

DISCUSSION OF ASSIGNMENT 02, FIRST SEMESTER 2018

Unless otherwise stated, all page and section references are references to the study guide for ECS1500.

- 2.1 The demand for golf balls is equal to -3 . That shows that the demand for golf balls is very price sensitive and the quantity demanded will change a lot when the price of golf balls changes. This can be expected as golf balls are a luxury product and not an essential good for most persons. Statement [1] is incorrect. The demand for electricity is equal to $-0,3$ which shows that the demand for electricity is not very price sensitive. This shows that the amount of electricity used does not change very much when there is a change in the price of electricity, and also indicates that it is an essential service. Statement [2] is incorrect. The demand for golf balls is more price sensitive than the demand for electricity, as indicated by the fact that the price elasticity of demand for golf balls is equal to 3 (larger than 1) and the price elasticity of demand for electricity is $0,3$ (less than 1). Remember that we can ignore the minus sign in the case of price elasticity of demand as price elasticity of demand will always be negative. Thus statement [5] is incorrect.

The price elasticity of the supply of golf balls is $0,3$ (thus less than 1), thus the supply of golf balls is not very sensitive to price changes. Statement [3] is not correct. The price elasticity of the supply of electricity is 3 (thus larger than 1). This indicates that the price elasticity of the supply of electricity is price sensitive and it is easy for the supplier to adjust the amount of electricity supplied. Statement [4] is correct.

The correct alternative is [4].

- 2.2 The price elasticity of demand is determined by the extent of the change in the quantity demanded relative to the extent of the change in the price level. It does not matter if a good is expensive or cheap; it is the percentage changes in both quantity and price that determine the elasticity. Statement [1] is therefore incorrect. It is also not the initial quantity that was bought that determines the elasticity, but the percentage change in the quantity. Therefore statement [2] is also incorrect. Elasticities make it possible to compare changes in demand and supply regardless of whether it is a good or a service that is provided. Thus statement [3] is incorrect.

If the demand for bread is price sensitive it means that the *quantity demanded* will change quite a lot when the price changes. It does not say anything about the extent of the changes in supply. Statement [4] is incorrect. If the supply of milk is not price sensitive, it does mean that the suppliers of milk cannot adjust the amount of milk that is supplied easily when the price changes. Therefore statement [5] is correct.

The correct alternative is [5].

- 2.3 The quantity of coal demanded changes by 5 000 ton (50 000 *minus* 45 000) a month and the quantity of coal demanded before the price change was 50 000 ton. We can now calculate the percentage change in the quantity demanded of coal as follows:

$$\begin{aligned} \% \text{ change in quantity of coal demanded} &= \frac{\text{change in quantity of coal demanded}}{\text{quantity of coal demanded before change}} \times 100 \end{aligned}$$

$$\% \text{ change in quantity of coal demanded} = \frac{5\,000}{50\,000} \times 100 = 10\%$$

The price of coal changed by R100 (R1 600 *minus* R1 500) and the price of coal before the price change was R1 500. We can now calculate the percentage change in the price of coal as follows:

$$\% \text{ change in price of coal} = \frac{\text{change in price of coal}}{\text{price of coal before change}} \times 100$$

$$\% \text{ change in price of coal} = \frac{R100}{R1\,500} \times 100 = 6,67\%$$

The price elasticity of demand can now be calculated as follows:

$$\text{Price elasticity of demand} = \frac{\% \text{ change in quantity of coal demanded}}{\% \text{ change in price of coal}}$$

$$\text{Price elasticity of demand} = \frac{10\%}{6,67\%} = 1,499 \approx 1,5$$

Statement a is therefore correct while statement b is incorrect. The price elasticity of the demand for coal is larger than 1; therefore the demand for coal is price elastic. Statement c is therefore correct and statement d is incorrect.

The correct alternative is [1].

- 2.4 Good A is a luxury good because the increase in the quantity demanded of good A when income increases will be a larger percentage than the increase in income. Thus statement a is not correct. Good B is an essential good because the quantity demanded of good B will increase when the income increases, but the percentage increase in the quantity of good B will be smaller than the percentage change in the income. Thus statement b is not correct. Both goods A and B are normal goods because the quantities demanded of these goods increase when the income increases, as indicated by the fact that the income elasticities for these goods are positive. Therefore statement d is correct. Good C is an inferior good because the negative income elasticity for this good indicates that the quantity demanded of this good will decrease when income increases. Therefore statement c is correct.

The correct alternative is [3].

- 2.5 The quantity demanded of good E will increase when income increases if good E is a normal good. The quantity demanded of an inferior good will decrease when income increases. Therefore, alternative [1] is not correct. A decrease in the price of good F will result in an *increase* in the quantity of *good F* demanded. If good F is a substitute

good for good E, this should result in a *decrease* in the demand for good E, and thus a decrease in the quantity demanded of good E. Thus alternative [2] is not correct.

An increase in the price of good G should result in a *decrease* in the quantity of *good G* demanded. If good G is a complement for good E, this should result in a *decrease* in the demand for *good E* and therefore a decrease in the quantity demanded of good E. Thus alternative [3] is not correct.

When the price of good E decreases, a downward movement to the right along the demand curve for good E will take place, thus the quantity demanded of good E will increase. Therefore alternative [4] can explain why the quantity of good E demanded has increased and is the correct alternative.

The correct alternative is [4].

- 2.6 If the percentage change in the quantity supplied of a good is exactly equal to the percentage change in the price of a good, the price elasticity of supply of that good will be equal to 1; it is therefore unitary elastic.

The correct alternative is [4].

- 2.7 When demand increases, this will result in excess demand at the current price, and will therefore put upward pressure on prices. The price of the good will increase. Refer to section 3.4 of the study guide. Therefore alternative [1] is incorrect.

The slopes of the demand curves D and D' are exactly equal; therefore, price elasticity of demand is the same on both these curves. Alternative [2] is incorrect.

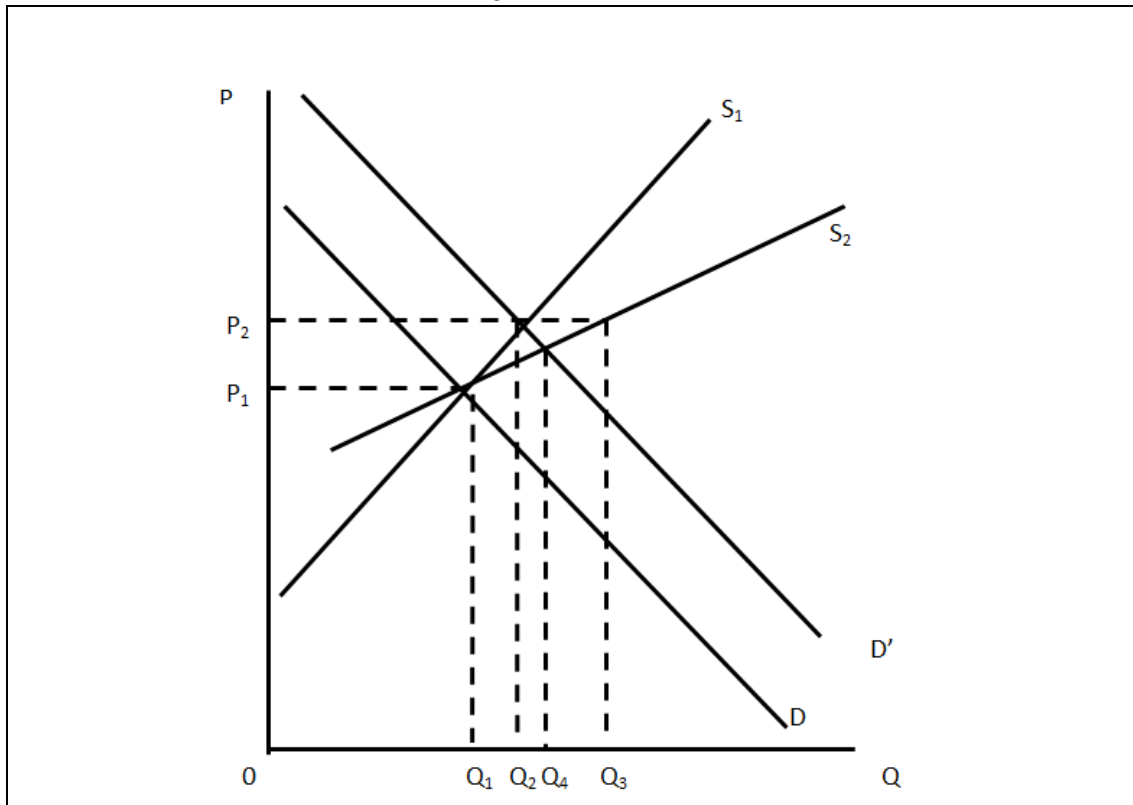
Refer to figure 12. Supply curve S_2 is flatter than supply curve S_1 . This means that for a given change in the price level (e.g. from P_1 to P_2), the change in the quantity supplied will be larger on S_2 (from Q_1 to Q_3) than on S_1 (only from Q_1 to Q_2). Supply curve S_2 is therefore more elastic than supply curve S_1 and alternative [3] is not correct.

When supply is more elastic such as S_2 , a given increase in demand will result in a larger change in the equilibrium quantity (from Q_1 to Q_4) than for a steeper, less elastic supply curve such as S_1 (where it will only increase from Q_1 to Q_2). Alternative [4] is correct.

When supply is less elastic, such as S_1 , an increase in the price of a good (e.g. from P_1 to P_2) will result in a relatively smaller change in quantity supplied (from Q_1 to Q_2) than if supply is more elastic, such as S_2 (when it will increase from Q_1 to Q_3). Alternative [5] is incorrect.

The only correct alternative is [4].

Figure 12



- 2.8 Stable prices, strong economic growth, full employment and balance of payment stability are all macro-economic policy objectives. A low petrol price cannot be regarded as a macro-economic policy objective since it refers to a price in a specific market, and is therefore a micro-economic concept. See section 6.1.2 for a discussion of the macroeconomic policy objectives.

The correct alternative is [2].

- 2.9 In the following table we show the value added by each participant in the production process:

	Value of sales (R)	Value added (R)
Farmer	5 000	5 000
Company that separates honey and honey comb	6 000	1 000
Company that pasteurises and bottles honey	9 000	3 000
Wholesaler	10 000	1 000
Retail shop	12 000	2 000
Total		12 000

The total value added by the retail shop is not R12 000 but R2 000. Therefore statement [1] is not correct. The total value added to the GDP is equal to the amount at which the retail shop sold the honey to the final consumer, that is R12 000. You will notice that if we add the total value added by each participant, together this is also equal to R12 000. Therefore statement [4] is correct but statements [2] and [5] are both incorrect. The total value added by the company that pasteurises and bottles the honey was R3 000. Therefore statement [3] is also not correct.

The correct alternative is [4].

- 2.10 For this question you have to understand how the GDP at constant prices is calculated if the GDP at current prices and the GDP deflator are available, and how the GDP deflator is calculated if the GDP at current prices and the GDP at constant prices are available. Note that the GDP at current prices is rounded to the closest whole number, while the GDP deflator is rounded to one decimal after the comma.

The formula for calculating the GDP at constant prices is as follows:

$$GDP \text{ at constant prices} = \frac{GDP \text{ at current prices}}{(GDP \text{ deflator}/100)}$$

Thus we can calculate the GDP at constant prices for 2010 (variable a) as follows:

$$GDP \text{ at constant prices}_{2010} = \frac{GDP \text{ at current prices}_{2010}}{(GDP \text{ deflator}_{2010}/100)} = \frac{X135\,000\,000}{(92/100)} = \frac{X135\,000\,000}{0.92} = X146\,739\,000$$

We can calculate the GDP at constant prices for 2014 (variable c) as follows:

$$\begin{aligned} GDP \text{ at constant prices}_{2014} &= \frac{GDP \text{ at current prices}_{2014}}{(GDP \text{ deflator}_{2014}/100)} = \frac{X167\,000\,000}{(102/100)} \\ &= \frac{X167\,000\,000}{1.02} \\ &= X163\,726\,000 \end{aligned}$$

We can calculate the GDP at constant prices for 2016 (variable e) as follows:

$$\begin{aligned} GDP \text{ at constant prices}_{2016} &= \frac{GDP \text{ at current prices}_{2016}}{(GDP \text{ deflator}_{2016}/100)} = \frac{X174\,000\,000}{(107.5/100)} \\ &= \frac{X174\,000\,000}{1.075} \\ &= X161\,861\,000 \end{aligned}$$

This means that alternatives [1], [3] and [5] are all incorrect.

The formula for calculating the GDP deflator is as follows:

$$GDP \text{ deflator} = \frac{GDP \text{ at current prices}}{GDP \text{ at constant prices}} \times 100$$

Thus we can calculate the GDP deflator for 2013 (variable b) as follows:

$$GDP\ deflator_{2013} = \frac{GDP\ at\ current\ prices_{2013}}{GDP\ at\ constant\ prices_{2013}} \times 100 = \frac{X162\ 000\ 000}{X164\ 467\ 000} \times 100 = 0,985 \times 100 = 98,5$$

This shows that in country XYX the price level decreased from 2012 to 2013.

We can calculate the GDP deflator for 2015 (variable d) as follows:

$$GDP\ deflator_{2015} = \frac{GDP\ at\ current\ prices_{2015}}{GDP\ at\ constant\ prices_{2015}} \times 100 = \frac{X171\ 000\ 000}{X162\ 857\ 000} \times 100 = 1,050 \times 100 = 105,0$$

This means that alternative [2] is correct and alternative [4] is incorrect.

The only correct alternative is [2].

- 2.11 In Economics we use the following symbols to represent the different components of expenditure on GDP:

Consumption by households: C

Government expenditure: G

Gross capital formation: I

Exports: X

Imports: Z

In section 6.2.4.2 it is shown that:

$$\text{Expenditure on GDP} = C + I + G + X - Z$$

Thus expenditure on GDP for country XYZ for 2016:

$$= Q150\ 000 + Q130\ 000 + Q80\ 000 + Q45\ 000 - Q65\ 000 = Q340\ 000.$$

The correct alternative is [3].

- 2.12. Production by persons who work in their own houses or in their own gardens such as housewives does not have a market price as it is not traded in the market, and therefore it is not included in the GDP of a country. This can be a substantial amount of production that is excluded and is regarded as a serious shortcoming of using GDP as a measure of economic growth and welfare. Statement [1] is correct.

The informal sector in South Africa is very big and to find an accurate indication of economic activity in the country it is actually essential that it should be taken into account when measuring production. However, it is not possible to measure it; therefore, it is not included in the GDP. Statement [2] is not correct.

An increase in expenditure to limit pollution will reflect as an increase in the GDP of a country. However, it cannot be regarded as growth or as contributing to an increase in economic welfare. Therefore statement [3] is not correct.

An increase in the leisure time of workers will most likely contribute to an increase in welfare. However, this cannot be shown in the GDP and this is therefore a limitation of the use of GDP to measure welfare in a country. Statement [4] is therefore incorrect.

The correct alternative is [1].

- 2.13 When interpreting this diagram it is necessary to remember that a positive inflation rate always implies an increase in the price level. When the inflation rate decreases but is still positive, it means that prices are increasing at a slower rate. Thus an inflation rate of 4% means that the general level of prices increased by 4%. When the inflation rate decreases to 2% it means that the general price level is increasing by 2%. Although the inflation rate is lower, the price level is still increasing. In the diagram for question 2.13 it is evident that both the CPI and the PPI were always positive for the period shown, thus during this period consumer or producer prices were declining. Therefore statements [1] and [4] are both incorrect.

When the PPI is above the CPI, it means that during that period production prices were increasing at a faster rate than consumer prices. Similarly, when the CPI is above the PPI, it means that during that period consumer prices were increasing at a faster rate than production prices. During the first half of 2015 the CPI was above the PPI, thus consumer prices were increasing at a faster rate than production prices. Statement [2] is correct.

From the diagram it is clear that the PPI was not higher than the CPI during the whole period shown in the diagram. At the end of 2012, from middle 2014 to middle 2015 and in the middle of 2016, the CPI was higher than the PPI – thus statement [3] is not correct.

The correct alternative is [2].

- 2.14 The PPI is discussed in section 7.2.2. Alternative [1] is incorrect. The **CPI** shows how the average price level of goods and services bought by a typical consumer or household changes over time.

Alternative [2] is incorrect. There are significant differences between the basket used to measure the CPI and the basket used to measure the PPI, as indicated by the differences in the weights allocated to the different types of goods and services shown in tables 7.1 to 7.4.

The PPI includes the prices of imported goods measured where these goods first enter the country. Therefore statement [3] is not correct.

The PPI includes capital and intermediate goods and excludes services. Therefore statement [4] is correct but statement [5] is incorrect.

The correct alternative is [4].

- 2.15 The calculation of the unemployment rates according to the strict and expanded definitions of unemployment are shown in the following table:

Calculating the unemployment ratio using the strict definition of unemployment	Calculating the unemployment ratio using the expanded definition of unemployment
<p><i>Number of unemployed persons</i> = 200m</p> <p><i>Labour force</i> = 350m + 200m = 550m</p> <p><i>Unemployment rate</i> = $\frac{200m}{550m} \times 100$ = 36,36%</p>	<p><i>Number of unemployed persons</i> = 200m + 40m = 240m</p> <p><i>Labour force</i> = 350m + 200m + 40m = 590m</p> <p><i>Unemployment rate</i> = $\frac{240m}{590m} \times 100$ = 40,68%</p>

Based on the information above, it is clear that only statement [5] is correct. Statement [3] does not indicate if the strict or the expanded definition of the labour force and unemployment should be used, but as you can see in the table the labour force is not 890 million, regardless of whether we use the strict or the expanded definition of unemployment. Children younger than 16 and the elderly are not included in the labour force.

The correct alternative is [5].

- 2.16 If less coal is needed due to the implementation of nuclear power programmes instead of power stations fuelled by coal, this is a structural change in the economy and therefore the workers who lose their jobs here will be structurally unemployed. This is the most difficult type of unemployment to solve as the jobs for which these workers were trained cease to exist or decrease, and will not come into existence again. They will have to find work in another sector, which implies that they may need to be retrained.

The correct alternative is [5].

- 2.17 Any factor that contributes to a more skew income distribution will lead to a rightward shift of the Lorenz curve or part of the Lorenz curve. If the share of the top 20% of income earners increases, the income distribution will become more skew and thus the top part of the Lorenz curve will shift to the right. Option a is thus correct. If the share of total income going to the bottom 40% of income earners rises, income distribution will become less skew and that part of the Lorenz curve will shift to the left. Option b is not correct. When the share of income going to the bottom 20% of income earners decreases, the income distribution becomes more skew and that part of the Lorenz curve will shift to the right. Option c is correct.

The correct alternative is [3].

- 2.18 Any factor that contributes to a more skew distribution of income (i.e. a rightward shift of the Lorenz curve) will result in an increase in the Gini coefficient. Therefore the same factors that result in a rightward shift of the Lorenz curve will also contribute to an increase in the Gini coefficient. Options a and c are therefore correct.

The correct alternative is [3].

- 2.19 As a business cycle begins to contract, the economy starts to shrink, that is right after the peak has been reached. Thus the peak marks the beginning of the contraction of the business cycle.

The correct alternative is [2].

- 2.20 The growth in GDP at current prices is calculated as follows:

$$\begin{aligned} \text{Growth in GDP at current prices} \\ &= \frac{\text{Change in GDP at current prices from previous year}}{\text{GDP at current prices in previous year}} \times 100 \end{aligned}$$

For example the growth in GDP at current prices for 2011 can be calculated as follows:

$$\begin{aligned} \text{Growth in GDP at current prices for 2011} \\ &= \frac{\text{GDP at current prices}_{2011} - \text{GDP at current prices}_{2010}}{\text{GDP at current prices}_{2010}} \times 100 \\ &= \frac{X145\,000 - X135\,000\,000}{X135\,000\,000} \times 100 = \frac{X10\,000\,000}{X135\,000\,000} \times 100 = 7,41\% \end{aligned}$$

The growth in GDP at constant prices is calculated as follows:

$$\begin{aligned} \text{Growth in GDP at constant prices} \\ &= \frac{\text{Change in GDP at constant prices from previous year}}{\text{GDP at constant prices in previous year}} \times 100 \end{aligned}$$

For example the growth in GDP at constant prices for 2011 can be calculated as follows:

$$\begin{aligned} \text{Growth in GDP at constant prices for 2011} \\ &= \frac{\text{GDP at constant prices}_{2011} - \text{GDP at constant prices}_{2010}}{\text{GDP at constant prices}_{2010}} \times 100 \\ &= \frac{X151\,515\,000 - X146\,739\,000}{X146\,739\,000} \times 100 = \frac{X4\,776\,000}{X146\,739\,000} \times 100 = 3,26\% \end{aligned}$$

The completed table will therefore look as follows:

Year	GDP at current prices (X 000)	GDP at constant prices (X 000)	Growth in GDP at current prices (%)	Growth in GDP at constant prices (%)
2010	135 000	146 739		
2011	145 000	151 515	7,41	3,25
2012	160 000	160 000	10,34	5,60
2013	162 000	164 467	1,25	2,79
2014	167 000	163 725	3,09	-0,45
2015	171 000	162 857	2,40	-0,53
2016	174 000	161 860	1,75	-0,61

Statement [1] is not correct. In 2011, the GDP at constant prices grew at **3,25%**.

Statement [2] is not correct. In 2013 the growth in GDP at current prices (1,25%) was smaller than the growth in the GDP at constant prices (2,79%). This indicates that prices decreased in this period.

Real GDP refers to GDP at constant prices. From 2014 onwards real GDP declined every year as indicated by the negative figures for growth in GDP at constant prices during these years. This decline indicates that the economy was shrinking and not growing. Therefore statement [3] is not correct but statement [4] is correct. Nominal GDP refers to the GDP at current prices. During 2014 to 2016 the growth rates in the GDP at current prices decreased; however, the figures are still positive showing that nominal GDP did not decrease during these years. As indicated by the negative figures for the real GDP growth these increases were exclusive due to price increases and not to increases in real production. Statement [5] is incorrect as the nominal production did increase during these years.

The correct alternative is [4].

