

# **EXAMINATIONS**

September 2002

**Subject 107 — Economics**

## **EXAMINERS' REPORT**

### **Introduction**

The attached subject report has been written by the Principal Examiner with the aim of helping candidates. The questions and comments are based around Core Reading as the interpretation of the syllabus to which the examiners are working. They have however given credit for any alternative approach or interpretation which they consider to be reasonable.

K G Forman  
Chairman of the Board of Examiners  
12 November 2002

<b>1</b>	D
<b>2</b>	A
<b>3</b>	B
<b>4</b>	D
<b>5</b>	D
<b>6</b>	D
<b>7</b>	A
<b>8</b>	B
<b>9</b>	C
<b>10</b>	C
<b>11</b>	C
<b>12</b>	D
<b>13</b>	C
<b>14</b>	B
<b>15</b>	B
<b>16</b>	C
<b>17</b>	B
<b>18</b>	B
<b>19</b>	C
<b>20</b>	C
<b>21</b>	D
<b>22</b>	A
<b>23</b>	D
<b>24</b>	C
<b>25</b>	C
<b>26</b>	C

*In general the multiple choice questions were well answered by most candidates. Some questions were answered incorrectly more frequently than others. These included questions 18, 20 and 26.*

- 27** Economics is the study of the allocation of scarce resources. A resource is scarce if there would not be enough of it to satisfy all the people who would want to make use of it if it had a zero price.

Economists usually categorise resources into three broad types:

- Land — all natural resources
- Labour — all human effort
- Capital — all man-made resources used in production.

There are three main allocation problems which have to be solved by any economic system

- Which goods and services should be produced (and in what quantities)?
- How should these goods and services be produced?
- Who should consume the goods and services that have been produced?

*Most candidates made a fair attempt at the question. Some were tempted merely to list or describe types of resources and the main allocation questions without discussing these in any detail.*

- 28**
- (i) 
$$\frac{\% \text{ change in quantity demanded of Good X}}{\% \text{ change in price of Good X}}$$
  - (ii) 
$$\frac{\% \text{ change in quantity supplied of Good X}}{\% \text{ change in price of Good X}}$$
  - (iii) 
$$\frac{\% \text{ change in quantity demanded of Good X}}{\% \text{ change in price of Good Y}}$$
  - (iv) 
$$\frac{\% \text{ change in quantity demanded of Good X}}{\% \text{ change in income}}$$

*Very well answered by candidates. Full marks were given for an accurate verbal or algebraic description. Marks were often lost where candidates failed to identify the importance of the percentage change in prices, quantities and income.*

- 29** (i) For maximum premium  $P$ , solve so that the utility from insuring equals the expected utility from not insuring.

$$100 + 100 - P + 600 / (100 - P) = 0.1 * (100 - 50 - 12) + 0.9 * (100 + 100 + 6)$$

$$200 - P + 600 / (100 - P) = 189.2$$

$$\rightarrow 10.8 + 600 / (100 - P) = P$$

$$\rightarrow P^2 - 110.8P + 1680 = 0$$

$$\begin{aligned}\rightarrow P &= (110.8 \pm \sqrt{110.8^2 - 4 * 1680}) / 2 \\ \rightarrow P &= 92.67 \text{ or } 18.13\end{aligned}$$

The maximum premium is therefore £18.13.

- (ii) For minimum premium  $Q$ , solve so that the expected utility from taking on the insurance equals the utility from not taking it on.

$$\begin{aligned}0.1 * (5000 + 0.5 * (1000 - 150 + Q)) + 0.9 * (5000 + 0.5 * (1000 + Q)) \\ = 5000 + 0.5 * 1000\end{aligned}$$

$$\begin{aligned}\rightarrow 542.5 + 0.05 Q + 4950 + 0.45 Q &= 5500 \\ \rightarrow 5492.50 + 0.5 Q &= 5500 \\ \rightarrow P &= 15\end{aligned}$$

The minimum premium is therefore £15.00.

- (iii) As the minimum premium the insurer is prepared to accept is less than the maximum premium the individual is prepared to pay, the transaction is feasible.

*This question caused many of the candidates a good deal of trouble. Simple arithmetic and algebraic errors were common. Of those able to solve the quadratic equation a surprising number chose the higher of the two roots. Where formulae were known parts (ii) and (iii) were well answered.*

- 30** A very large number of firms is needed. If each firm has an infinitesimally small share of the market, an  $x\%$  change in output by one firm will have (virtually) no effect on the overall level of industry output.

Each firm must produce exactly the same product. A price raising firm could lose all its sales. Similarly, if it dropped its price fractionally large numbers of customers might want to buy the output from that firm.

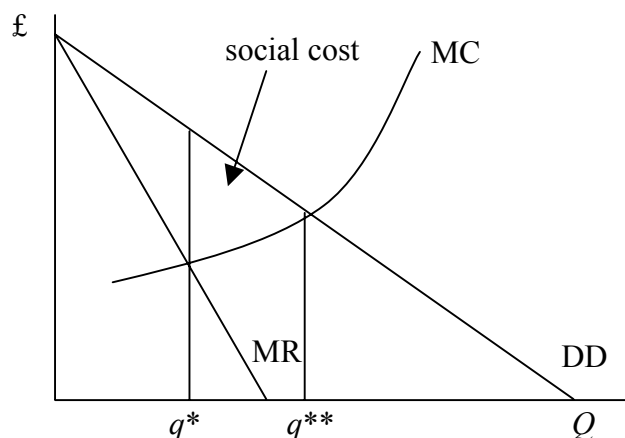
Customers must have perfect information. If we assume that customers have perfect information concerning the price charged by different firms, and know that all firms are producing exactly the same product, then a price raising firm may well lose all its sales.

Customers must act rationally. This means that, using their perfect information, customers will choose to purchase from the cheapest suppliers.

There is free entry and exit of firms, so that collusion between firms can be ruled out.

*Many candidates merely listed the conditions for perfect competition and so did not obtain full marks. The question asked for descriptions - some of which were brief but adequate. Credit was not given to candidates who moved away from the question to discuss imperfect markets.*

- 31** The way to explain that output under monopoly is too low to maximise social welfare is to consider the monopoly's chosen (profit maximising) output level ( $q^*$ ) and weigh up the costs and benefits to society of increasing output by one unit.



The main cost to society will be whatever it costs the monopolist to produce the one extra unit. If there are no other costs imposed on society then the monopolist's marginal cost is the marginal cost to society.

The demand curve can be assumed to show the marginal benefit to society of each extra unit produced.

So long as the demand curve exceeds the monopolist's marginal cost curve, social welfare can be increased by setting output at a higher level.

The socially optimal output level ( $q^{**}$ ) is thus where the marginal cost curve cuts the demand curve.

*Most candidates correctly identified the relevant diagram, but in many cases the quality of the sketch was poor. The written explanation accompanying the diagram differentiated between candidates. A discussion of price discrimination was not required.*

- 32** (i)

Output	Total Cost	Total Fixed Cost	Marginal Cost	Average Total Cost
0	10	10		—
1	18	10	8	18
2	30	10	12	15
3	47	10	17	15.67
4	67	10	20	16.75
5	92	10	25	18.4

- (ii) 2 units of output

*A straightforward question that was generally very well answered. Some candidates failed to identify correctly the profit maximising level of output, and some gave confusing figures for Marginal Cost and Average Total Cost at zero output.*

**33** The government can pay for its expenditure in one of five ways:

- taxation
- profits from publicly owned companies and other income
- sales of public assets
- borrowing
- printing money

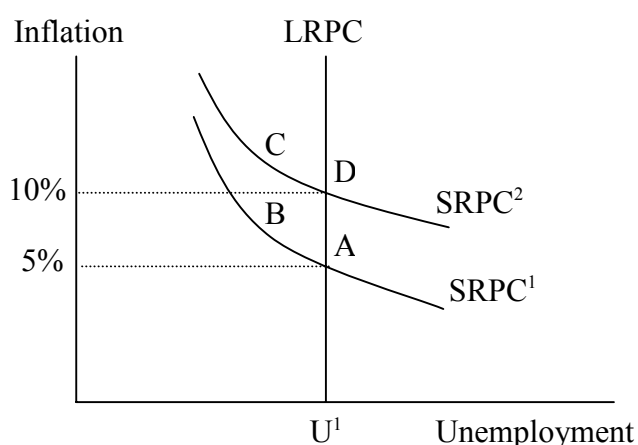
The government can finance the PSBR by:

- borrowing
- printing money

The two lists are not the same because the proceeds from the sale of nationalised industries and also their profits are treated as negative expenditure, therefore increased proceeds from nationalised industries will reduce the PSBR, rather than being a way of funding it. Taxation also reduces the PSBR, by definition, and, therefore, does not fund it.

*The quality of answers varied widely with some candidates having difficulty distinguishing between the contents of the two lists.*

**34**



The long run Phillips curve (LRPC) and the short run Phillips curve (SRPC) show the relationship between inflation and unemployment in the long run and short run respectively.

Starting at point A with LRPC and SRPC<sup>1</sup>, the natural level of unemployment is U<sup>1</sup> and the rate of money supply growth is 5% per year. Thus, actual and expected price and wage inflation are all 5% per year as well.

If the government increases the rate of growth of the nominal money supply to, say, 10% but inflation remains at a lower level the real money supply will expand. This causes interest rates to fall. Private sector investment and consumption will rise leading to lower unemployment.

So long as workers expect the money supply to expand at 5% per year in the long run, the economy stays on SRPC<sup>1</sup>. Wage claims and inflation are increased only a little above 5% by the fall in unemployment and rise in aggregate demand. With inflation lower than monetary growth the real money supply continues to expand. Consequently interest rates and unemployment continue to fall. The economy moves to the left up SRPC<sup>1</sup>, for example to point B on the diagram.

In the long run, the economy will return to LRPC either at point A or D. What happens depends upon the government's and workers' reactions.

If the government decides to accommodate wage rises by less than 10% by once again expanding the money supply at 5%, the economy will move back to point A. This happens because, while it persists, falling unemployment will keep wage rises and thus price inflation above 5%. This means that the real money supply will be contracting with interest rates and thus unemployment rising as a result.

If the government continues to expand the money supply at 10%, workers will eventually come to expect 10% inflation in the long run and the economy will move on to SRPC<sup>2</sup> at point C. Wage inflation will be a little higher than 10% and so the real money supply is contracting, eventually taking the economy back to LRPC at point D as interest rates and thus unemployment rise.

*Again diagrams varied in quality. Most correctly used the Phillips curve apparatus, but some focussed instead on aggregate supply diagrams failing to cover the effects on unemployment. A few discussed the effects of a decrease rather than an increase in the growth rate of the money supply.*

- 35**
- (i) At any point in time, the demand for the products of some industries is in long term decline. The result is structural unemployment: a mismatch between the skills employers require, and the skills of the unemployed.
  - (ii) Technological unemployment arises because the need to employ workers with certain skills may decline even if the industry as a whole is not in decline.

*Although consisting of straightforward definitions there was considerable variation in the quality of answers.*

36 (i) (a) The multiplier principle

An increase in an injection to the national income flow (e.g. an increase in investment expenditures) causes an increase in the equilibrium level of national income greater than the increase in the injection.

Explanation: The multiplier is the ratio of the increase in equilibrium national income to the original increase in the injection. The multiplier can be explained as follows.

Assume investment increases by 60 and the marginal propensity to consume is 0.8.

In the first time period following the extra 60 investment expenditure, national income will be higher by 60. But this is not an equilibrium position.

In the next time period, the factors of production who received the extra 60 will be able to spend more. Given that the marginal propensity to consume is 0.8, we know that another 48 will be added to national income.

This will, in turn, give rise to extra factor incomes of 48, and therefore subsequent expenditure of 38.4. This 38.4 will also give rise to further incomes and expenditure, and so on. The total increase in national income is found by summing the increase in each successive round of the multiplier:

$$60 + 0.8 * 60 + 0.8^2 * 60 + \dots$$

This is a geometric progression. Its sum is:

$$\frac{a}{1 - r}$$

where  $a = 60$  and  $r = 0.8$

Its value is  $60 / 0.2$

This is the same as  $60 / \text{MPS}$ , or  $60 / (1 - \text{MPC})$

Where MPS is the marginal propensity to save and MPC is the marginal propensity to consume.

In the special case where  $I$ ,  $G$ ,  $X$ , and  $Z$  are all exogenous and where there are no direct taxes, the value of the multiplier is  $1 / \text{MPS}$  or  $1 / (1 - \text{MPC})$

- (b) An increase in an injection into the circular flow of income will increase the equilibrium level of national income.

In each case, if it is an autonomous part of the injection / leakage that changes, the resulting change in equilibrium national income will be:

*Change in injection/leakage  $\times$  multiplier*

In equilibrium planned injections must equal planned leakages. An increase in planned injections into the circular flow of income will tend to raise the equilibrium level of national income. The equilibrium is changed because planned withdrawals must also change (and by the same amount) in order to maintain the equilibrium condition that planned withdrawals equal planned injections. Planned withdrawals are an increasing function of national income. Thus an increase in injections / withdrawals means that equilibrium national income is higher.

Equivalently, the effect of an increase in planned injections can be seen by considering the multiplier. An increase in injections is an increase in one of the components of aggregate demand. This increase in aggregate demand will increase factor incomes. This leads to a further increase in aggregate demand etc.

- (ii) According to the accelerator principle, investment expenditure is determined by the rate of change of national income. Small fluctuations in national income can lead to large fluctuations in investment demand.

The capital stock is the current amount of capital equipment available in the economy. It consists of machines, factories, offices, commercial vehicles etc. which are all used to allow production of other goods. The capital stock is long lasting. Unlike raw materials it is not used up in production. The capital output ratio is the amount of capital needed to produce 1 unit of output.

If national income falls slightly, the required capital stock is reduced slightly. However, the negative investment needed to meet the reduction in the required capital stock may swamp the small annual replacement demand.

Similarly, a small rise in national income can lead to a very large rise in investment demand. Therefore the demand for investment can fluctuate greatly.

The accelerator-multiplier theory can be used to explain why economies move in cycles. A one-off shock within a very simple model leads to a complex cycle of economic activity. Because investment depends on the rate of change of national income, which can change much more rapidly than its absolute level, investment demand is particularly volatile.

*Part (i)(a) of the question was quite well answered, although some candidates were sidetracked into a discussion of the money multiplier. For the worked example many simply reproduced a page or more of algebra without giving a full explanation to interpret the various mathematical expressions.*

*Part (i)(b) was less well handled. Very few gave a good explanation of the link between injections and leakages and the point at which these came into equilibrium. Again others were sidetracked by irrelevant discussions of crowding out.*

*Answers to Part (ii) were surprisingly brief and superficial given that half of the allocated marks for the question were available. Turning points in the economic cycle were a source of confusion in the accelerator-multiplier discussion.*

*In several instances handwriting was virtually illegible.*