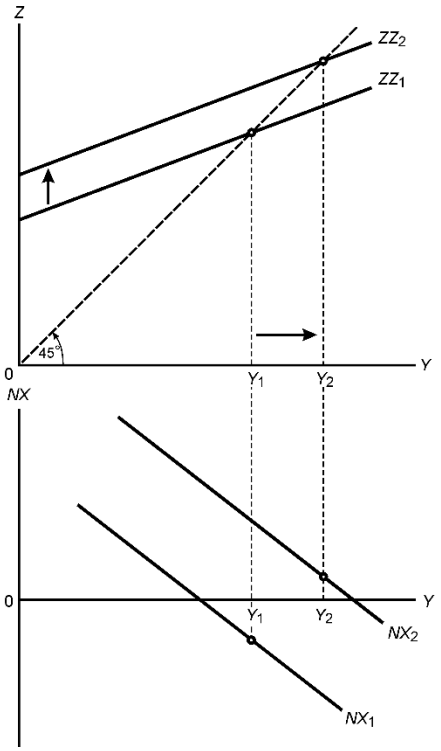
b. A depreciation results in an improvement in the trade balance and an increase in the level of output and income. The level of output and income increases since the demand for domestic goods increases in the economy. The increase in the demand for domestic goods is the result of a rise in exports and the switching of expenditure from foreign goods (which are now more expensive) to domestically produced goods. This increase in the demand for goods leads to an increase in the level of output and income. In terms of the diagram, the ZZ curve shifts upwards from ZZ_1 to ZZ_2.

The increase in the level of output and income causes a rise in imports. The positive effect of an increase in exports and decline in imports (due to expenditure switching) on the trade balance, however, outstrips the negative effect of an increase in imports on the imports bill and an increase in imports due to the increase in the level of output and income. The trade balance thus improves (NX↑). This is represented by a rightward shift of the NX curve.

Thus, for the Marshall-Lerner condition to hold, a depreciation must eventually lead to an increase in net exports and for this to happens, the positive effect ($P_{exports}$↓ → X↑ → Z↑ → Y↑ and $P_{imports}$↑ → IM↓ → Z↑ → Y↑) on the trade balance must outstrip the negative effect (Increase in the imports bill and Y↑ → IM ↑ → NX↓) This combination of higher exports and lower imports causes an improvement in the trade balance (X↑ and IM↓ → NX improves).

Thus, for the Marshall-Lerner condition to hold, depreciation must eventually lead to an increase in net exports and for this to happens, the positive effect on the trade balance must outstrip the negative effect. Therefore, the ZZ_1 curve will shift upwards to ZZ_2, the domestic level of output will increase from Y_1 to Y_2, the NX curve will shift to the right from NX_1 to NX_2 and a trade surplus occurs.

Graphically this can be indicated as follows:



c. For the Marshall-Lerner condition to hold, a real depreciation must eventually lead to an increase in net exports. For this to occur the positive effect on the trade balance must outstrip the negative effect and a trade surplus occurs. See also the explanation under point b above

Question 17

a i. If a recession is defined as a decrease in real GDP for two consecutive periods, where a period is 3 months, then the recession in the Brazilian economy started during the last quarter of 2008 and ended during the last quarter of 2009.

ii. From the information and diagrams given we can gather that they made use of the following policies:

● Expansionary monetary policy. There was a decline in the interest rate starting in January 2009.

● Expansionary fiscal policy. There was a more than 5.5% increase in final consumption expenditure by government during 2009.

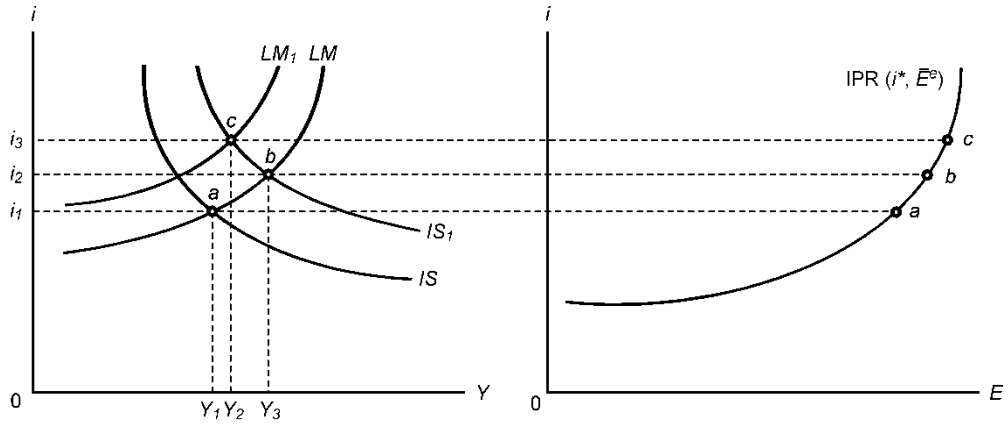
b. i. There was an appreciation of the Brazilian Real against the USA dollar.

ii1. **Impact on the level of output and income**

Looking at the diagram and data in question 17 a (Brazil GDP annual growth rate) you can see that since the last quarter of 2009 the level of output and income in Brazil has increased. Given the additional information in this question this was due to the following three factors:

- An increase in exports
- An increase in investment (foreign direct investment)
- An increase in government spending

Note: In an open economy autonomous exports will shift the IS curve to the right. In terms of the IS-LM model this is indicated by a rightward shift of the IS curve. See diagram below.



ii2. **Impact on the interest rate**

The interest rate increased for the following two reasons:

- An increase in output and income which increased the demand for money ($Y\uparrow \rightarrow M^d\uparrow \rightarrow i\uparrow$)
- A contractionary monetary policy which increased the interest rate ($M\downarrow \rightarrow M/P\downarrow \rightarrow i\uparrow$)

The impact of the contractionary monetary policy is indicated by an upward shift of the LM curve to LM_1.

The net effect on the level of output and income was an increase in the level of output and income for Brazil: compare point c with initial point a in the diagram above.

ii3. **Financial account of the balance of payments**

Since the interest rate in Brazil increased relative to interest rates in the rest of the world, an inflow of portfolio capital took place. Brazil also experienced and inflow of direct foreign capital. A surplus therefore develops on the financial account.

ii4. **Exchange rate**

The exchange rate appreciated and this was due to the following factors that increased the demand for the Brazilian Real:

- The increase in exports
- The increase in foreign direct investment
- The increase in the interest rate, which attracted portfolio investment.

In terms of the interest parity condition the increase in the domestic interest rate relative to the interest rates in the rest of the world will cause the exchange rate to appreciate. Looking at the exchange rate data for Brazil this is indeed what happened.

ii5. **The current account of the balance of payments**

According to our IS-LM model, an appreciation of the exchange rate increases the price of exports and decreases the price of imports and the current account balance will decrease.

Looking at the data for question 16, you will see the deficit on the current account of the balance of payments for Brazil has indeed increased.

Question 18

To answer this question you must know that an increase in the budget deficit of government implies an expansionary fiscal policy, in other words an increase in government spending and/or a decrease in taxes. In this example, we assume an increase in government spending.

Both of the following reasons for the current account deterioration are correct and acceptable.

1. An expansionary fiscal policy causes an increase in the interest rate, which increases capital inflows and an appreciation of the exchange rate. This appreciation causes the price of imports to decrease and the price of exports to increase resulting in a deterioration of the trade balance (or the current account of the balance of payments).

2. An increase in government spending increases the demand for goods as well as the level of output and income. The increase in the level of output and income leads to an increase in imports and since exports are unchanged, a deterioration of the trade balance (or the current account of the balance of payments).

The full chain of events will look as follows:

Impact on the goods market	
The first impact of an increase in government spending is on the goods market. An increase in government spending causes a rise in the demand for goods and the level of output and income increases. This has a multiplier effect on the level of output and income, and in the process, the level of consumption spending increases as well.	$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$ $Y\uparrow \rightarrow C\uparrow$ $Y\uparrow \rightarrow I\uparrow$
Impact on the financial market	
The increase in the level of output and income, resulting from the rise in government spending, increases the demand for money on the financial market and the interest rate increases.	$Y\uparrow \rightarrow M^d\uparrow \rightarrow i\uparrow$
Back to the goods market	
The increase in the interest rate causes investment spending to decrease in the goods market. The rise in output and income, however, increases investment spending and the change in investment spending is uncertain.	$i\uparrow \rightarrow I\downarrow$ $Y\uparrow \rightarrow I\uparrow$
Impact on the exchange rate and trade balance	
In an open economy, the increase in the interest rate influences the exchange rate, which in turn affects the trade balance. *The rise in the interest rate increases the nominal exchange rate and the domestic currency appreciates.* *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.*	$i\uparrow \rightarrow Capital_{inflow} \rightarrow E\uparrow$ $E\uparrow \rightarrow X\downarrow \rightarrow NX\downarrow$ $E\uparrow \rightarrow IM\uparrow \rightarrow NX\downarrow$ *and* $Y\uparrow \rightarrow IM\uparrow \rightarrow NX\downarrow$

Question 19

The correct option is 3. The extract from the *Monetary Policy Review* describes two separate events, which will have the same effect on South Africa's trade balance. Firstly "*monetary policy in South Africa remains in a tightening cycle"* tightening of monetary policy is another way of describing a contractionary monetary policy i.e. M↓ → M/P↓ → i↑ and since there is a positive relationship between the interest rate and the exchange rate, i↑ → E↑ a contractionary monetary policy will lead to an appreciation of the rand. Statement 1 is incorrect because it illustrates an expansionary monetary policy.

The second event describes "policy easing" by the ECB and Bank of Japan; this is another way of describing an expansionary monetary policy. Since the interest rate in the EU and Japan will decline as a result of an expansionary monetary policy, capital will flow from these countries to countries with a relatively higher interest rate and therefore a higher rate of return for capital, such as South Africa who is following a contractionary monetary policy.

Thus, the situation in South Africa is as follows; there is an increase in capital inflows due to the increase in the local interest rate following a contractionary monetary policy as well as the increased attractiveness of South African bonds relative to the EU and Japan; the nominal exchange rate increases and the domestic currency appreciates. An appreciation of the domestic currency increases the price of exports and the net exports position worsens. This is illustrated by the following chain of events:
i↑ → $Capital_{inflow}$ → E↑ → X↓ → NX↓. Thus, option 3 is correct whilst option 4 is incorrect. Option 2 is incorrect because according to the interest parity condition, the domestic exchange rate will respond to a change in the domestic interest rate, not the other way around. In addition, an appreciation of the rand will lead to a decrease in net exports because we assume the Marshall-Lerner condition holds.

Question 20

a. The diagram given (below) shows the increase in government spending and therefore the stabilisation policy represented by the data is an **expansionary fiscal policy**.

Measured in millions of ZAR

b. The impact of an **expansionary fiscal policy in the AS-AD model** in the short run and in the medium run in the goods market, the financial market and the labour market will be as follows:

In the short run

Initial events on the goods and financial markets

An increase in government spending initially affects the goods market where the demand for goods and the level of output and income increase.

$G\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$

An increase in output and income increases the demand for money in the financial market and the interest rate rises.

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

$i\uparrow \rightarrow I\downarrow$

Whether or not investment spending increases at this stage is ambiguous. While an increase in the interest rate decreases investment spending, an increase in output and income increases investment spending.

$Y\uparrow \rightarrow I\uparrow$

In terms of the IS-LM model, this is represented by a rightward shift in the IS curve, and in terms of the AS-AD model, this is represented by a rightward shift in the AD curve to AD_1.

Events in the labour market

As the level of output increases, the level of employment increases and the unemployment rate decreases. The decrease in the unemployment rate increases the bargaining position of workers and the nominal wage increases. An increase in the nominal wage in turn causes an increase in the price level.

$Y\uparrow \rightarrow N\uparrow \rightarrow u\downarrow \rightarrow W\uparrow \rightarrow P\uparrow$

In terms of the AS-AD model, an upward movement along the AS curve from point a to point b occurs. This is the **short run equilibrium** position.

In the medium run

Events in the labour market

At point b, the expected price level on which workers based their real wage negotiations turned out to be lower than the actual price level. Workers revise their expected price level upwards and the nominal wage increases. In reaction to the higher nominal wages, firms increase their price levels.

$P^e\uparrow \rightarrow W\uparrow \rightarrow P\uparrow$

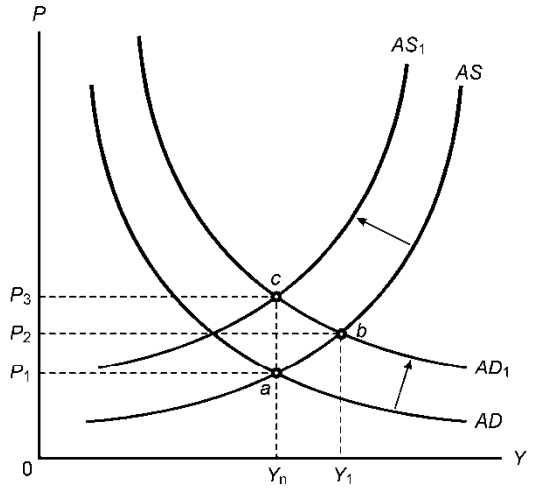
In the AS-AD model, this effect is captured by a leftward shift of the AS curve to AS_1.

Events in the financial and goods market

The increase in the price level causes a decrease in the real money supply and the interest rate rises. An increase in the interest rate decreases investment spending, the demand for goods and the level of output and income.

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

In the IS-LM model, this is represented by a downward shift of the LM curve and in the AS-AD model by a movement along the AD_1 curve from point b to point c. This process continues until point c is reached, where the level of output is at the natural level of output and the unemployment rate by implication is equal to the natural rate of unemployment. **This is the medium run position**.



Question 21

a. According to the data given in Figure 2 the recession in South Africa started in the fourth quarter of 2008 and lasted until the second quarter of 2009 (9 months).

b. An expansionary monetary policy, in other words an increase in the money supply.

c. The impact of an expansionary monetary policy in the AD-AS model in the short and medium run in the goods market, the financial market and the labour market will be as follows:

In the short run	
Initial events in the financial market	
The initial effect of an increase in the nominal money supply is on the financial market. To increase the money supply, the central bank buys bonds on the financial market. As a result, the real money supply increases and the interest rate declines.	$M\uparrow \rightarrow M/P\uparrow \rightarrow i\downarrow$
Events in the goods market	
In the goods market, firms react to the decline in the interest rate by increasing their investment spending. The rise in investment spending increases the demand for goods and, through the multiplier process, the level of output and income increases.	$i\downarrow \rightarrow I\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$
In terms of the AS-AD model, this is represented by a rightward shift in the AD curve to AD_1 curve.	

Events in the labour market

A rise in the level of output increases the level of employment, and the unemployment rate decreases and the bargaining position of workers increases. Given this rise in the bargaining position of workers, the nominal wage increases. Firms react to this increase in wages by increasing the price level.

$Y\uparrow \rightarrow N\uparrow \rightarrow u\downarrow \rightarrow W\uparrow \rightarrow P\uparrow$

In the AS-AD model, this is indicated by an upward movement along the AS curve from point a to point b and a **short-run equilibrium** position is reached at point b in the diagram below.

In the medium run

Events in the labour market

At point b, the expected price level on which workers based their real wage negotiations turned out to be lower than the actual price level. They revised their expected price level upwards and negotiated for higher wages. In reaction to the higher nominal wages, firms increased the price level.

$P^e\uparrow \rightarrow W\uparrow \rightarrow P\uparrow$

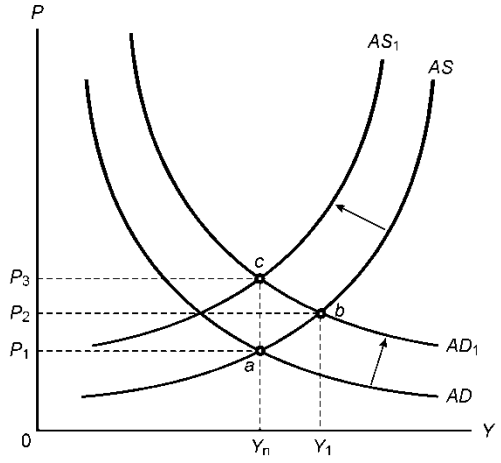
This effect is captured by a shift of the AS curve upwards to AS to AS_1.

Events in the financial and goods market

As the price level increases, the real money supply decreases in the financial market leading to a rise in the interest rate. The increase in the interest rate causes firms to reduce their investment spending, and aggregate demand and the level of output and income therefore decrease.

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

This is captured by an upward movement along the AD_1 curve. This process continues until point c is reached where the level of output is at the natural level of output, and the unemployment rate by implication, is equal to the natural rate of unemployment. This is the **medium run position.**



Question 22

In both cases the medium run position is reached where the level of output is at the natural level of output and the unemployment rate by implication is equal to the natural rate of unemployment.

Therefore, to answer this question, it is necessary to identify the nominal and real variables in the AS-AD model and to compare the impact of the different policies on these variables.

The following are nominal and real variables in the AS-AD model:

Nominal variables	**Real variables**
nominal money supply (M^s)	real money supply (M/P)
price level (P)	interest rate (i)
nominal wage (W)	investment spending (I)
	demand for goods (Z)
	level of output and income (Y)
	real wage (W/P)

Expansionary fiscal policy: Comparing the medium run equilibrium point with the initial equilibrium position as explained in question 20, it is clear that the level of output and income, the level of employment and the unemployment rate are the same as before the increase in government spending. What is different is that the real money supply is lower (owing to the increase in the price level), the interest rate is higher (owing to the lower real money supply), investment spending is lower (owing to the higher interest rate) and government spending is higher (by assumption).What has happened in the economy is that the increase in government spending has been replaced by a decrease in investment spending (known as crowding out of private investment spending).

Expansionary monetary policy: The interesting thing about the impact of an expansionary monetary policy is that in the medium run as explained in question 21, it is neutral, which means that it only changes nominal variables and not the real variables in the model. Comparing the medium run equilibrium point with the initial equilibrium position it is clear that not only are the level of output and income, the level of employment and the unemployment rate what they were before the increase in the nominal money supply, but the real money supply, the interest rate, investment spending, government spending and the real wage are also equal to their original values. What has changed? In this case, the nominal variables namely the nominal money supply, the nominal wage and the price level, are higher. What happened to these variables in the short and medium run?

Short run	**Medium run**
$\mathbf{M^s\uparrow} \rightarrow M/P\uparrow \rightarrow i\downarrow$	$P^e\uparrow \rightarrow W\uparrow \rightarrow \mathbf{P\uparrow}$
$i\downarrow \rightarrow I\uparrow \rightarrow Z\uparrow \rightarrow Y\uparrow$	$\mathbf{P\uparrow} \rightarrow M/P\downarrow \rightarrow i\uparrow \rightarrow I\downarrow \rightarrow Z\downarrow \rightarrow Y\downarrow$
$Y\uparrow \rightarrow N\uparrow \rightarrow u\downarrow \rightarrow \mathbf{W\uparrow} \rightarrow \mathbf{P\uparrow}$	

The nominal variables increase in the medium run

- $M^s\uparrow$ owing to the assumed increase in nominal money supply
- $W\uparrow$ owing to an increase in employment and then an increase in P^e
- $P\uparrow$ since the nominal wage is higher

The real variables all remain **unchanged**

- M/P first increases, because of higher M^s, but then starts to decrease because of a higher P
- i first decreases, then increases
- I first increases, then decreases
- Z first increases, then decreases
- Y first increases, then decreases
- W/P remains unchanged throughout the process

The real variables remain unchanged because the increase in the nominal money supply (M^s) is exactly offset by an increase in the price level (P).

In other words, a 10% increase in money supply eventually leads to a 10% increase in the price level, which means that the real variables return to their original values as does the real wage, because the increase in nominal wage is offset by an increase in the price level.

This is referred to as the neutrality of money. An expansionary monetary policy only influences nominal variables (they are higher), while real variables remain unchanged. Neutrality of money does not mean that monetary policy cannot or should not be used to affect output.

As expansionary monetary policy can, for example, help the economy move out a recession and return more quickly to Y_n. However, this is a warning that monetary policy cannot sustain higher output forever (cannot effect real change in the economy) because it returns to the Y_n level.

5. EXAMINATION PREPARATION

This tutorial letter forms part of your study material and so you need to study its content for examination purposes.

It is important that you are able to answer questions like those presented in this tutorial letter as well as in TL102 (Workbook) and TL103 (How to answer macroeconomic questions).
Test yourself on these questions as preparation for the examination.

All the study material such as the tutorial letters which contain the answers to the assignments (the 200-series of tutorial letters), except the prescribed book, is available on *my*Unisa.

Remember to work through **all** the activities in TL102 (the workbook).

Best of luck with your studies.

Your lecturers