

# **INSTITUTE AND FACULTY OF ACTUARIES**

## **EXAMINERS' REPORT**

April 2017

### **Subject CT7 – Business Economics Core Technical**

#### **Introduction**

The Examiners' Report is written by the Principal Examiner with the aim of helping candidates, both those who are sitting the examination for the first time and using past papers as a revision aid and also those who have previously failed the subject.

The Examiners are charged by Council with examining the published syllabus. The Examiners have access to the Core Reading, which is designed to interpret the syllabus, and will generally base questions around it but are not required to examine the content of Core Reading specifically or exclusively.

For numerical questions the Examiners' preferred approach to the solution is reproduced in this report; other valid approaches are given appropriate credit. For essay-style questions, particularly the open-ended questions in the later subjects, the report may contain more points than the Examiners will expect from a solution that scores full marks.

The report is written based on the legislative and regulatory context pertaining to the date that the examination was set. Candidates should take into account the possibility that circumstances may have changed if using these reports for revision.

Luke Hatter  
Chair of the Board of Examiners  
July 2017

**A. General comments on the *aims of this subject and how it is marked***

1. The aim of the Business Economics subject is to introduce students to the core economic principles and their relevance to the business environment behaviour. It provides a grounding in the fundamental concepts of micro and macro economics as they affect the operation of insurance and other financial systems, both for individuals and their requirements for financial security, and for financial institutions and their ability to provide products that meet individual and institutional clients' needs.
2. The Business Economics examination paper includes different types of questions requiring a variety of styles both in terms of the nature of the answer and the degree of detail required. The questions clarify the amount of detail necessary in the answer.
  - 2.1 For Multiple Choice questions, it is *not* necessary to show workings or to offer explanation.
  - 2.2 For questions requiring calculations with workings, full marks are awarded if the correct answer is given and workings are shown. Where due to a calculation error, the final answer is incorrect, marks are awarded for the method and workings.
  - 2.3 Where the question asks for stating a list of items, full marks will be gained by providing the specific list. As explaining each item does not gain additional marks, time is best spent on other questions.
  - 2.4 In discursive types of question the model answers shown below are indicative of valid answers that could be provided. However, answers other than those indicated are accepted if relevant, and are awarded marks.
  - 2.5 For essay questions, candidates are expected to include the relevant facts and issues as well as the linkages so that a direct and coherent answer to the specific question is provided.
  - 2.6 Diagrams should be clear and labelled correctly to gain full marks. Using a ruler helps in producing straight lines and a useful framework for curves and other components of a diagram.

**B. General comments on *student performance in this diet of the examination***

The examination paper included some questions that proved more challenging for most candidates so appropriate adjustments were made in marking.

**C. Pass Mark**

The Pass Mark for this exam was 58.

**Solutions**

<b>1</b>	D	[1½]
<b>2</b>	D	[1½]
<b>3</b>	C	[1½]
<b>4</b>	B	[1½]
<b>5</b>	C	[1½]
<b>6</b>	C	[1½]
<b>7</b>	B	[1½]
<b>8</b>	D	[1½]
<b>9</b>	C	[1½]
<b>10</b>	A	[1½]
<b>11</b>	A	[1½]
<b>12</b>	D	[1½]
<b>13</b>	B	[1½]
<b>14</b>	B	[1½]
<b>15</b>	A	[1½]
<b>16</b>	A	[1½]
<b>17</b>	B	[1½]
<b>18</b>	D	[1½]
<b>19</b>	D	[1½]
<b>20</b>	D	[1½]
<b>21</b>	B	[1½]
<b>22</b>	B	[1½]
<b>23</b>	B	[1½]
<b>24</b>	A	[1½]
<b>25</b>	A	[1½]
<b>26</b>	C	[1½]

**Q1–Q26:** These questions were generally answered well. For question 14, although answer B was the preferred answer, answers C and D were also accepted.

- Q27** (a) Shifts to left.  
 (b) Shifts to right.  
 (c) No shift.  
 (d) Shifts to right.

[4]

This question was generally answered well with many candidates scoring full marks.

**Q28** (i)

<i>Price</i> (£)	<i>Quantity</i> (Units)	<i>Total Profit</i> (£)	<i>Marginal Revenue</i> (£)
20	0	-	-
18	1	13	18
16	2	22	14
14	3	27	10
12	4	28	6
10	5	25	2
8	6	18	-2
6	7	7	-6

[2]

- (ii)  $-(dQ/Q)/(dP/P)$  where  $Q$  is midpoint  $Q$  and  $P$  is midpoint  $P$

[2]

$$= -(1/5.5)/(2/9) = -0.82$$

- (iii) £10–£20

[1]

[Total 5]

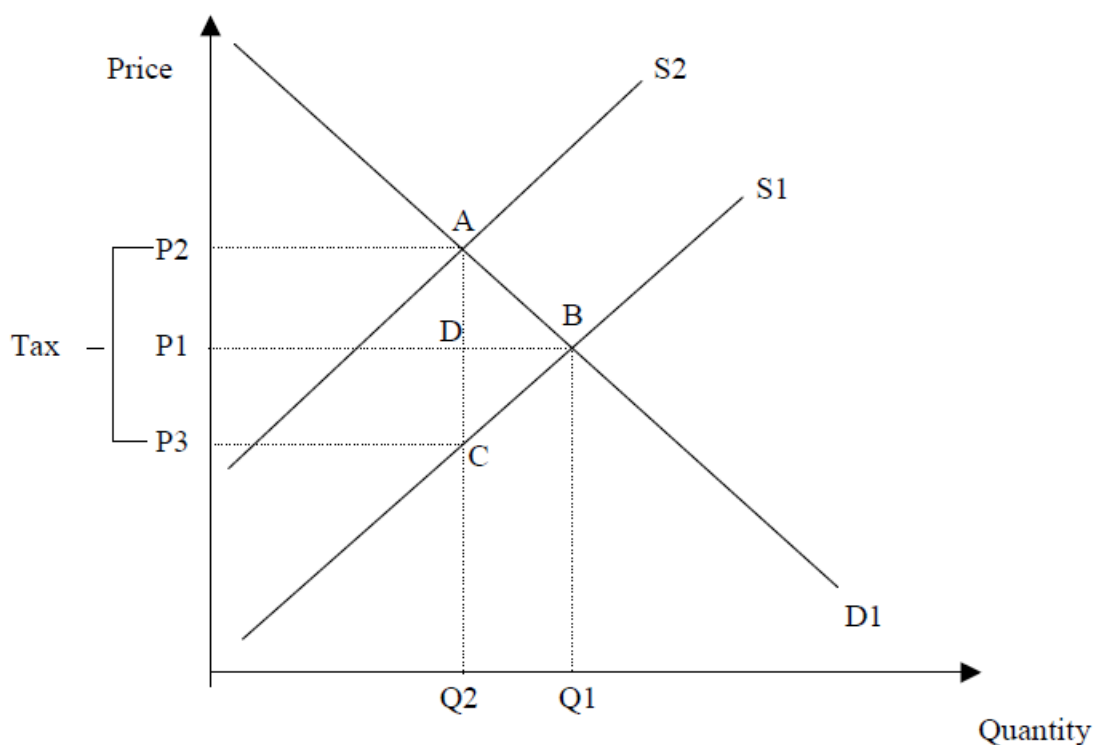
This question was generally well answered. Part (i) was answered correctly by most candidates. Weaker answers did not use the average formula and quite a few answers provided the incorrect range in part (iii).

- Q29** (i) £10 [1]
- (ii) £10 [1]
- (iii) It is called a dominant strategy game since regardless of what the other player does a particular strategy earns a player a larger payoff than any other strategy. In this case for Company A its dominant strategy is to charge £10 as this results in higher profits than charging £15 regardless of what Company B does. Similarly for Company B, its dominant strategy is to charge £10, as this results in higher profits than charging £15 regardless of what Company A does. [2]
- (iv) Both charge £10 and the profit for each company is £8 million. [1]
- [Total 5]

The answers to this question were varied.

In answering part (iii), candidates were required to provide a clear explanation of a dominant strategy game in general and with reference to both firms A and B to score full marks. Marks were allowed for providing the correct answer based on different interpretations of the word 'renege'.

- Q30** (i) The effect of a per unit sales tax is illustrated in the diagram below:



Before the introduction of the tax the supply and demand curves S1 and D1 intersect to give the equilibrium price and quantity of P1 and Q1 respectively. If a per unit sales tax is introduced this will have the effect of shifting the supply curve upwards and to the left by the full amount of the tax from S1 to S2. The result is a new equilibrium price and quantity given by P2 and Q2 respectively. It should be noted that the rise in the price of the good is less than the amount of the tax.

The effect of the tax is to create a wedge between the price paid by the consumer P2 and the price received by the producer P3. There is a reduction in consumer surplus equal to area P2ABP1. There is also a reduction in producer surplus equal to area P1BCP3 as they suffer both a lower price received P3 and a reduction in production to Q2. The government receives a tax of P2 P3 per unit sold, which means receiving tax revenue equal to area P2ACP3 and it therefore benefits from the imposition of the tax. [3]

- (ii) The gain to the government is less than the combined losses of consumers and producers, so that there is a net loss from the tax given by the area ABC. The net loss is relatively easy to explain, the area ABD is the consumer surplus loss suffered by consumers who are willing to pay between price P1 and P2 but are unable to do so at the price P2. While the area BCD is the producer surplus loss suffered by domestic producers who are willing to produce the good between the price P3 and P1 but who no longer do so as a result of the imposition of the tax. [2]

[Total 5]

Producing the correct graph was important in answering this question. Candidates who did not provide the correct graph could not provide correct explanation. Some candidates provided the correct graph but did not provide the full explanation. Generally the answers were not strong.

- Q31** (i) There are many reasons why economists and government policy makers are concerned about rising unemployment. These include the following:

Social/Political costs – Unemployment is usually an unhappy experience for the individual and their families. In turn, they often blame their unemployment on the government so that makes politicians concerned about the issue of unemployment.

Economic resource cost – An unemployed person is a waste of a scarce economic resource and means lower production and welfare for a society as a whole.

Fiscal cost – Unemployment adversely affects the public finances, high levels of unemployment mean lower taxation revenues and also higher social security and other transfer payments which worsens the fiscal position.

Human capital cost – Unemployed labour loses its skills and depletes the human capital stock and this hinders the longer term productive potential of the country. [4]

- (ii) There are many other issues that concern policy makers than the headline rate, these include:

Duration issue – Long term unemployment (usually 12 months or more) is more of a concern than short term unemployment since the long term unemployed find it harder to attract employers' interest and also become demoralised and less likely to apply for jobs. The skill set of the unemployed can also become less useful the longer they remain unemployed since technology and the economy progress.

Age structure concerns – it is generally the case that policy makers are more concerned about youth unemployment, that is, people under the age of 25, than older people that are unemployed, such as, those over 60. This is because the younger age group lose vital training at a crucial time in their lives.

Demographic concerns – the demographics of unemployment are also a major concern. For example, there may be inequalities in the labour market such as different unemployment rates between different ethnic groups and between genders.

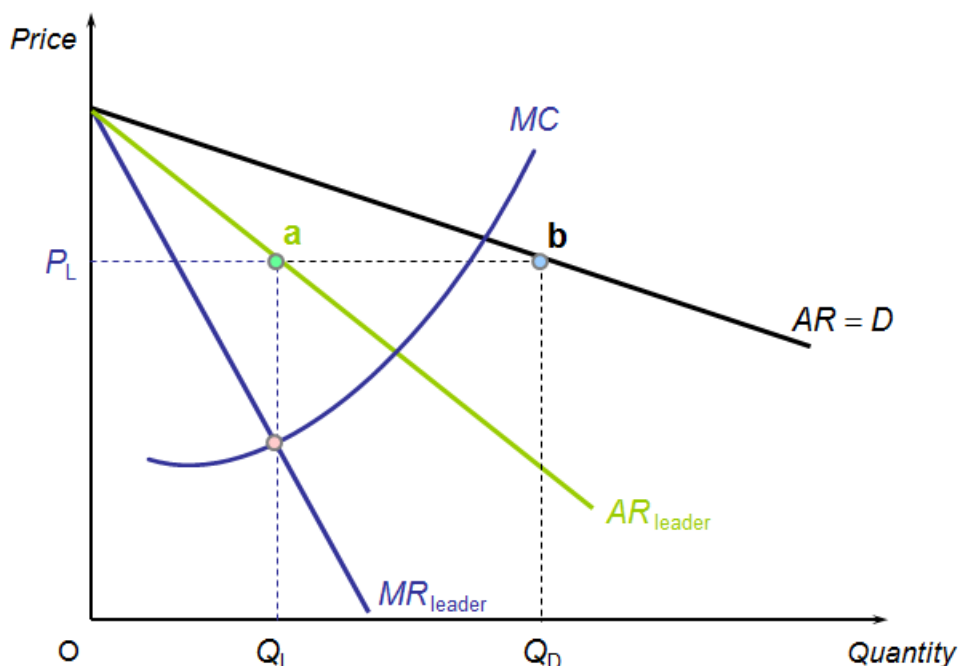
Regional distribution concerns – The regional distribution of unemployment is also a concern. For example are unemployment rates particularly high in certain regions of the country? If so, there may be a case for regional aid directed at bringing jobs to the workers, rather than a policy of encouraging workers to move to the jobs. [4]

[Total 8]

This question proved to be the most challenging compared to other questions in the paper. Most candidates offered generic comments about unemployment which did not answer the specific question. Answers to part (ii) were poor with few candidates offering measures of unemployment other than the headline rate and so were unable to score well on this part.

- Q32** (i) The principal – agent problem refers to the fact that the principals that are the shareholders and the owners of a firm are not necessarily the agents of the firm, who are the managers of the firm. The principals employ the agents to act in the interests of the principals. There is a danger that the managers who on a day to day basis tend to have more information on the firm may be able to pursue objectives that are in their own interest but not necessarily in the interests of the shareholders of the firm. [3]

(ii)



In the above diagram the market demand curve is given by  $D$ , the leading firm sets its market share as given by  $AR_{leader}$  with the resulting marginal revenue  $MR_{leader}$ . Its optimal price is found by equating its marginal cost  $MC$  to its marginal revenue, giving price  $P_L$  and output  $Q_L$ . At price  $P_L$  total market demand is  $Q_D$  with the follower firms supplying  $Q_L Q_D$ .

[3]

[Total 6]

Part (i) of this question related to the material no longer directly covered in the current core reading and so appropriate adjustment was made to the marks for all candidates for this part of the question. Many candidates scored well in part (ii) with clear graphs demonstrating a good understanding of the material.

**Q33** There are a number of supposed advantages of floating rates over fixed exchange rates.

**Monetary autonomy** – a country with a floating exchange rate can pursue an independent monetary policy and be left to determine its own inflation rate. By contrast, under a fixed exchange rate, monetary policy is dictated by the need to buy or sell the currency to maintain its fixed rate.

**External balance** – a floating exchange rate will tend to lead to automatic external balance. A country with a large and persistent current account deficit will normally have a depreciating currency that will help to restore external balance. By contrast, under a fixed exchange rate it may be necessary for severe deflationary policies to be adopted to restore external competitiveness.



**Insulation from foreign price shocks** – if foreign inflation is significantly higher than domestic inflation a floating exchange rate will tend to lead to an appreciation of the domestic currency and this helps prevent importing the inflation. By contrast, under a fixed exchange rate, the authorities would be forced to purchase the foreign currency and sell the domestic currency to prevent a revaluation of the domestic currency. The resulting expansion of the domestic money supply would lead to the country importing the foreign inflation rate.

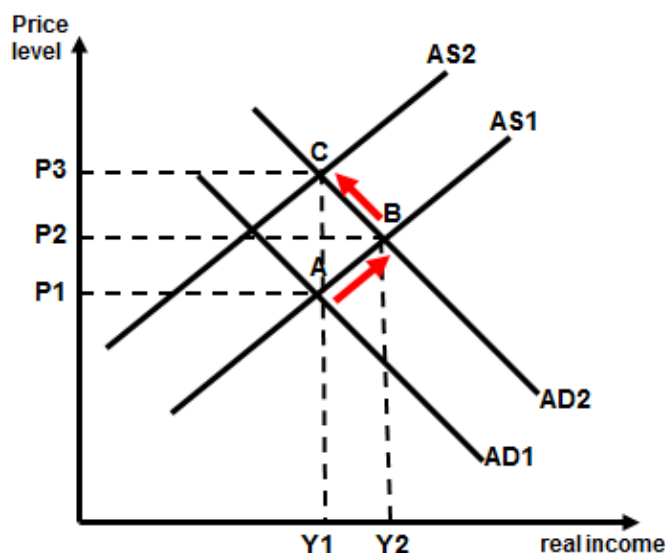
**Less need to hold foreign exchange reserves** – under a floating exchange rate the authorities do not buy or sell the currency and they therefore have less need of low interest earning foreign exchange reserves. By contrast, under a fixed exchange rate the authorities need to maintain sufficient reserves to maintain the fixed exchange rate parity if it comes under devaluation pressure.

**No risk of foreign exchange losses by the authorities** – under a floating exchange rate the authorities neither buy nor sell the currency and therefore incur no direct losses or profits from foreign exchange intervention. By contrast, under fixed exchange rates weak currency countries typically purchase their currency to defend the currency and frequently incur substantial losses if the currency is later devalued.

[4]

The answers to this question were not strong. Few candidates provided a full list of points together with explanations. Some provided an incomplete list and others provided a good list but with little or no explanation.

### Q34



In the short run an expansionary monetary policy which expands the money supply, lowers the short term rate of interest which will increase aggregate demand shifting AD1 to AD2. This will push up the price level and level of real income to Y2 in the short run. The problem is that in the longer run the rise in the aggregate price level will mean that workers will seek to get wage rises which will shift the aggregate

supply curve to the left to AS2 reducing somewhat the increase in the real level of real output possibly even back to its original level Y1 – see diagram (a). Or if there is a net rise in output to Y3 there will be further upward pressure on prices – see diagram (b) where price would be at P3 and output at Y3.

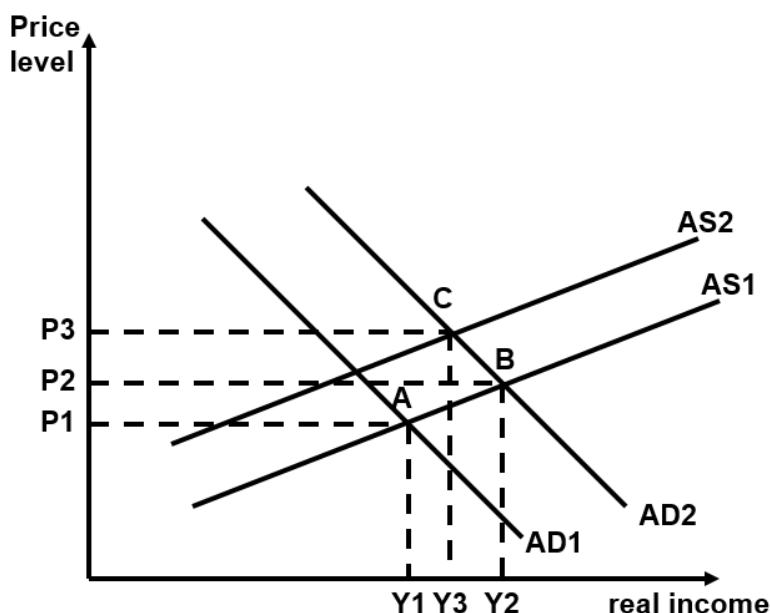


Diagram (b)

[5]

This question proved a challenge and was generally answered poorly. Many candidates did not discuss the impact of monetary expansion in the short term and long term or did not explain the impact on aggregate supply.

- Q35**
- |       |              |     |
|-------|--------------|-----|
| (i)   | £280 million | [1] |
| (ii)  | £60 million  | [1] |
| (iii) | £60 million  | [1] |
| (iv)  | £320 million | [1] |

[Total 4]

This question was generally answered well.

- Q36** If the government decides to borrow the money from the private sector then it will have to increase sales of government bonds and in order to attract investors to buy those bonds, there will be an increase in the long term rate of interest other things being equal. This leads to the danger of crowding out of private investment, as the longer term borrowing costs of companies will be forced up and also consumption may be hit by higher long term interest rates. The main advantage of borrowing is that

there is no increase in the money supply as the money borrowed by the issuance of government bonds is then spent, leaving the money supply unaffected.

Alternatively the government can finance increased expenditure via the printing of money. In this instance, the Treasury presents government bonds to the central bank and the central bank purchases the bonds with newly printed money. The government then uses the newly printed money to finance its excess expenditure and the money supply in the hands of the private sector rises. The problem with this is the risk that the newly printed money will mean an increase in the inflation rate as more money chases the same quantity of goods. The increase in the inflation rate may then start to undermine confidence in the financial markets which will require higher long term bond yields once inflation expectations rise. If inflation becomes endemic in the economy then there will be adverse consequences for both consumer and business confidence until the inflation is brought back under control. [5]

Few candidates scored full marks on this question. Most candidates did not consider the longer term implications of the policy changes for the economy.

- Q37** (i) There are significant differences between the market structures of monopolistic competition and monopoly. With monopolistic competition there are many competing firms whereas with monopoly there is only one firm.

Under monopolistic competition each firm sells a differentiated product whereas a monopoly may sell either a single product or a range of differentiated but similar products.

A crucial difference between the two structures is that with monopolistic competition there are no barriers to entry whereas with monopoly there are barriers to entry. The absence of barriers to entry means that firms in a monopolistic competition industry will only make normal profits in the long run although supernormal profits can be made in the short run. With a monopoly, the existence of barriers to entry means that supernormal profits can be made in both the short and the long run.

Although both monopolistic competition and monopoly firms face downward sloping demand curves, the market demand curve is the demand curve for a monopolist, whereas a monopolistic competitor firm only has a small share of the market. The presence of competition will also tend to make the demand curve facing a monopolistic firm more price elastic than for a monopoly firm.

While both types of firm can be profit maximisers, competition means that a monopolistic competitor firm will have to seek to minimise its costs whereas a monopoly firm can to some extent afford to be inefficient. Monopoly firms will be better able to exploit economies of scale as their production runs will be larger than monopolistic competitor firms. [5]

- (ii) (a) Monopoly policy to prevent the abuse the existing power of monopolies and oligopolies. [1]
- (b) Merger policy – to control the growth of market power through mergers and acquisitions and takeovers. [1]
- (c) Restrictive practices policy to prevent oligopolistic collusion. [1]
- (iii) A merger is an agreement between the owners and managers of two or more firms to form a common company. In a merger there is usually an agreement about the new managerial structure of the new firm.

In a takeover one firm effectively buys out the shareholders of another firm to gain control of the newly combined company. A takeover ordinarily means that the managers of the firm taken over are replaced over time and control rests with the managers of the acquiring company. [2]

[Total 10]

This question was the longest on the paper, was generally answered well and in parts (i) and (ii) provided an opportunity for candidates to demonstrate their basic knowledge of the two market structures. These parts of the question were answered to a high standard. Part (i) of this question was answered well with many answers providing a clear distinction between monopoly and monopolistic competition. Part (ii) was a basic question which could be answered well if the candidates had the knowledge of the relevant material in the core reading. In part (iii) candidates were required to provide a clear explanation of the difference between a merger and a takeover and the implications for management, in order to score the marks for this part.

## **END OF EXAMINERS' REPORT**