Subject CB2

CMP Upgrade 2021/22

CMP Upgrade

This CMP Upgrade lists the changes to the Syllabus objectives, Core Reading and the ActEd material since last year that might realistically affect your chance of success in the exam. It is produced so that you can manually amend your 2021 CMP to make it suitable for study for the 2022 exams. It includes replacement pages and additional pages where appropriate.

Alternatively, you can buy a full set of up-to-date Course Notes / CMP at a significantly reduced price if you have previously bought the full-price Course Notes / CMP in this subject. Please see our 2022 *Student Brochure* for more details.

We only accept the current version of assignments for marking, *ie* those published for the sessions leading to the 2022 exams. If you wish to submit your script for marking but have only an old version, then you can order the current assignments free of charge if you have purchased the same assignments in the same subject in a previous year, and have purchased marking for the 2022 session.

This CMP Upgrade contains:

- all significant changes to the Syllabus objectives and Core Reading
- additional changes to the ActEd Course Notes and Assignments that will make them suitable for study for the 2022 exams.

1 Changes to the Syllabus

This section contains all the ***non-trivial*** changes to the syllabus objectives.

The focus of Objective 2.7 has been amended to the financial services sector and the wording has become:

2.7 Assess various pricing strategies that firms in the financial services sector can adopt.

A new objective 3.1.6 has been added on government intervention that reads:

3.1.6 Explain why government intervention might not improve market outcomes in practice even if the existence of 'market failures' suggest they can in theory.

Objective 3.8 has been significantly revised to read:

3.8 Discuss the role, structure and stability of the financial system.

3.8.1 Describe the functions of the financial sector.

3.8.2 Distinguish between the functions of investment funds, banks and insurance companies / pension funds.

3.8.3 Describe the different ways banks and insurance companies can be exposed to credit risk and liquidity risks through:

- bank loans
- corporate bonds
- securitisations (which can be owned by the non-bank sector)
- syndicated loans
- credit derivatives.

3.8.4 Discuss why the banking sector is more likely to be exposed to systemic risk than the non-bank financial sector.

3.8.5 Describe how financial innovation could lead to some functions of the banking sector being performed by non-banks.

3.8.6 Describe the basic principles on which Islamic finance is based.

3.8.7 Describe the features of one Islamic finance product and compare its features to the principles of Islamic finance.

2 Changes to the Core Reading and ActEd text

This section contains all the ***non-trivial*** changes to the Core Reading and ActEd text.

Textbook

The reference textbook has been updated to the 2020 version of the 10th edition of Economics by Sloman, J., Garratt, D., and Guest, J.

ActEd introduction and modules

Throughout

Changes have been made to reflect the online nature of exams, in particular:

- checklist items have been amended to reduce the emphasis on producing diagrams, *eg* 'draw diagrams……' has been replaced with 'use diagrams…' or 'interpret diagrams…'
- advice on drawing diagrams has been removed or shortened
- exam-style end of module questions that required diagrams have either:
  - had the 'exam-style' icon and mark allocations removed
  - been amended so that they no longer require diagrams, with any marks assigned to diagrams removed from the solution.

The majority of the diagrams contained within the course material, including in the solutions to questions, have been left in place due to the importance they play in aiding understanding of key concepts.

Introduction

The following bullet point has been added as a penultimate point in the first set of bullet points under the Core Reading heading on page 1:

- **The IFoA has produced an Examinations Handbook which includes guidance around notation, suggesting possible standard keyboard notation that candidates could use when typing solutions in Word during the IFoA examinations.**

The following three bullet points have been added to the bullet point list detailing additional Core Reading at the top of page 2:

- market failure and government failure (Module 10)
- cryptocurrencies (Module 14)
- multinational insurance business (Module 22).

The paragraph regarding the effects of the coronavirus pandemic towards the top of page 2 has been replaced with the following section of Core Reading and ActEd text:

The 2020 version of the 10th edition of the textbook includes some content on the economic effects of the coronavirus pandemic, as well as some updated data. Otherwise, the material in the textbook is the same as in the previous (2018) version and the references are unchanged.

At the time of writing (Winter 2021), the enduring effect of the coronavirus pandemic on both the global economy and financial markets will not be known for some time. The 2020 version of the textbook contains some material relating to the pandemic (as referred to above) but this version of the Core Reading does not attempt to fully address these areas.

The United Kingdom left the European Union on 1 January 2021 without an EU-wide arrangement for the operation and regulation of financial services. Discussions will continue during 2021 and this version of the Core Reading does not attempt to address these areas.

Module 2

Section 1.11

The heading 'The process of competition' has been replaced with 'Knowledge and the process of competition'.

Module 8

Practice questions

The marks to both parts of question 8.6 have been reduced to [3], and the total reduced to [6]. The diagrams in the solution no longer score marks.

Module 9

Section 0

The final two paragraphs of this section have been amended:

This module considers the different strategies that firms (with particular reference to firms in the financial services industry) use in practice to determine their prices, having regard to the above factors and also a number of other relevant issues. Bear in mind that a combination of pricing strategies could be used for a particular product.

In addition to knowing and understanding the strategies discussed in this module it is also useful to be able to draw the diagrams to illustrate them, as this might help in answering certain questions on this material.

Section 3 onwards

A new section has been added, resulting in the following changes:

- the new section (titled 'Price discrimination in financial services') has been assigned section number 3 – replacement pages are attached
- the previous Section 3 (Multiple product pricing) is now Section 4
- the previous Section 4 (Pricing and the product life cycle) is now Section 5.

Section 4 (Multiple product pricing)

In Section 4.1, the following Core Reading and ActEd text has been added to the end of the section titled 'Full-range pricing and the use of loss leaders':

'An example from the financial services sector is offering discounted insurance premiums to new customers in the hope that these customers will renew cover in future years at more profitable rates.

This relies on renewing customers not shopping around for the best deals each year. It is an example of inertia pricing (described above).'

Section 5 (Pricing and the product life cycle)

The following additional case study has been added after the mobile phone industry case study:

Online banking industry case study

This is another case study that forms part of the Core Reading and so could be tested in the exam.

An example from the financial services sector is the innovation in banking services through the use of financial technology, including mobile phone applications, 'apps'.

At the launch stage, the need for cutting-edge (*ie* highly-advanced and innovative) **technology limited the number of competitors, and suppliers aimed to attract large numbers of customers who could generate profitable business in the future.**

The growth stage has seen product differentiators, such as environmentally friendly non-plastic debit cards, and the use of face/voice recognition as security features. Further innovation is expected before this industry becomes mature.

The following item has been added to the checklist:

- describe how prices have varied over the product life cycle in the mobile phone and online banking industries. □

Replacement pages are attached.

Module 10

New Syllabus Objective 3.1.6 , as set out in Section 1 of this upgrade document, has been assigned to Module 10.

Section 4

This section has been amended to include:

- additional Core Reading on market failure and government failure
- additional ActEd text to complement the additional Core Reading
- a new checklist item relating to the new Core Reading
- two new paragraphs in the solution to the final question of Section 4.5.

Replacement pages are attached.

Module 14

There have been substantial changes to this module and so replacement pages for the whole module are attached. Changes include:

- Syllabus Objective 3.8 has been revised as set out in Section 1 of this upgrade document.
- There have been significant additions to the additional Core Reading, ActEd text, checklist items and questions in Sections 1 and 3.
- A new section has been added on cryptocurrencies and assigned section number 5, meaning the previous Section 5 (The supply of money) is now Section 6.
- A new practice question has been added.

Module 22

A new section (Section 3, Multinational insurance business) has been added, containing additional Core Reading, ActEd text and checklist items.

The new section is attached.

3 Changes to the X Assignments

Overall

The X Assignments have been changed significantly to reflect the online nature of the exams, in particular, questions requiring the submission of diagrams have been removed. Where they are deemed to be useful, diagrams still appear in the solutions, though no credit is awarded for them.

The main changes to the questions are detailed below.

Assignment X1

Question 1.31

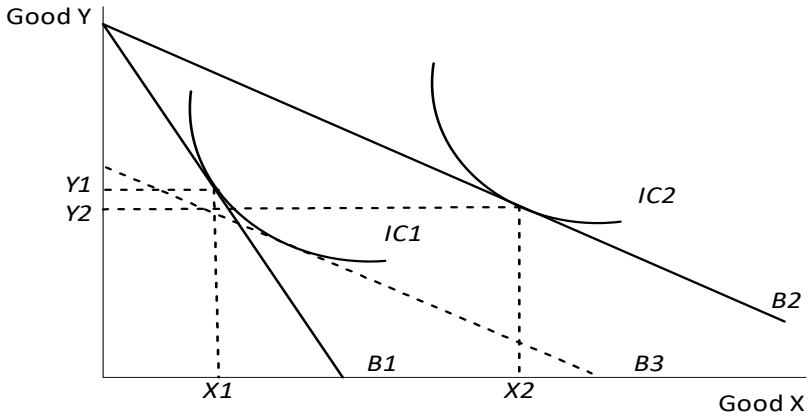
Question 31 has been replaced with the following:

(i) (a) Describe what is shown by an indifference curve.

(b) Explain the shape of a typical indifference curve.

[2]

The following diagram shows the effect of a fall in price of Good X when the price of Good Y and the consumer's income remain unchanged. *IC1*, *B1*, *X1* and *Y1* show the indifference curve, budget line and optimal consumption quantities of Goods X and Y before the price change, and *IC2*, *B2*, *X2* and *Y2* show the corresponding items after the price change. *B3* shows a hypothetical budget line, which has the same gradient as *B2* and is drawn at a tangent to *IC1*.



(ii) Explain what the diagram illustrates about Good X. [2]

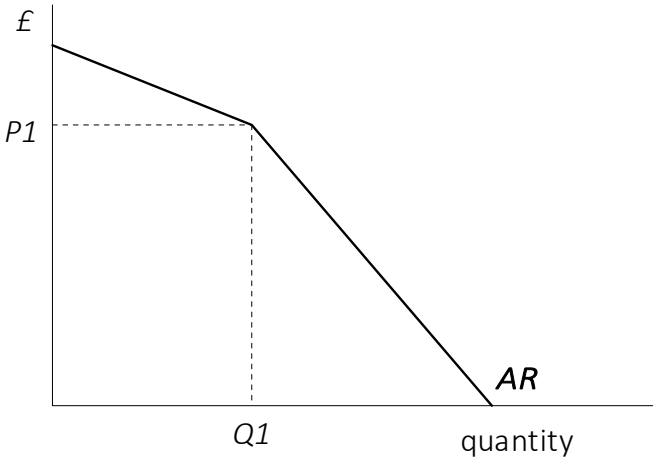
[Total 4]

Please use the 2022 version of the solution to this question.

Question 1.34

Question 34, part (i) has been removed. A diagram is now provided in the question, and the previous part (ii), which is now the only part of this question, has been amended to refer to this diagram. This question is now only worth [2] and reads:

The following diagram shows an average revenue (AR) curve for an oligopoly firm according to the kinked demand curve model.



Explain why the firm's AR curve has the shape shown on the diagram. [2]

Question 1.36

The requirement to submit diagrams has been removed from Question 36. Instead, it consists of new parts (a) and (b), followed by a reduced version of the previous question as part (c). This question is now only worth [4] and reads:

Explain:

(a) what is meant by third degree price discrimination (TDPD)

(b) the conditions under which TDPD might operate

(c) how a firm practising third-degree price discrimination will determine its price and output levels.

[4]

Solution 1.36

The solution to this question has been amended significantly. Replacement pages are attached.

Question 1.37

A new question worth [4] has been added and numbered 1.37. Subsequent questions have been renumbered. This new question reads:

Discuss the extent to which speculation both stabilises and destabilises the price of cryptocurrencies, *eg* bitcoin. [4]

Question 1.38 (previously 1.37)

Question 1.38 has been amended to remove the requirement to submit diagrams and the mark allocation for each part has been reduced by [1]. An additional part worth [3] has been added. The question also now refers to the *domestic* market. The question now reads:

Discuss how each of the following scenarios may influence the price and equilibrium quantity of housing within the domestic market. Each scenario should be discussed separately.

(i) an increase in interest rates [3]

(ii) an expected rise in future house prices [2]

(iii) an increase in the rate of taxation for house builders [2]

(iv) an appreciation of the domestic currency [3]

[Total 10]

Solution 1.38 (previously 1.37)

Marks are no longer awarded for the diagrams (though the diagrams have been left in the solutions in case they are useful to students), nor for the points that referred to the diagrams. There are also additional points and minor changes throughout. Replacement pages are attached.

Question 1.39 (previously 1.38)

Question 1.39 has been amended to remove the requirement to draw diagrams as follows:

Compare the two market forms of perfect competition and monopolistic competition. [10]

Solution 1.39 (previously 1.38)

The diagrams, and associated marks, that previously formed part of the solution have been removed. References to curves and points on the diagrams have also been replaced by descriptions. The credit awarded for some points has been increased to be a full mark. There are also additional points and minor changes throughout. Replacement pages are attached.

Assignment X2

Question 2.28

Question 2.28 has been amended to remove the requirement to submit diagrams and the mark allocation for each part has been reduced by [1]. The question is now worth [4] and reads:

Explain, using the aggregate supply and aggregate demand model, the likely impact in the short run on the general price level and the level of real GDP of:

(i) an increase in the cost of raw materials [2]

(ii) an increase in income tax. [2]

Diagrams are not required. [Total 4]

Solution 2.28

Diagrams have been left in the solutions in case they are useful to students, and points that explain which curves shift remain, however, references to points on the diagram have been removed from the solution.

Question 2.30

The original Question 2.30 is now part (i) and a new part (ii) has been added. The question is now worth [6] and reads:

(i) Outline the main factors that determine the average duration of unemployment. [3]

(ii) Describe how the following causes of unemployment might apply to the automobile manufacturing industry:

(a) demand-deficient unemployment

(b) structural change.

[3]
[Total 6]

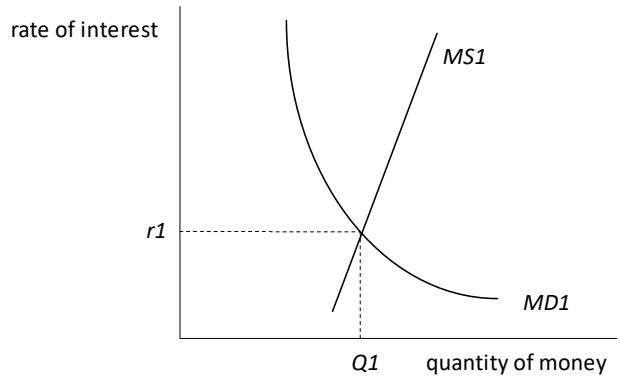
Solution 2.30

Please use the 2022 version of the solutions for part (ii).

Question 2.34

A diagram is now provided in the question, and the previous part (i) no longer requires the diagram. Part (i) is now only worth [2] and reads:

The following diagram illustrates equilibrium in the money market, assuming an endogenous money supply.



(i) Outline why the money demand curve and the money supply curve have the shapes shown. [2]

(ii) Explain how a reduction in the money supply would affect the market rate of interest in the short run. [1]

(iii) Explain how an increase in the money supply is likely to affect both the exchange rate and the current account of the balance of payments. [4]

[Total 7]

Solution 2.34

Part (i)

The diagram and subsequent point have been deleted from the solution, so the solution starts with the point that begins 'The central bank controls …'.

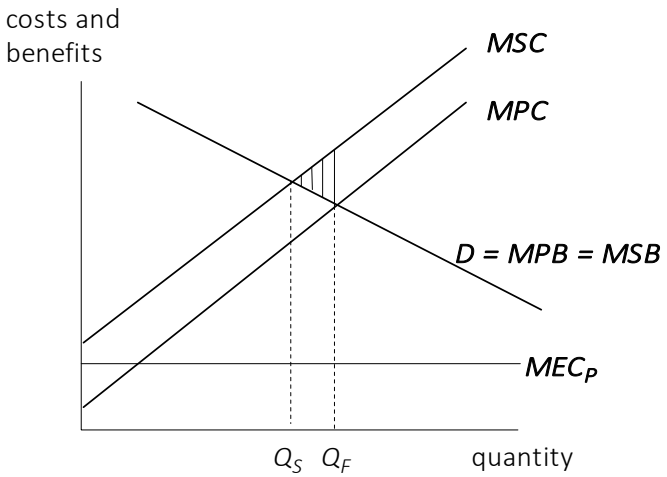
Solution 2.35

Some additional (follow-on) points have been added to this solution to reflect extra points covered by the additional Core Reading (added for 2022). Replacement pages are attached.

Question 2.36

A diagram is now provided in the question, and the previous part (i) no longer requires the diagram. This question now reads:

(i) Explain, using the diagram below, why pollution created by the production process causes a misallocation of resources in a free market. [5]



(ii) Discuss the relative merits of using taxation and legislation as a means of correcting this form of market failure. [10]

Diagrams are not required.

[Total 15]

Solution 2.36

Marks are no longer awarded for the diagrams. Instead, marks are awarded for defining / describing the curves in the diagram. There are also minor changes to the solution throughout. Replacement pages are attached.

Assignment X3

Questions 3.28 and 3.33

These questions have been merged into a new two-part question (numbered 3.28). The question is worth [8] and reads:

Compare the views of the new classical and Keynesian economists on:

(i) hysteresis [5]

(ii) the approaches to demand- and supply-side policies. [3]

[Total 8]

Solutions 3.28 and 3.33

The solution to the previous Question 3.28 can be used for part (i) of this question.

Please use the 2022 version of the solutions for part (ii) of this question.

Question 3.31

This question has been replaced by a new question (worth [5]), which reads:

Discuss the reasons why a long-standing member country of the European and Monetary Union (EMU) might be considering leaving the EMU. [5]

Solution 3.31

Please use the 2022 version of the solutions for this question.

Question 3.33 (previously 3.34)

Part (i) has been replaced because straightforward definitions are less likely to be tested in the online era. This part is now worth [2].

In part (ii), the diagram requirement has been removed and the marks reduced to [2].

The question is now worth [5] and reads:

(i) Explain the difference between the budget deficit and national debt. [2]

(ii) State, with examples, two ways in which a recession can increase the size of the government's budget deficit. [2]

(iii) Describe what is meant by the structural deficit or surplus. [1]

[Total 5]

Solution 3.33 (previously 3.34)

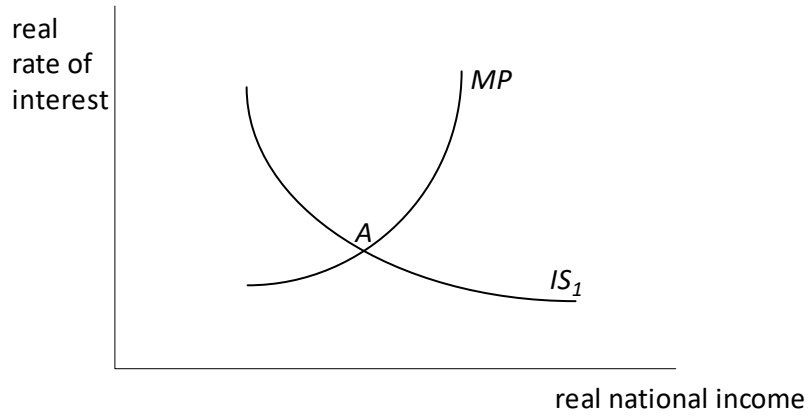
Please use the 2022 version of the solutions for part (i) of this question.

In part (ii), the point for the diagram, together with the subsequent point, have been deleted.

Question 3.36 (previously 3.37)

Diagrams are now provided in the question for both parts, and part (ii) has an additional requirement. The marks are now split [4] for part (i) and [6] for part (ii). This question now reads:

The following diagram shows the *IS-MP* model for an economy currently in equilibrium at Point *A*:



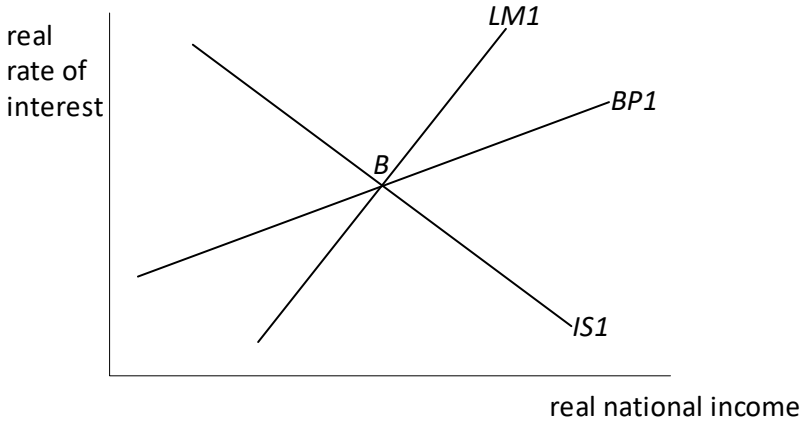
(i) Explain, using the diagram, the effect on interest rates and real national income of:

(a) an increase in the demand for exports

(b) a loosening of monetary policy.

[4]

The following diagram shows the extended *IS-LM* model for an economy in equilibrium at Point *B*:



(ii) Explain, using the diagram and assuming the economy operates a floating exchange rate regime, the effect on interest rates and real national income of:

(a) an increase in the money supply

(b) an increase in taxation.

[6]

[Total 10]

Solution 3.36 (previously 3.37)

The solution to this question has been amended significantly. Replacement pages are attached.

Other tuition services

In addition to the CMP you might find the following services helpful with your study.

3.1 Study material

We also offer the following study material in Subject CB2:

- Flashcards
- Revision Notes
- ASET (ActEd Solutions with Exam Technique) and Mini-ASET
- Mock Exam and AMP (Additional Mock Pack).

For further details on ActEd's study materials, please refer to the 2022 *Student Brochure*, which is available from the ActEd website at **www.ActEd.co.uk**.

3.2 Tutorials

We offer the following (face-to-face and/or online) tutorials in Subject CB2:

- a set of Regular Tutorials (lasting a total of three days)
- a Block (or Split Block) Tutorial (lasting three full days)
- an Online Classroom.

For further details on ActEd's tutorials, please refer to our latest *Tuition Bulletin*, which is available from the ActEd website at **www.ActEd.co.uk**.

3.3 Marking

You can have your attempts at any of our assignments or mock exams marked by ActEd. When marking your scripts, we aim to provide specific advice to improve your chances of success in the exam and to return your scripts as quickly as possible.

For further details on ActEd's marking services, please refer to the 2022 *Student Brochure*, which is available from the ActEd website at **www.ActEd.co.uk**.

3.4 Feedback on the study material

ActEd is always pleased to receive feedback from students about any aspect of our study programmes. Please let us know if you have any specific comments (*eg* about certain sections of the notes or particular questions) or general suggestions about how we can improve the study material. We will incorporate as many of your suggestions as we can when we update the course material each year.

If you have any comments on this course, please send them by email to **CB2@bpp.com**.

Solution

1	Limit pricing	**E**	An existing firm deliberately keeps its prices below the short-run profit-maximising level so as to deter new entrants to the market.
2	Average-cost pricing	**C**	A firm adds a mark-up to average cost.
3	First-degree PD	**A**	A firm charges each consumer for each unit the maximum price that the consumer is willing to pay for that unit.
4	Second-degree PD	**B**	A firm offers consumers a range of different pricing options for the same or similar product. Consumers are then free to choose whichever option they wish, but the price is often dependent on some factor such as the quantity purchased.
5	Third-degree PD	**F**	A firm divides consumers into different groups based on some characteristic that is relatively easy to observe and informative about how much consumers are willing to pay. The firm then charges a different price to consumers in different groups, but the same price to all the consumers within a group.
6	Predatory pricing	**G**	A firm sets its price below its average cost in order to drive competitors out of business.
7	Peak-load pricing	**D**	Price discrimination (second or third degree) where a higher price is charged in peak periods and a lower price in off-peak periods.

3 Price discrimination in financial services

The general theory on pricing strategies can readily be applied to products in the financial services sector.

This section of additional Core Reading considers how pricing strategies such as price discrimination are typically applied and regulated in the financial services sector.

3.1 Price discrimination in financial services

There are forms of price discrimination that are used in financial services which are perhaps different from those used in other sectors. In the airline industry, for example, price discrimination is used to segment markets and increase income whilst providing services at lower costs to price-elastic consumers. By spreading fixed costs over a wider group of customers, everybody can benefit.

However, in financial services, the same principle of charging lower prices to more price-sensitive consumers can apply, but in ways that are sometimes thought 'unfair' or, indeed, unethical. For example, providers may charge higher annual renewal prices for long-term customers who are seen to be less price sensitive and less likely to switch to other providers. This form of price discrimination is often called *inertia pricing*.

In addition, providers may extract more income from customers by taking advantage of consumer behaviour, such as their preference for low prices in the short term, even if followed by higher prices after a period, or their focus on headline prices rather than ancillary charges or their expectation that they will not have to pay ancillary charges.

An ancillary charge is an amount charged to the consumer in respect of the transaction, but that does not directly relate to the good / service itself, for example, a processing fee.

These strategies are not necessarily conscious or deliberate. They can happen gradually over time, as providers seek to maximise their income. However, regulators may investigate them, if they believe that there are excessive cross-subsidies between groups of customers, especially if higher prices fall disproportionately on vulnerable customers.

In the UK, the financial conduct regulator (the FCA) has investigated various product markets and has made a number of proposals:

- **In banking current accounts, the FCA has banned a number of charges, which were paid by a small number of customers, including customers that might be regarded as vulnerable.**
- **In savings accounts, where interest rates on new deposits have been attractive but have declined over time, the FCA has recommended the concept of a basic savings rate.**
- **In home and motor insurance, the FCA has proposed that prices for existing customers should be the same as if they were new customers.**

It remains to be seen whether these interventions will have the intended effects, or whether they will lead to undesirable unintended consequences. For example, the introduction of a price cap might lead to this price becoming the norm, reducing competition, while the abolition of some charges might lead to firms trying to recoup lost income through other charges.

3.2 Checklist

Task	*√when completed*
Ensure that you can:	
• define the following key terms: - inertia pricing	☐
• give examples of ways in which firms in the financial services industry might use price discrimination in order to maximise their income	☐
• explain why price discrimination might be applied differently in the financial services industry compared to other sectors	☐
• give examples of how price discrimination in the financial services industry might be regulated	☐
• explain, with examples, how regulation of price discrimination in the financial services industry might have adverse consequences.	☐

3.3 Questions

Question

(i) Explain what is meant by inertia pricing in the insurance industry.

(ii) Suggest how the regulator might intervene to protect customers from inertia pricing and outline a negative consequence this might have.

Solution

(i) ***Inertia pricing***

Inertia pricing describes the concept of long-term existing customers being charged more for a policy than new customers would be. This can occur because customers who have held a policy with the provider for many years are less likely to shop around in the future. Newer customers, on the other hand, are more likely to be comparing prices of a number of insurance companies, *eg* through a price comparison website.

(ii) ***How the regulator can protect customers from inertia pricing***

The regulator could dictate that prices for existing customers be no more than prices for equivalent new customers. The desired effect would be for renewal premiums to reduce, however, it could instead result in higher prices for new customers.

4 Multiple product pricing

This section of additional Core Reading introduces two more pricing strategies (*loss leaders* and *full-range pricing*), and also considers how to price *by-products*.

4.1 Pricing strategy for multiple products

The basic theory of the firm is explained in terms of a firm producing a single product. In practice, most firms produce a range of products which are sold in one or more markets. The pricing of such multiple products raises additional issues due to the relationships between demand patterns and cost structures between the products.

The rest of this section considers possible pricing considerations under various production scenarios.

Full-range pricing and the use of loss leaders

It is usual for a business to consider prices over its full range of products, rather than individually, in order to maximise its profit across all products. This is referred to as 'full-range pricing'.

A key part of this strategy can be to offer 'loss leaders' – products which are sold at low prices (sometimes below cost). The aim is to attract customers into the business where it is hoped they will buy additional products; the prices of which are higher relative to costs and so contribute more to the firm's profits. The success of this strategy depends on the price elasticity of demand for the loss leader product. The higher this is, the more customers will be attracted by it.

An example from the financial services sector is offering discounted insurance premiums to new customers in the hope that these customers will renew cover in future years at more profitable rates.

This relies on renewing customers not shopping around for the best deals each year. It is an example of inertia pricing (described above).

Complementary and substitute products

If a firm produces complementary products, sales of one product can lead to increased sales of a complement, depending on the cross-price elasticities of demand. Conversely, if a firm produces substitute products, sales of one can lead to reduced sales of a substitute. Therefore, prices should be determined jointly to maximise total revenue and profit.

By-products

A by-product is a good which is produced as a consequence of producing the main product. If there is demand for this by-product, the firm needs to consider whether it is profitable to sell it. To do this, it needs to determine the correct costs of its production and marketing.

In theory, the main and by-product would be considered together, looking at the combined curves for marginal cost and marginal revenue and producing at the combined output where MC equals MR in order to maximise profits.

4 Government failure and the case for the market

4.1 What's included in this section

- Drawbacks of government intervention
- Advantages of the free market
- Should there be more or less intervention in the market?
- Government failure vs market failure

4.2 Guidance

This section consists of reading from the textbook and additional Core Reading written by the IFoA.

Examination questions relating to this module are likely to test an *ability to evaluate* the case for and against government intervention.

The reading includes Box 12.7, which was also part of the reading for Module 2. This box describes the views of economists belonging to the Austrian school. They are ardent supporters of the free market for its ability to co-ordinate the decisions of consumers and producers without the intervention of bureaucrats, for its motivating force and the liberties it offers.

4.3 Reading

Task	***√when completed***
Read Chapter 12, Section 5	☐
Read the additional Core Reading (below)	☐

Market failure

In some senses, the phrase 'market failure' is an odd term.

Recall that market failure occurs when the free market fails to achieve a satisfactory allocation of resources with regard to attaining social efficiency (*ie* the level at which welfare is maximised) and equity.

The conditions assumed necessary for welfare maximisation can never hold in practice – they are designed to underpin a theoretical model which can never hold in reality. As such, there is a sense in which the market is being held to a standard it can never meet.

An analogy has been made with physics and engineering. Under certain assumptions, the theoretical top speed of a car is the speed of light. But, when those assumptions do not hold, we don't talk about 'car failure'. Instead, we compare alternative designs to determine which car meets our criteria best.

As such, when thinking about practical public policy, two approaches are sometimes put forward to try to balance this critique.

The first approach is to look at the way the government might 'fail' when intervening and the second is to look at the implications for the forms of government intervention.

Government failure

One is to counter-balance 'market failure' with the idea of 'government failure'.

When trying to deal with imperfections within markets, there are inherent problems with government intervention. For example, regulation designed to remove information asymmetries in financial markets might lead to greater costs or the undermining of an intermediary market designed to provide impartial advice. Indeed, such regulation may lead to requirements for providers of retail financial products to provide so much information to buyers that consumers face a set of choices and processes that are highly complex and difficult to navigate.

In addition, regulation might be captured by interest groups (the subject of study of 'public choice economics'). Such interest groups can include politicians, groups within the electorate that might benefit from regulation or the industry itself, which might see regulation as a useful barrier, raising the costs of market entry, thus reducing competition.

Regulatory capture is where the regulator is persuaded to operate in the industry's interests rather than those of the consumer.

Another problem with government regulation is that, just as market participants do not have perfect knowledge, government officials do not either. There can therefore be unintended consequences of regulation that can take us even further from the welfare-maximising position. This relates to the 'knowledge problem' in Austrian economics (see Module 2, Section 1.11).

There are many examples of these phenomena in the events that led up to the financial crisis (of 2008)**. For example:**

- **There were various forms of regulation, both in the US and internationally, that encouraged the process of mortgage securitisation. Regulators felt, not unreasonably, that this would reduce risks within the banking sector by dispersing credit risk. However, the unforeseen effect was to introduce various forms of moral hazard and reduce the monitoring of risky bank loans.**
- **Over the years, the introduction of deposit insurance and bank capital regulation designed to overcome information asymmetries has gone hand-in-hand with the decline of institutions that signalled to depositors, in various ways, that they had a highly secure capital base (for example, building societies and the earlier form of the Trustees Savings Banks in the UK).**

This is not to say that government regulation is always a bad thing. We should try to avoid a way of thinking that runs: 'markets fail, government action should therefore be used to correct markets'. One way of doing that is to consider forms of government failure.

Implications for the form of government intervention

Another way is to accept that both the 'market failure' and 'government failure' terminology holds both markets and governments to unreasonable standards and, instead, to think analytically about the strengths and weaknesses of different institutions in different situations. In this context, the design of government institutions is important. For example, they should be designed in such a way that they are difficult for interest groups to capture.

4.4 Checklist

Task	*√when completed*
Ensure that you can:	
• describe the problems caused by government intervention in a free market	☐
• describe the advantages of the free market	☐
• discuss the case for more or less government intervention	☐
• discuss the view that the term 'market failure' holds markets to unrealistic standards.	☐

4.5 Questions

Question

Which of the following is NOT an advantage of the free market?

A automatic adjustments are made to changes in demand and supply
B competition between firms prevents high profits being earned
C individuals are free to make economic choices
D material incentives encourage risk-taking and innovation

Solution

Option B. Monopolies and oligopolies can form in a free market and, since barriers to entry prevent new firms entering the market, high levels of supernormal profits can be earned in the long run.

Question

Describe the possible drawbacks of government intervention in the market.

Solution

1. *Shortages and surpluses*

If the government thinks that the market price of a product is too high, it might introduce a price ceiling below this, but this would result in excess demand, *ie* a shortage. As a result, some rationing system would have to be introduced (*eg* queuing, waiting lists, ration coupons), and this would have to be policed to avoid the development of an illegal (or shadow or underground) market.

If the government thinks that the market price is too low, it might introduce a price floor above this, but this would result in excess supply, *ie* a surplus. To guarantee the price, the government might buy up the surplus, which could be expensive. Furthermore, if surpluses were produced year after year, the surplus stock would eventually have to be sold on the world market at the lower world price, or possibly destroyed.

2. *Poor information*

Consumers and producers make suboptimal decisions because of ignorance. Similarly, the failure of government to achieve its intended aims can result from ignorance. If the government strives to maximise welfare, it needs to know society's utility function and its cost function. It is likely to be unaware of society's wishes and this ignorance is compounded by a lack of information on externalities. This lack of complete information might cause the government to introduce second-best solutions, *eg* restrictions on imports to protect a declining industry rather than retraining the workers with the skills needed in other (growing) industries.

3. *Bureaucracy and inefficiency*

Government intervention requires a large team of talented civil servants (*eg* economists, lawyers, administrative staff), as well as sophisticated and expensive equipment and technology. If the intervention brings about a better allocation of resources (*eg* reduced pollution) then such intervention would be regarded as a good use of resources. Nevertheless, critics of intervention suggest that these resources could be used more productively elsewhere.

4. *Loss of market incentives*

Government intervention might weaken market incentives and result in lower efficiency. For example, if the government rescues banks when they run short of funds rather than allow them to fall into bankruptcy, the problem of moral hazard could be created as banks adopt riskier lending strategies in the belief that they will always be rescued. Similarly, subsidies might allow inefficient firms to survive, and welfare payments might discourage people from working.

5. *Shifts in government policy*

Frequent changes in government policy (*eg* taxation and government spending) cause uncertainty that makes it very difficult for firms to plan for the future. Some firms may be very dependent on a particular policy, *eg* a lower corporate tax rate in depressed regions, and may be severely affected if the policy is changed or removed.

6. *Lack of freedom of choice*

Intervention by the government removes some element of freedom of choice in making individual economic decisions. For example, if taxation increases to pay for increased government spending on infrastructure projects, individuals have less disposable income to spend on what they would like to buy.

7. *Undermining of an intermediary market and overwhelming individuals*

Regulation designed to increase the provision of information in financial markets might lead to the undermining of an intermediary market that is designed to provide impartial advice. Too much information might also overcomplicate the decision-making process for consumers.

8. *Regulatory capture*

Regulation that was initially intended to protect the public interest may end up supporting the industry or firms within it as the regulator becomes close to those it works with. This could have adverse consequences for consumers.

9. *Welfare loss*

The imposition of taxation on goods results in higher prices for consumers, lower prices for producers and lower output of these goods. Consumer surplus falls and producer surplus falls. This is partly made up by the government surplus, *ie* the tax revenue, but there is a net welfare loss (which is known as the 'excess burden' of tax). However, this standard analysis assumes that the socially optimal output level was produced prior to the imposition of the tax. In fact, the tax might have been imposed to correct market failure. If, for example, the product was a pollutant, then the overproduction prior to the tax could be corrected by the tax.

This final point was covered in Section 3 of this module.

5 Competition policy

5.1 What's included in this section

- Competition, monopoly and the public interest
- The targets of competition policy
- Competition policy in the European Union
- UK competition policy
- Assessment of competition policy

5.2 Guidance

The exam will probably test an ability to *explain* how firms can use their market power to the detriment of consumers.

It is important to be able to give lots of examples of anti-competitive practices and to be able to explain how the three areas of competition policy can make markets more competitive. Such examples may be found in the sections on competition policy in the European Union and the UK.

This material was examined infrequently in Subject CT7, however it was the focus of a long-answer question in the first Subject CB2 exam paper in April 2019.

5.3 Reading

Task	***√when completed***
Read Chapter 14, Section 1	☐

5.4 Checklist

Task	***√when completed***
Ensure that you can:	
• define the following key terms:	
- exploitative abuse	☐
- exclusionary abuses	☐
- restrictive practices	☐
• discuss how the use of market power may be against the public interest and how it might be beneficial	☐
• describe the actions that can be taken in the UK if a monopoly is responsible for carrying out exploitative or exclusionary abuses.	☐

14

The financial system and the money supply

Syllabus objectives

1.3 Analyse the recent macroeconomic history.

1. Describe the progress of the world economy since the Great Depression, with a particular focus on:
   - a history of banking crises and irrational behaviour
   - consequences of banking crises.
2. Discuss the banking crisis of 2008, the Great Recession and recovery.

3.7 Discuss the role of money and interest rates in the economy.

1. Describe the function of money.
2. Describe what determines the amount of money in the economy, what causes it to grow and the role of banks in this process.
3. Discuss the concept of the money multiplier in the real world.
6. Explain why central banks play a crucial role in the functioning of economies.

Syllabus objectives

3.8 Discuss the role, structure and stability of the financial system.

1. Describe the functions of the financial sector.
2. Distinguish between the functions of investment funds, banks and insurance companies / pension funds.
3. Describe the different ways banks and insurance companies can be exposed to credit risk and liquidity risks through:
   - bank loans
   - corporate bonds
   - securitisations (which can be owned by the non-bank sector)
   - syndicated loans
   - credit derivatives.
4. Discuss why the banking sector is more likely to be exposed to systemic risk than the non-bank financial sector.
5. Describe how financial innovation could lead to some functions of the banking sector being performed by non-banks.
6. Describe the basic principles on which Islamic finance is based.
7. Describe the features of one Islamic finance product and compare its features to the principles of Islamic finance.

Core Reading

Chapter 18 (Sections 1 and 2)

Chapter 18 (Section 3, up to and including the flow-of-funds equation)

Additional Core Reading

0 Introduction

The additional Core Reading in Section 1 provides an overview of the definition, role and evolution of financial systems.

Section 2 then looks in detail at the financial system, and in particular, the important role played by banks, including the central bank. It discusses the functions of banks, the main one of which is to accept deposits from savers, *ie* to borrow from them, and then to lend the money deposited to borrowers. In doing so, they need to ensure they have sufficient *liquidity* and *capital*, otherwise they can run into problems.

Some of the causes of, and responses to, the financial crisis of 2008 are also covered in Section 2, before the additional Core Reading in Section 3 provides a more general discussion of banking crises.

Section 4 covers the meanings and functions of money, the main one of which is as a means of paying for goods and services.

Section 5 looks at cryptocurrencies; a different type of currency and one that is outside of the traditional banking system.

Finally, Section 6 looks at the process of borrowing and lending by banks and the resulting creation of credit, both in theory and also in the real world.

The material in this module is useful background information for the module that follows. It builds on many of the themes discussed in this one and looks at monetary policy, which is concerned with interest rates and the control of the money supply.

The majority of the additional Core Reading was new material for 2019 (and amended for 2022), however most of what is covered in the textbook also appeared in the Subject CT7 course.

Section 1 starts on the next page so that you can keep all the chapter introductions and syllabus objectives together for revision purposes.

1 The definition, role and evolution of financial systems

This section of additional Core Reading outlines the definition and role of financial systems and their recent evolution. This material was new to the Subject CB2 syllabus in 2019 and has been amended for the 2022 exams.

1.1 The evolution of financial systems

Financial systems continue to evolve over time. The last thirty years, in particular, has seen a major transformation.

This has been facilitated primarily by the enormous increases in computing capacity and capability.

Recent developments in financial systems

The influences of a mature and well-functioning capital market and financial system on the development and growth of an economy has grown substantially. In the UK and other Western economies with deeply developed banking sectors, financial markets and instruments, these changes have included:

- **financial integration**
- **globalisation**
- **deregulation**
- **financial innovation.**

The changes have altered the operation and impact of the financial system on the rest of the economy. Financial integration and globalisation yielded great benefits such as greater productivity, higher liquidity, capital mobility and economic growth. However, these also increased the economies' exposure to systemic risk (problems in the financial system of one country spreading to other countries).

For example, sub-prime lending in the USA also affected banks in many other countries, which led to the global nature of the financial crisis of 2008.

In the aftermath of the financial crisis of 2008, financial systems have seen marked changes in their structure and regulation.

China's financial systems

In emerging market countries such as China and India an important factor in achieving high levels of growth has been the development of these countries' financial systems. For example, China, in its move towards a market-oriented economy has undertaken reforms of its banking sector where the main commercial banks are listed on stock exchanges and play a key role in China's economic growth. These reforms have resulted in China's banking sector becoming one of the world's largest. Development of an efficient banking sector together with developing its financial market and financial instruments will enable it to move towards achieving its economic objectives.

1.2 Functions of a financial system

Some of the topics from this section are covered again in the textbook Core Reading referenced in later sections of this module.

The fundamental economic functions of the financial system are:

- **maturity transformation – enabling borrowers to borrow over long terms whilst savers can access their funds easily**
- **reducing the transactions costs of matching lenders and borrowers so that households can save and firms can borrow without all households having to assess the creditworthiness of borrowers – such tasks can be undertaken by specialist financial institutions (banks whilst making bank loans and other financial institutions investing in securities which provide funds to borrowers)**
- **facilitating money transfers and payments – especially through the banking system**
- **monitoring investments and corporate governance after finance has been provided**
- **risk reduction through diversification – by investing in mutual funds, unit trusts, pension funds and through bank deposits, households can diversify their saving across a very wide range of borrowers in ways which simply would not be possible without a sophisticated financial system**
- **the transfer of different forms of risk to those who wish to hold them and the diversification of insurable risks**
- **the transfer of consumption across time so that households can save for pensions, funerals, *etc*.**

Within the financial system, banks are much more important for providing money transfer functions. Life insurance companies, mutual funds and pension funds are important for risk diversification, the provision of liquidity (in the case of mutual funds) and the transfer of consumption across time. Insurance companies of all types are important for the transfer and diversification of insurable risks.

All financial institutions reduce transactions costs. Without them, the search costs for households looking for a secure place to invest and obtain insurance functions would be enormous and prohibitive for all but the most wealthy.

Question

What functions are the following financial institutions likely to be most important in providing:

(i) banks

(ii) life insurance companies

(iii) general insurance companies

(iv) pension funds

(v) mutual funds?

Solution

(i) Banks provide maturity transformation functions, *eg* from depositors to borrowers, and money transfer facilities, *eg* from one person or institution to another without the need for cash. They also help to reduce transaction costs within these functions.

(ii) Life insurance companies help transfer life-related risks from those who do not wish to hold them to those that do. They facilitate the transfer of consumption (*eg* through annuities) and wealth (*eg* through inheritance) and also help to reduce transaction costs in relation these areas.

(iii) General insurance companies facilitate the transfer of risk from individuals or institutions to those who wish to hold the risks (*ie* the insurance companies). They also help to reduce transaction costs relating to this transfer.

(iv) Pension funds provide risk reduction through diversification of individuals' savings, as well as the transfer of consumption across time and the reduction in transaction costs.

(v) Mutual funds offer investors a liquid investment type and one that will provide diversification (from other investments, and within the mutual fund itself, which might invest in a variety of different asset classes). They also help to reduce transaction costs.

Financial intermediaries

Financial institutions offer a wide range of financial products and services and act as financial intermediaries.

Financial intermediation can be seen as the process through which the savings of households are transformed into physical capital. It can be understood as a chain:

- **At one end of the chain, you have households giving up consumption and thus saving.**
- **They then save these funds through financial institutions or intermediaries such as banks, pension funds and insurance companies. The investment normally takes place through the purchase of financial products.**
- **These institutions then either lend directly to corporations (generally banks) or purchase securities in corporations (normally done by pension funds, insurance companies or mutual funds): thus buying assets which offer a financial return.**
- **Corporations then use the money raised from the issue of securities to invest in capital for their business.**

  This is the physical capital referred to in the initial sentence, and may consist of land, buildings, machinery, *etc.*

- **The returns from capital are then passed back down the chain, through paying returns to the holders of securities (or interest on bank loans) and the institutions that hold securities then pay returns to their savers on their saving products.**

1.3 The financial system and risk

Different financial instruments intermediated through different types of financial institutions distribute risk in different ways within the financial system.

Credit risk: banks

A bank will make a wide variety of loans (auto loans, mortgages, consumer credit loans, small and large business lending and so on). This will expose the bank to credit risk, the materialisation of which will be affected greatly by economic events.

An auto loan is a loan made specifically for the purpose of buying a vehicle. The loan is usually secured, with the vehicle purchased forming the collateral for the loan.

A rise in unemployment, for example, could give rise to losses on consumer credit loans, auto loans and mortgages. These losses may be mitigated by the security that is held by the bank (the value of the house in the case of mortgages). Depositors should not be affected except in extreme cases, because the first losses will be borne by the bank's equity and debt capital holders. However, if a bank loses all its capital because of credit risk materialising then depositors' funds may be endangered.

Liquidity risk: banks

Banks are also subject to liquidity risk because depositors, worried about a bank's solvency (with or without justification), may start to withdraw funds rapidly. In such situations, depositors lose nothing from trying to withdraw their funds first, but may lose access to their money if they wait. In these circumstances, a 'run' on the bank can develop. Because banks cannot call in their loans as quickly as depositors can withdraw their money, the bank might run into liquidity problems.

In 2007 it was reported on news outlets that Northern Rock bank in the UK was facing difficulties and would require central bank support. The next day queues of customers wanting to withdraw their funds were forming outside Northern Rock branches.

Various mechanisms such as deposit insurance and lender of last resort facilities of central banks are designed to reduce the likelihood of bank runs.

These facilities are often designed to give consumers confidence that their money is safe and to prevent them withdrawing it. Unfortunately this was not enough in the case of Northern Rock. Northern Rock was eventually nationalised in February 2008.

Credit and liquidity risk: other institutions and financial instruments

Corporate bonds and securitisations still expose the holders of such instruments to credit risks because the issuer might default. However, there is not really an analogy to the liquidity risk arising in the case of bank deposits because the holders of the instruments bear the risks directly and can sell their bonds in secondary markets if they wish to do so.

The holders of mutual funds also are normally able to access their funds without liquidity risk because mutual funds tend to hold securities that can be sold rapidly on secondary markets.

Credit derivatives and syndicated loans give rise to specific types of credit risk that are based on their particular characteristics and contractual terms.

A credit derivative is designed to transfer the credit risk element of a portfolio or asset between two or more parties. A syndicated loan is a loan jointly provided by two or more banks to one borrower.

Credit derivatives can be based on a general bundle of risks so holders of corporate bonds or a securitisation issue could buy a credit derivative to protect against a general downturn in credit conditions. It will not help protect the holder against the specific risk of the failure of particular creditors however.

Holders of such assets may be able to obtain protection against the failure of particular creditors using various general insurance products.

Systemic risk in the banking sector

There is great concern about the concept of 'systemic risk' in the banking sector. In economic terms, this could be thought of as an externality. If a bank fails, it is not only those who contract with the bank that might suffer.

If Bank XYZ fails, it might not be able to settle payments overnight with Bank ABC. In turn, that bank might fail to settle payments with Bank DEF *etc*. As a result of this, the failure of a substantial bank can bring the whole financial system down rapidly, with the costs reverberating around the economy.

Reducing systemic risk in the banking sector

Regulators might require banks that are particularly large relative to the financial system to hold extra capital so that this does not happen. The downside of this approach is that it can make the system less dynamic because poorly performing banks might never fail because they are required to hold so much capital.

There are various other ways in which the problem of systemic risk might be dealt with:

- **Central banks might use lender of last resort facilities to keep banks going that are illiquid (because payments have not been settled by the failed bank) but fundamentally solvent.**
- **The central bank might encourage other banks to support those banks that are short of liquidity but still solvent**
- **There might be heightened supervision and control of the behaviour of systematically important banks.**
- **The government might try to recapitalise banks.**

  Recapitalisation involves significant changes in the funding structure of a bank. It involves new capital, for example from the government buying shares in the bank. Recapitalisation improves the bank's liquidity and prevents it from going insolvent.
- **Bankruptcy law might be developed so that the bank can fail and be isolated from the rest of the financial system so that the systemic risk is contained and those contracting with the failed bank bear the costs (this would 'internalise' the externality).**

It is this last approach that supervisory authorities have been trying to put in place since the financial crisis. In addition, since the financial crisis of 2007-2008, regulatory authorities have tried to strengthen capital requirements to make a failure less likely.

Since 2008, substantial revisions have been made to the Basel regulations, which apply to banks globally.

Basel is the international regulatory framework for banks.

In many countries, including the UK, banking regulators have introduced more demanding requirements for stress testing, including for a system-wide severe stress scenario.

Systemic risk in insurance

There may be specific situations where systemic risks arise in the insurance industry – for example, if an insurance company is a huge provider of credit risk insurance and is unable to pay out to a bank in the event of a large credit shock.

However, in general, the costs of the failure of an insurance company are borne by those who contract with it. This means that the economic arguments for the regulation of insurance companies are different from those for the regulation of banks, and regulatory regimes should probably be based on different principles. It is not so necessary to regulate insurance companies to deal with the social costs of externalities.

1.4 Innovation in the financial system

Use of the internet

Understanding the fundamental economic functions of the financial sector can help us understand, anticipate and contribute to likely trends in innovation.

For example, if we appreciate the importance of the financial sector in reducing transactions and search costs, we can see that internet platforms might be able to cut out part of the intermediation functions and allow savers to invest in a diversified portfolio of loans through a peer-to-peer lending scheme in which the matching of borrowers to lending is done directly whilst maintaining diversification.

Peer-to-peer lending involves the online matching of lenders and borrowers. Because the companies operate with lower overheads than traditional financial institutions, they can provide their services at more competitive rates. This allows lenders to earn higher returns and borrowers to benefit from lower interest rates on loans. There is a risk that the borrower might default on the loan, but this risk can be diversified by the pooling of a large number of loans and borrowers.

Securitisation

By understanding the economic functions of the financial sector, we can consider how those functions can be performed in radically new ways.

Securitisation, for example, despite it being implicated in the financial crisis, was an innovative way of diversifying credit risk and tapping into much larger pools of capital at lower cost to allow households to save whilst maintaining liquidity. The fundamental functions that banks performed could be performed in a different way, sometimes cutting out the traditional banking functions such as loan monitoring altogether.

Securitisation is covered further in the next section of this module.

Limitations to innovation in financial markets

However, innovation can be difficult in financial markets.

In a market where there is an oligopoly of large incumbents, it is difficult for firms to enter the market and compete effectively. New entrants face structural barriers to entry, because of their limited economies of scale, and may face strategic barriers to entry if the large incumbents offer lower prices for new customers cross-subsidised by higher prices for existing customers.

Low prices for new customers is just one example of a strategic barrier to entry that a bank might erect. Other barriers to entry are described in Module 7.

In each of insurance and banking, there is a relatively small number of large incumbents, and they may form an effective oligopoly in their core markets.

However, over recent years, new entrants have been successful in general insurance and, more recently, in banking. Their entry has been made possible by *disruptive innovation*.

Disruptive innovation in insurance

In motor insurance, Direct Line was established in 1985. As the name suggests, Direct Line enabled consumers to contact it directly, rather than through a broker. By cutting out the broker, Direct Line was able to reduce its costs and to compete effectively with the large incumbents. It also had a business model that enabled it to identify and sell insurance to lower-risk customers. It built up a large share in the UK motor insurance market, and caused much of the industry to adopt its business model.

Disruptive innovation in banking

Until quite recently, there had been very few new banks in the UK. In addition to economies of scale, new entrants faced the structural barrier to entry that many personal and small business customers chose their bank because it had a local branch.

However, with growing use of online banking and reduced use of bank branches, a number of new entrants have established online-only banks. Some of these new banks have been established by firms specialising in the use of financial technology, 'fintech', which are well-placed to apply data science to customer data, including data gathered from other banks through open access data arrangements, and to develop innovative products and services that meet the needs of consumers.

At this stage, it is not clear that new entrant banks will gain significant market shares in the way that Direct Line did in motor insurance. Many large banks recognise the danger of disruptive innovation by new entrant banks, and are responding by enhancing their own systems and by applying data science techniques to their large customer databases. To ensure adequate resources, some large banks have been co-operating with, or have acquired, fintech firms.

1.5 Islamic finance

Islamic finance has grown rapidly in recent years with assets under management being around $2 trillion, growing at around 10 per cent per year. Islamic banking complies with Islamic law (called Sharia), which follows the following principles:

- **prohibits it making 'money from money', generally interpreted as avoiding earning 'interest on money'**
- **it should not cause harm as perceived by Islamic law, so should avoid investing in activities such as alcohol, tobacco and gambling**
- **it encourages the sharing of risk through equity rather than debt instruments.**

An Islamic business financing product would tend to involve the bank taking an equity interest in the business.

In the 1970s, a number of Islamic banks were formed that carried out Sharia-compliant transactions. The number of banks and Islamic institutions has grown since, and Islamic banking is expected to continue to grow in the future.

With an Islamic-compliant mortgage, for example, the bank buys the property and sells it in instalments to the occupier with the occupier paying rent on the part of the property they do not own. The bank makes charges sufficient to cover their costs and their risks of owning all or part of the property.

A mortgage structured in this way means the bank is making money from its investment in property, rather than on lending money.

1.6 Checklist

Task	*√when completed*
Ensure that you can:	
• outline the evolution of:	
– financial systems in Western economies	☐
– financial systems in China	☐
• outline the functions of the financial system, including which institutions are most likely to provide which functions	☐
• describe the chain of financial intermediation	☐
• explain how banks, insurance companies and other institutions are exposed to:	
– credit risk	☐
– liquidity risk	☐
– systemic risk	☐
• outline how systemic risk in the financial system can be reduced	☐
• give examples of innovation in the financial system.	☐

Task	*√when completed*
Continued Ensure that you can:	
• outline why innovation in the financial system is difficult	☐
• give examples of how smaller banks and insurance companies have challenged large firms in innovation	☐
• outline the principles followed by Islamic banking	☐
• outline how a mortgage product might be designed to comply with these principles.	☐

1.7 Questions

Question

Explain why (until recently) very few new banks have set up in the UK and other developed countries.

Solution

Structural barriers to entry such as high start-up costs, capital and regulatory requirements make it difficult for a new bank to enter the market. This can be exacerbated in the banking industry due to many potential customers wanting a local branch and the cost this would involve.

Economies of scale enjoyed by existing banks also make it difficult for new banks to compete.

Strategic barriers to entry might exist too, for example large existing banks can use cross-subsidies (from existing customers to support lower prices for new customers), aggressive tactics (*eg* starting a price war) or impose switching costs (*eg* early repayment charges on mortgages to persuade people to stay with them even if an attractive new bank opens).

Some individuals and firms might continue to stay with their existing bank due to brand loyalty or existing relationships.

2 The financial system

2.1 What's included in this section

- The role of the financial sector
- The banking system
- Deposit taking and lending
- Liquidity, profitability and capital adequacy
- The central bank
- The money markets

2.2 Guidance

This lengthy section describes in detail the typical constituents and main players in a developed financial system, with particular focus on the role of banks, including the central bank. It also:

- covers some of the causes of, and responses to, the financial crisis of 2008. These are revisited later on in the course.
- provides a useful background to understanding monetary policy, which is discussed in Module 15.

The material, which revisits some of the material covered in Section 1 of this module, first covers the main roles of financial institutions, such as banks. Traditionally, banks have made profits by borrowing money from depositors, which they then lend out to borrowers at a higher rate of interest. However, in doing so, they need to ensure they have sufficient:

- *liquidity*, *ie* sufficient cash available to meet their liabilities as they fall due, *eg* when depositors want to withdraw their savings
- *capital*, essentially the surplus of assets over liabilities, to guard against the possibility that their borrowers are unable to repay their loans, resulting in losses to the banks.

In the years leading up to the financial crisis, *securitisation*, *ie* the repackaging and selling on of loans, enabled the banks to increase their lending substantially and hence their profits (see Box 18.3). However, subsequent defaults on these loans, allied with the increased use of wholesale funding (see Box 18.2) and the increased interdependence of the global financial system, were a major cause of the financial crisis of 2008. A key regulatory response to the crisis was to introduce more stringent capital adequacy and liquidity requirements.

In most countries, a key player in the financial system is the central bank, *eg* the Bank of England in the UK. Amongst its many roles, a central bank is typically responsible for regulation of the banking system. Central banks played a key role in the regulatory response to the financial crisis.

Although most of this material appeared in the economics course prior to 2019, it was rarely examined. However, it has been tested on a number of occasions in Subject CB2 exams, which does not come as a surprise given the course has a greater focus on recent economic history than its predecessor.

2.3 Reading

Task	*√when completed*
Read Chapter 18, Section 2	☐

2.4 Checklist

Task	*√when completed*
Ensure that you can:	
• define the following key terms:	
- maturity transformation	☐
- risk transformation	☐
- retail banking	☐
- wholesale banking	☐
- financial instruments	☐
- liabilities	☐
- sight deposits	☐
- time deposits	☐
- certificates of deposit (CDs)	☐
- sale and repurchase agreements (repos)	☐
- liquidity	☐
- maturity gap	☐
- liquidity ratio	☐
- secondary marketing	☐
- securitisation	☐
- special purpose vehicle (SPV)	☐
- collateralised debt obligations (CDOs)	☐
- sub-prime debt	☐
- capital adequacy ratio (CAR)	☐
- open market operations (OMOs)	☐
- quantitative easing (QE)	☐
• describe the five main services provided by financial intermediaries	☐
• outline the roles of retail banks, wholesale banks and building societies	☐
• describe the liabilities and assets of retail banks	☐
• outline the aims of the UK bank levy and how it works	☐
• explain the balance between liquidity and profitability.	☐

Task	*√when completed*
Continued	
Ensure that you can:	
• explain how secondary marketing can reconcile the conflicting objectives of liquidity and profitability	☐
• explain the process of securitisation	☐
• explain what is meant by capital adequacy and why it is important	☐
• explain why securitisation can lead to the problem of moral hazard	☐
• discuss the effects of securitisation	☐
• explain the role of securitisation in the financial crisis of 2008	☐
• describe the main functions of the central bank	☐
• explain the ways in which the central bank can provide liquidity, as necessary, to banks	☐
• explain the role of the Bank of England as 'lender of last resort'	☐
• distinguish between the capital markets and the money markets	☐
• explain the operation of the discount and repo markets.	☐

2.5 Questions

Question

Which of the following are assets of a bank?

I cash
II repos
III mortgages

A I and II only
B I and III only
C II and III only
D I, II and III

Solution

Option B. *Repos* (sale and repurchase agreements) involve a bank selling bonds in return for cash, at the same time agreeing to rebuy the bonds at some future date. They therefore create a financial obligation for the bank and as such are a *liability* of the bank. However, they are an asset of the counterparty, usually the central bank or another bank, which is said to have a *reverse repo* position.

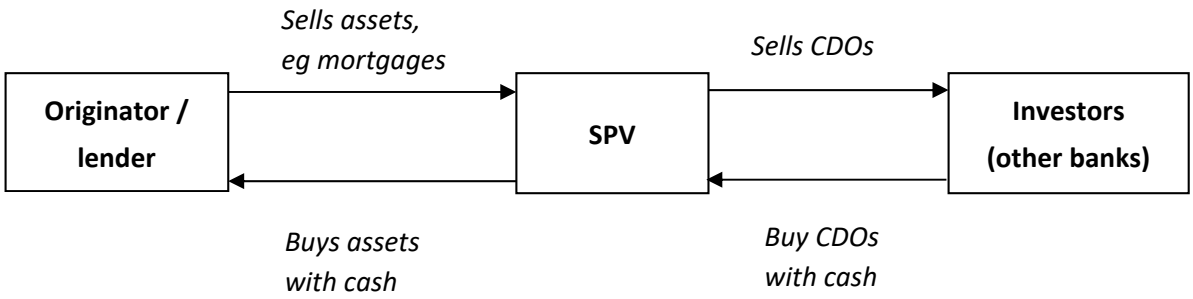
Question

Describe, with the aid of a diagram, the process of securitisation.

Solution

Securitisation is the process of pooling assets, such as loans or mortgages, into marketable securities, such as bonds, backed by these assets. It works as follows:

- A financial institution such as a bank (known as the lender or *originator*) sells some of its assets to an intermediary known as a *special purpose vehicle (SPV)* – a legal entity created by the financial institution for conducting specific financial functions.
- The SPV bundles these assets together and sells them as fixed-income bonds to investors (*eg* other banks). These bonds are known as *collateralised debt obligations (CDOs)* since they are backed by the range of assets bought by the SPV, *eg* corporate bonds, mortgage debt and credit-card debt.
- The SPV receives cash from its investors for its CDO sales and hence provides the original financial institution with cash for its assets.
- The CDOs subsequently provide interest payments for their holders as long as the income received from the underlying assets is sufficient to do so.



Question

Classify the following items into assets and liabilities of the commercial banks:

(a)	sight deposits
(b)	government bonds
(c)	repos
(d)	Treasury bills
(e)	overdrafts
(f)	market loans
(g)	bills of exchange
(h)	time deposits
(i)	reverse repos
(j)	advances to customers
(k)	mortgages
(l)	capital

(i) assets

(ii) liabilities

Solution

(i) ***assets***
(b) government bonds
(d) Treasury bills
(e) overdrafts
(f) market loans
(g) bills of exchange
(i) reverse repos
(j) advances to customers
(k) mortgages

(ii) ***liabilities***
(a) sight deposits
(c) repos
(h) time deposits
(l) capital

Certificates of deposit (CDs) are a liability of the bank that issues them and an asset of the bank that holds them.

Question

Fill in the gaps using the following terms:

collateralised debt obligations (CDOs)
liquidity
maturity gap
profitability
secondary marketing
securitisation
special purpose vehicle (SPV)
sub-prime debt
gearing
co-ordination failure
liabilities

Over the years prior to the 'credit crunch' there was a huge expansion in bank _____ as a result of deregulation and financial innovation. There was also an increase in _____ as banks raised capital by increasing debt rather than equity. This increase in funds allowed an explosion of credit, but banks attempted to increase _____ by decreasing _____ and hence increasing the _____.

One way of reconciling the banks' two conflicting aims was the use of _____ of assets, *ie* the sale of assets before maturity to another institution. The main method for the sale of assets was through the process of _____. This process involved bundling up assets, such as mortgages, and selling them to an intermediary that the bank set up, known as a _____. This intermediary financed the purchase of these assets by the sale of bonds to other financial institutions. These bonds were known as _____.

This process of pooling assets encouraged banks to take greater risks, and many banks reduced their lending criteria, *eg* by granting mortgages to lower-income households and increasing income multiples. These loans were all bundled and re-sold. When there was an increase in the number of defaults on _____, banks that had bought re-packaged debt began to be concerned about their exposure to it. Banks became reluctant to lend and the 'credit crunch' was born.

This situation arose because of _____. Each bank acted independently without foreseeing the consequences for the economy as a whole.

Solution

Over the years prior to the 'credit crunch' there was a huge expansion in bank ***liabilities*** as a result of deregulation and financial innovation. There was also an increase in ***gearing*** as banks raised capital by increasing debt rather than equity. This increase in funds allowed an explosion of credit, but banks attempted to increase ***profitability*** by decreasing ***liquidity*** and hence increasing the ***maturity gap***.

One way of reconciling the banks' two conflicting aims was the use of ***secondary marketing*** of assets, *ie* the sale of assets before maturity to another institution. The main method for the sale of assets was through the process of ***securitisation***. This process involved bundling up assets, such as mortgages, and selling them to an intermediary that the bank set up, known as a ***special purpose vehicle (SPV)***. This intermediary financed the purchase of these assets by the sale of bonds to other financial institutions. These bonds were known as ***collateralised debt obligations (CDOs)***.

This process of pooling assets encouraged banks to take greater risks, and many banks reduced their lending criteria, *eg* by granting mortgages to lower-income households and increasing income multiples. These loans were all bundled and re-sold. When there was an increase in the number of defaults on ***sub-prime debt***, banks that had bought re-packaged debt began to be concerned about their exposure to it. Banks became reluctant to lend and the 'credit crunch' was born.

This situation arose because of ***co-ordination failure***. Each bank acted independently without foreseeing the consequences for the economy as a whole.

3 The history and consequences of banking crises

This section looks at the causes of banking crises, the responses of policymakers when they occur and also one or two wider issues relating to them. This material was new to the Subject CB2 syllabus in 2019 and has been amended for the 2022 exams.

At the time of writing (Winter 2021), the enduring effect of the coronavirus pandemic on both the global economy and financial markets will not be known for some time. The 2020 version of the textbook contains some material relating to the pandemic but this version of the Core Reading does not attempt to fully address these areas.

3.1 History and consequences of banking crises

Economic cycles

Economies have typically shown cycles of growth above and below their long-term trends, with periods of rapid growth and periods of low growth or recession. Periods of rapid growth have often been encouraged by lower interest rates (to encourage growth) and readily-available bank credit, while periods of recession have often been caused by higher interest rates (to combat inflation) and tightening banking credit.

Economic cycles pose a greater challenge for banks than they do for insurance companies. In periods of rapid growth, strong competition can erode banks' margins, while in periods of recession rising unemployment and poor corporate performance can lead to much higher credit losses on bank lending to individuals and businesses. It is prudent for banks to build up their capital in periods of economic growth, so that they can absorb higher credit losses in periods of recession.

This isn't unique to banks nor even financial institutions. It could be argued to apply to some extent to individuals, small firms, large firms, banks, insurance companies and even the government.

Asset bubbles

Economic cycles can be extended, on the upside and subsequently on the downside, by asset bubbles and bank lending. Asset bubbles can be encouraged by excessive bank lending, creating an imbalance between demand and supply and leading to a rapidly-rising price, with both investors and banks expecting the rise in price to continue.

Such expectations cause speculation, which causes further price increases.

When the price of the asset reaches an unrealistic level and buyers are no longer prepared to purchase the asset, the bubble bursts, and the price of the asset falls, often quite sharply. Falling asset prices lead to losses by investors and by the banks that lent to them. If banks become more cautious about lending, their actions can add to recessionary pressures, amplifying the downside.

Asset bubbles are not a new phenomenon. The first major financial bubble was *tulipmania*. In the 17th century, tulip flowers were brought into Holland from Turkey. When the demand for this unusual flower began to increase significantly, investors and speculators kept bidding to buy tulips and pushed prices up so that, at the peak of the market, tulips were more expensive than gold. However, the bubble burst when a buyer failed to collect his purchase and fear spread through the market that others might do the same. So confidence in the market was lost and prices collapsed in a matter of days.

More recent bubbles have included the rise in Wall Street prior to the Crash of 1929, Japanese land prices in the 1980s and the technology or 'dot.com' bubble in 2000.

A feature of asset bubbles is the psychology that develops and feeds the bubble. Previous investors are reluctant to sell in case they miss a further rise in prices. Potential investors rush to buy, worried that they might have to pay higher prices later. Speculators are drawn in by the expectation that prices will continue to rise. These behaviours reflect the emotions of fear and greed in a rapidly rising market.

The Austrian school of economics is relevant to the study of asset bubbles – see Module 2 Section 1.11.

Banking crises

Banking crises occur when a number of banks fail or come very close to failure. In such circumstances, a run on one bank (*ie* customers withdrawing their deposits) can cause customers of other banks to lose confidence in the safety of their deposits and can result in widespread bank failure.

The failure of one bank can have a knock-on impact on other banks with which it is connected – for example, through inter-bank deposits or derivative transactions. The banking sector is more inter-connected than the insurance sector.

For further details on banking failure due to systemic risk see Section 1 of this module.

Asset bubbles can lead to banking crises. When asset prices fall, banks suffer losses if their customers who had invested in the asset are unable to repay their loans in full. Also, banks may themselves have invested in the asset, and suffer losses on their own investments.

In addition, after a bubble in which many banks have participated, the actions of individual banks can make things worse for other banks. For example, if one bank sells the asset at depressed prices, it will lead to larger losses by other banks. Alternatively, if one bank cuts back its lending to protect its capital position, its action can add to recessionary pressures and lead to greater losses on banking lending.

Banking crisis 2007-08

The banking crisis of 2007-08, though it had some novel features, was in fact a classic financial panic following an asset bubble.

Ahead of the banking crisis, the asset bubble was in US house prices. However, when the bubble burst, the problems that arose came not from direct investment in property but from securities based on US mortgages, particularly from collateralised debt obligations (CDOs), complex securities based on sub-prime (*ie* higher risk) mortgage lending in the US.

The volume of such CDOs increased rapidly in the 2000s, with increased supply and demand. On the supply side, US legislation encouraged US banks to support the needs of low- and medium-income neighbourhoods: this encouraged US banks to engage in sub-prime lending. On the demand side, US interest rates had been reduced to low levels after the 'dot.com' bubble burst in 2000.

CDOs based on sub-prime mortgages offered higher interest rates, with the expectation that risk would be reduced by diversification within the pools of sub-prime mortgages. Indeed, this expectation led to senior tranches of CDOs being rated AAA by credit rating agencies.

In the event, the expected benefits of diversification did not materialise. US house prices had risen across the country and, when they fell, they fell by similar amounts across the country. So the correlation between sub-prime loans was higher than had been assumed, and values of CDOs fell sharply.

When the US house price bubble burst, some banks were holders of CDOs, particularly of lower-grade tranches. Because these CDOs were held in banks' trading books, they had to be marked to their market values, meaning that the affected banks suffered substantial losses in 2008.

Memorable events in the banking crisis of 2007-08 include, in the UK, queues forming outside Northern Rock branches in September 2007 as customers sought to withdraw their deposits, prior to Northern Rock being rescued by the UK government and, in the US, employees removing their personal possessions from Lehman Brothers following its failure in October 2018.

The response to banking crises

After the failure of Lehman Brothers, governments in various countries, including the US and the UK, intervened to support their banking systems and to prevent a systemic chain reaction.

Changes to the Basel regulations for banks over recent years have addressed issues that became apparent in the banking crisis of 2007-08. Banks are now required to hold more equity capital (Common Equity Tier 1 (CET1) capital) to absorb losses and to hold sufficient liquidity to cope with outflows during a period of liquidity stress.

An important lesson from the banking crisis is the need to consider system-wide risks as well as bank-specific risks.

Lehman Brothers illustrated the risk of contagion from banks that are 'too big to fail'. Banks that are systemically-important, globally and within individual countries, must now hold additional capital as a systemic risk buffer. In addition, in the EU, all banks must have recovery and resolution plans in place so that, in the event of problems, they can recover if that is possible or, if not, they can fail in an orderly manner, without creating systemic risk.

Regulation and systemic risks in the banking sector were discussed in Section 1 of this module.

3.2 The recent crisis and rationality

Economics is the study of human behaviour and assumes humans make decisions rationally and not based on emotions.

Classic economic theory is based on the idea that individuals are rational. For example, consumers buying goods and services are assumed to maximise utility and investors faced with uncertainty are assumed to maximise expected utility. However, there is an increasing body of empirical evidence suggesting that in practice emotional and psychological factors often influence economic decisions.

Since the crisis of 2008, psycho-analysts have begun to take more note of the behaviour of the participants in the stock market and have discovered human emotions have a critical impact on financial markets.

For example, there is evidence that *group*, or *herd*, *behaviour*, whereby investors copy the behaviour of other investors (whether rational or not) contributes to stock market cycles.

Other explanations for bubbles are based on the management of monetary policy, as discussed in the final paragraph of Module 2, Section 1.11.

The classic economic theory focuses on explaining the way that economic agents behave but it does not concern itself with whether the result is good or bad, moral or ethical. The crisis has generated discussion by focusing attention on ethical issues. For example, the rescue of the major banks by governments has caused the debate about moral hazard and private gain/public loss.

Background reference, for information only:

***The Global Financial Crisis: Lessons Learned and Challenges for Developing Countries*, Edwin M. Truman, Peterson Institute for International Economics, Remarks at the Eighteenth Cycle of Economics Lectures, Banco de Guatemala, June 16, 2009.**

3.3 Checklist

Task	*√when completed*
Ensure that you can:	
• explain what is meant by an asset bubble	☐
• explain how banking crises can arise	☐
• describe the causes of the 2007-08 banking crisis	☐
• outline government's response to the 2007-08 banking crisis	☐
• outline the failings of classic economic theory.	☐

3.4 Questions

Question

Describe the moral hazard issue that arises if, in the event of a financial crisis, the government rescues financially distressed banks.

Solution

Suppose there is a financial crisis and the government rescues financially distressed banks. This will lead the banks to believe that in the event of future financial difficulties, they are again likely to be rescued by the government. Believing this to be the case may encourage the banks to undertake more of the risky lending activities (*eg* to sub-prime borrowers), so increasing the possibility of financial difficulties in the first place. This is because if all goes well and few sub-prime borrowers default on their loans, then the banks are likely to make large profits, whereas if many borrowers default and the banks incur substantial losses, then the government will bail them out and effectively share the losses.

4 The meaning and functions of money

4.1 What's included in this section

- The meaning of money
- The functions of money
- What should count as money?

4.2 Guidance

This section defines money in terms of its key function, which is as a *medium of exchange* that is used to buy goods and services, instead of exchanging goods and services themselves. However, deciding exactly what counts as money isn't entirely straightforward. Consequently, later on in this module, we go on to discuss other definitions of money that are used in practice.

4.3 Reading

Task	***√when completed***
Read Chapter 18, Section 1	☐

4.4 Checklist

Task	***√when completed***
Ensure that you can:	
• define the following key term: - medium of exchange	☐
• describe the four main functions of money	☐
• explain what is meant by money and discuss what might be included in the definition of money.	☐

4.5 Questions

Question

Which of the following are functions of money?

I a means of measuring future payments
II a unit of account
III a means of saving

A I and II
B I and III
C II and III
D I, II and III

Solution

Option D. All three of the above are functions of money.

Remember that:

- a *unit of account* means a way of measuring the value of goods, services and assets
- the fourth and main function of money is as a *medium of exchange*.

Question

Which of the following statements is NOT true?

A Money can be used to compare the values of shares and bonds.

B Only notes and coins are included in the definition of money.

C A medium of exchange is anything that is widely acceptable in exchange for goods and services.

D In the absence of money, people will barter goods and services.

Solution

Option B. There are many different definitions of money. The broader definitions of money include not just notes and coins but also various types of bank accounts and other financial assets.

5 Bitcoin and other cryptocurrencies

5.1 Definition of cryptocurrencies

An example of a form of money outside of the conventional banking system is cryptocurrencies, such as bitcoin.

A cryptocurrency is a digital asset, stored on a computerised database across encrypted networks of computers, which acts as a medium of exchange and so can be used to buy goods and services. There is also a lot of interest in cryptocurrencies by speculators, driving up the volatility of values.

Bitcoin is the biggest and most well-known of the cryptocurrencies and was launched in 2009.

Cryptocurrencies and inflation

Supporters of cryptocurrencies argue that, in addition to their security and anonymity, they are designed in such a way that they will not be systematically prone to inflation in the same way that central bank currencies can be if badly managed. In this respect, they are designed to replicate gold in some ways. In particular, the digital mining of bitcoin is designed to replicate the scarcity that arises in gold mining.

Bitcoin 'mining' is the digital process through which new bitcoin are created. As more bitcoin are created, the mining process becomes increasingly resource intensive. Bitcoin mining today requires significant computing and electrical power.

Inflexibility of cryptocurrencies

However, it is less flexible than gold. If more gold is required for transactions (*eg* if the demand for money increases because national income in countries that use gold increases), gold coinage can be made from newly mined gold in which there can be increased investment. In addition, if there is deflation so that gold is worth more relative to other goods, the demand for gold in other uses should decrease. Bitcoin mimics the inherent scarcity of gold whilst not having this flexibility. This is one factor which makes its price so volatile.

Some have therefore suggested that, whilst cryptocurrencies may well have a future, there will have to be further development of the computer algorithms that determine supply.

If cryptocurrencies do become the norm, it would radically change the functions of the banking system.

Cryptocurrencies and the functions of money

The characteristics of cryptocurrencies can be compared with the functions of traditional forms of money and illustrate how technical innovation can change the financial landscape.

Function of money	Cryptocurrency
Medium of exchange	Yes, but only if acceptable to buyer and seller
Means of storing wealth	Yes, secure storage through encryption
Means of evaluation *ie* unit of account	No, except through the exchange rate with more conventional forms of money
Means of establishing the value of future claims and payments	No

5.2 Checklist

Task	*√when completed*
Ensure that you can:	
• explain what is meant by a cryptocurrency	☐
• discuss the advantages and disadvantages of cryptocurrencies in relation to traditional currency and other assets	☐
• assess cryptocurrencies against the four functions of money.	☐

5.3 Questions

Question

Explain why the prices of cryptocurrencies such as bitcoin are particularly volatile.

Solution

Speculation is a large driver of volatility in cryptocurrency values. Even the most popular cryptocurrencies, such as bitcoin, are rarely used for the purpose of making transactions. Instead the majority of bitcoin transactions are for investment purposes, and this frequent, speculative buying and selling leads to a volatile price.

Volatility is exacerbated by market sentiment. A positive news story or celebrity endorsement relating to a particular cryptocurrency will see a surge in demand for, and hence the price of, that cryptocurrency. For example, the price of bitcoin surged in February 2021 when Elon Musk announced he had invested in the cryptocurrency himself, and that his firm Tesla would soon begin to accept it as payment for its vehicles. Similarly, a negative news story could send prices tumbling.

The inflexibility of cryptocurrencies relative to other non-digital assets (*eg* gold) contribute to price volatility. A bar of gold itself has value and can be used for other purposes, which puts an underpin to its value and so gives it some stability, whereas bitcoin is not backed by anything so there are no constraints on its value.

6 The supply of money

6.1 What's included in this section

- Definitions of the money supply
- The creation of credit: the simplest case
- The creation of credit: the real world
- What causes the money supply to rise?
- The flow-of-funds equation

6.2 Guidance

This section starts by considering the main definitions of money and how they are related via the credit creation process. It is important to understand both the concepts and the calculations underlying this process and to be familiar with:

- the *bank deposits multiplier*, which encapsulates the theoretical relationship between the monetary base and broad money
- the *money multiplier,* which allows for the real-world complications affecting the credit creation process and has a smaller value than the bank deposits multiplier.

Box 18.5 contains a helpful derivation of the money multiplier.

This section also considers the key factors that influence the money supply in practice and which cause it to grow over time. These factors are summarised in the *flow-of-funds equation* and an understanding of them is important if the central bank wishes to control the money supply as part of its monetary policy.

6.3 Reading

Task	***√when completed***
Read Chapter 18, Section 3 (up to and including the subsection on the flow-of-funds equation).	☐

6.4 Checklist

Task	*√when completed*
Ensure that you can:	
• define the following key terms:	
- monetary base	☐
- broad money	☐
- bank deposits multiplier	☐
- money multiplier	☐
- public sector net cash requirement (PSNCR)	☐
• explain the credit creation process in theory	☐
• calculate:	
- the bank deposits multiplier	☐
- the money multiplier	☐
• give reasons why the money multiplier is typically smaller than the bank multiplier	☐
• explain the three complications affecting the credit creation process in practice	☐
• explain the five main causes of changes in the money supply	☐
• state the flow-of-funds equation and discuss how its components influence the money supply.	☐

6.5 Questions

Question

The monetary base is £300 billion and the broad money supply is £1,500 billion. Assuming that the money multiplier and the bank deposits multiplier are equal in value, what is the liquidity ratio of the banking system?

A 5
B 0.5
C 0.33
D 0.2

Solution

Option D. The money multiplier m shows the relationship between the monetary base and the (broad) money supply and can be found as follows:

$$m = \frac{\text{M4}}{\text{monetary base}} = \frac{1500}{300} = 5$$

Assuming the money multiplier and the bank deposits multiplier (b) are equal in value we have:

$$m = b = \frac{1}{L} = 5$$

where L is the banks' liquidity ratio.

Hence $L = 0.2$.

Question

In each of the following cases, explain whether the money supply is likely to increase, decrease or be unaffected:

(a) an increase in the public sector deficit financed by borrowing from the non-bank private sector

(b) a decrease in the non-bank private sector's holdings of cash

(c) an increase in the commercial banks' liquidity ratios

(d) the sale of exports paid for in the domestic currency.

Solution

The money supply will:

(a) be *unaffected* because the public's cash is withdrawn from banks and the government spends it, so it is redeposited in the banking system. Hence there is no overall change in the amount of cash held in the banking system.

(b) *increase* because there will be more cash deposited in banks, rather than being held outside of the banking system, which they can use to create credit

(c) *decrease* because banks hold more in cash and liquid assets, so less can be lent to customers

(d) *increase* because the domestic currency will be deposited in banks and credit can be created on the basis of it.

Question

Show how an injection of £100 of cash into the banking sector can greatly increase the money supply. Assume banks wish to maintain a reserve ratio of 15%.

Solution

Suppose the banking sector has just received an extra £100 cash from a depositor. There is an increase of £100 in the bank's balance sheet. There are extra assets of £100 (the cash) and extra liabilities of £100 (*ie* the liability to pay the depositor £100 if he wants his money back). So, the change in the balance sheet of the banking system is as follows:

Assets		**Liabilities**	
Cash	£100	**Deposits**	£100

Let us suppose that the bank wishes to maintain a reserve (or liquidity) ratio of 15%. It will now be prepared to lend up to £85.

Once the borrowers have actually withdrawn the £85 cash/written a cheque for £85 the bank's balance sheet is as follows:

Assets		**Liabilities**	
Cash	£15	**Deposits**	£100
Loans	£85		

What happens next depends on what we assume.

Let's assume that all of the cash used by the borrowers is spent and finds its way back into the banking system, in the form of new deposits. Then, the change in the balance sheet for the whole banking sector will appear as follows:

Assets		**Liabilities**	
Cash	£100	**Deposits**	£185
Loans	£85		

(Cash and deposits have both increased by £85.)

These extra deposits are used to set up further overdraft facilities. 85% of the extra £85 (£72.25) will be used. Thus, once the overdraft facilities have been used the banks' balance sheet will appear as follows:

Assets		**Liabilities**	
Cash	£27.75	**Deposits**	£185
Loans	£157.25		

The new loans will again be spent and so find their way into the banking system and 85% of the extra £72.25 will then be used to finance further lending.

Thus, we have an increase in the money supply of:

$$£100 \times (1 + (0.85) + (0.85)^2 + (0.85)^3 + ...)$$

So, the total increase in the money supply would, in this case, ultimately be:

$$100 \times \frac{1}{1-(0.85)} = 666.67$$

Recall that the bank deposits multiplier is given by:

$$b = \frac{1}{L}$$

where L is the banks' liquidity ratio.

In this case, $L = 0.15$, so the bank deposits multiplier is equal to:

$$b = \frac{1}{L} = \frac{1}{0.15} = 6.67$$

So, an injection of £100 into the banking sector increases the money supply by a multiple of 6.67 times this, ie £666.67.

If we had made different assumptions, for example, that some of the cash held by borrowers wasn't redeposited into the banking system, then the money multiplier would be smaller and the money supply wouldn't expand by as much.

Module 14 Practice Questions

14.1 A bank's decision to reduce loans and advances to customers and increase its reserve balances at the central bank whilst holdings of other liquid assets are held constant will:

Exam style

A increase the liquidity ratio and increase the maturity gap.
B increase the liquidity ratio and decrease the maturity gap.
C decrease the liquidity ratio and increase the maturity gap.
D decrease the liquidity ratio and decrease the maturity gap. [1½]

14.2 Which of the following is NOT a tool that the Bank of England uses to provide liquidity insurance for the banking system?

Exam style

A discount window facilities
B quantitative easing
C contingent term repo facilities
D index long-term repos [1½]

14.3 Which of the following ratios is the ratio of a company's borrowed capital to shares?

Exam style

A capital adequacy
B gearing
C liquidity
D net stable funding [1½]

14.4 Suppose that a 10,000 increase in monetary base results in a 40,000 increase in M4. If the public hold all their money in bank accounts, then the banks' reserve ratio is equal to:

Exam style

A 0.10
B 0.175
C 0.20
D 0.25 [1½]

14.5 Outline the role of financial instruments, financial markets and financial institutions in a financial system. [3]

Exam style

14.6 (i) List the main functions of the central bank. [3]

Exam style

(ii) Explain the two main ways in which the Bank of England, in its role as lender of last resort, uses the money markets to provide liquidity to the banking system and exercises control over interest rates. [4]

[Total 7]

14.7 Describe the measures that have been (or are in the process of being) introduced to try to reduce the likelihood and the impact of a future financial crisis. [6]

Exam style

14.8 Discuss the effects of securitisation on the banking system. [6]

Exam style

14.9 Define the bank deposits multiplier and the money multiplier and explain why the latter typically has a smaller value than the former. [4]

Exam style

14.10 Assess the following types of asset against the functions of money:

(i) cash

(ii) cryptocurrencies (*eg* bitcoin)

(iii) gold.

Module 14 Solutions

14.1 Option B. A reduction in loans and advances to customers and an increase in the reserve balances at the central bank will increase the bank's holdings of liquid assets and will *increase* the liquidity ratio (liquid assets/total assets).

The average maturity of the bank's loans will decrease, since it will have a smaller proportion of long-term loans (to customers), so the *maturity gap* (the difference in the average maturity of loans and deposits) will *decrease*. [1½]

14.2 Option B. As lender of last resort, the Bank of England uses a variety of methods (such as Options A, C and D) to try to ensure that individual banks and the banking system as a whole has sufficient liquidity to meet customers' demand. Quantitative easing aims to increase the money supply. [1½]

14.3 Option B. This is the definition of gearing from Section 2.

The *capital adequacy ratio* is the ratio of a bank's capital (reserves and shares) to its risk-weighted assets, the *liquidity ratio* is the proportion of a bank's total assets held in liquid form, and the *net stable funding ratio* is the ratio of stable liabilities to assets likely to require funding (*ie* assets where there is a likelihood of default. [1½]

14.4 Option D. The value of the money multiplier, m, is:

$$\frac{\Delta \text{ total money supply}}{\Delta \text{ monetary base}} = 4$$

However, m can also be calculated in terms of the *banks' reserve ratio*, r, as:

$$m = \frac{1+c}{r+c}$$

Since the public hold all their money in banks, *ie* $c = 0$, this is equal to:

$$m = \frac{1}{r}$$

So:

$$r = \frac{1}{m} = \frac{1}{4} = 0.25$$ [1½]

14.5 *Financial instruments* such as shares, bonds and mortgages transfer resources from savers to investors. [1]

Financial markets, where instruments are traded, determine the price of the securities and enable allocation of capital. [1]

Financial institutions offer a wide range of financial products and services and act as financial intermediaries. [1]

[Total 3]

14.6 (i) ***The functions of the central bank***

The central bank has the following functions:

1. it issues notes
2. it acts as banker to the government
3. it acts as banker to the banks
4. it acts as banker to overseas central banks
5. it operates the government's monetary policy
6. it provides liquidity to the banks
6. it oversees (*ie* regulates) the activities of banks and other financial institutions
7. it operates the government's exchange rate policy. [½ each, maximum 3]

(ii) ***The Bank of England and the money markets***

In its role as lender of last resort, the Bank of England can help to provide cash to the banking system in two main ways:

1. sale and repurchase (repo) arrangements
2. rediscounting.

Under repo arrangements, the Bank of England buys government securities (gilts) from the banks with cash, with an agreement to sell them back to the banks at a fixed price at a fixed date in the future. [1]

The repurchase price (and hence the 'repo rate') is determined by the Bank of England to reflect the desired interest rate set by the Monetary Policy Committee (MPC). [1]

Rediscounting occurs when the Bank of England buys back Treasury bills from the banks before maturity (and therefore at a price below the face value). [1]

The price (and therefore the 'rediscount rate') is set by the Bank of England to reflect the MPC's desired interest rate. [1]

[Total 4]

14.7 A number of *measures* have been (or are in the process of being) introduced:

- The *bank levy* on banks' liabilities aims to raise sufficient revenue to cover the fiscal costs of any future support and also to encourage banks to engage in less risky lending. [1]
- *Enhanced capital requirements*, through the capital adequacy ratio (CAR), aim to ensure that each bank has sufficient capital to cover its particular risk portfolio of assets. [1]
- *Macro-prudential regulation* involves assessing the stability of the financial system as a whole in the light of economic conditions ... [1]
- ... and, if necessary, a *counter-cyclical buffer* (an increase in the CAR) can be applied to all banks in order to build up a capital buffer in boom times to draw on in times of recession or financial difficulty. [1]
- Additional capital adequacy requirements have been introduced for *global systematically important banks (G-SIBs)* / *domestic systematically important banks (D-SIBs)*, whose failure could have wide-ranging affects upon the global / domestic financial system. [1]
- A *non-risk-based leverage* ratio has been introduced. This requires financial institutions to operate with a Tier 1 capital-to-asset ratio of 3%, though the assets here are not risk-weighted. [1]
- A *liquidity coverage ratio* was introduced, requiring financial institutions to have high quality liquid assets to cover the expected net cashflow over the next 30 days. [1]
- A minimum *net stable funding ratio* is to be introduced. This is the ratio of stable liabilities to assets likely to require funding and is to be set at a minimum of 100% for banks. [1]

[Maximum 6]

14.8 Securitisation enables banks to manage their exposure to default risk (by selling on risky assets)… [½]

.. and also to reduce liquidity risk (by selling illiquid assets for cash). [1]

This may enable them to operate on a lower liquidity ratio and an increased maturity gap, so increasing profitability. [1]

Securitisation also enables banks to grow. By allowing the sale of assets for cash, it provides banks with liquidity and enables them to engage in further lending, so increasing profitability. [1]

In addition, by allowing the pooling of assets, securitisation reduces the cashflow risk for investors and therefore encourages financial investment. [1]

However, by causing a lower average liquidity ratio throughout the banking system, securitisation might lead to an excessive expansion of credit. [1]

Also, a *moral hazard* problem occurs, in that banks might be tempted to take greater risks in their lending, *eg* by making it easier for higher-risk borrowers to borrow, because the risks are being passed on to other financial institutions. [1]

Of particular concern is the increased systemic risk of banking collapse because the fortunes of the banks become even more intertwined. Ultimately, many financial institutions may end up being exposed to the risk of the original bank's lending policy. [1]

This form of market failure, called *co-ordination failure*, occurs when a group of firms, *eg* banks, act independently without foreseeing the consequences, when a more desirable outcome could have been achieved if they had co-ordinated their decision making. [1]

[Maximum 6]

14.9 The *bank deposits multiplier* is defined as the number of times greater the expansion of deposits is than the additional liquidity that caused it. [1]

The *money multiplier* is defined as the number of times greater the expansion of the money supply is than the expansion of the monetary base that caused it. [1]

The money multiplier typically has a smaller value than the bank deposits multiplier because:

- Firms and households may hold cash outside of the banking system. Consequently, this cash isn't redeposited in the banking system and so cannot be used as a basis for further lending. [1]
- Firms and households may wish to borrow less than banks wish to lend. [1]

[Total 4]

14.10

Function of money	**Cash**	**Cryptocurrency, *eg* bitcoin**	**Gold**
Medium of exchange	Yes	Yes	Yes
Means of storing wealth	Yes	Yes	Yes
Means of evaluation *ie* unit of account	Yes	No	No
Means of establishing the value of future claims and payments	Yes	No	No

Solution

Option B. A key argument against the single currency is that the countries that use the euro lose the ability to have an independent monetary policy tailored to their own economic circumstances and problems. For example, as the economies of Germany and Greece are very different, the monetary policy that is suitable for Germany may be very unsuitable for Greece and vice versa.

Question

Outline the five convergence criteria that countries had to meet in order to adopt the euro.

Solution

1. *Inflation* should be no more than 1.5% *pa* above the average of the three EU countries with the lowest inflation rates.

2. *Interest rates* on long-term government bonds should be no more than 2% *pa* above the average of the three EU countries with the lowest inflation rates.

3. The *budget deficit* should be no more than 3% of GDP at market prices.

4. The *national debt* should be no more than 60% of GDP at market prices.

5. The *exchange rate* should have been within the normal ERM bands for at least two years, with no realignments or excessive government intervention.

3 Multinational insurance business

This short section of additional Core Reading describes how an insurance company might operate across multiple countries and the factors it might consider when doing so.

3.1 Multinational insurance business

Many insurance companies operate a multinational business model, insuring global risks and writing business across many countries and regulatory jurisdictions, and also servicing business by taking advantage of lower costs or greater efficiency of labour and capital across a range of countries.

Such business models can be designed in a variety of different ways, including the following:

- **outsourcing specific functions, such as policy servicing and administration, to international offices or subsidiaries, or to other international businesses that have specialist skills or can obtain economies of scale in the activity**
- **setting up local branches or partnering with local businesses to sell business into international markets**
- **establishing separately capitalised subsidiaries to sell business in other countries – the development of such a business model might involve the purchase of a business that is established overseas.**

The particular approach that is taken will depend on relative costs, efficiency and effectiveness of international business partners, as well as the culture, regulatory regime and legal framework in countries in which the financial services company is operating.

The European Union, for example, has encouraged international diversification within the EU via branches (*ie* the second option)**. However, if the regulatory regime in a country in which it is desired to expand is totally different from that in the home country, it may be preferable (or even required) to establish a subsidiary** (*ie* the third option)**.**

3.2 Checklist

Task	***√when completed***
Ensure that you can:	
• outline three possible multinational business models adopted by insurance companies	☐
• list the factors to consider when selecting an international business model.	☐

Solution X1.36

(a) ***What is meant by third-degree price discrimination***

Third-degree price discrimination is where a firm divides consumers into different groups based on some characteristic that is relatively easy to observe … [½]

… and informative about how much consumers are willing to pay. [½]

The firm then charges a different price to each group of consumers, ... [½]

... though all the consumers within a particular group pay the same price. [½]

(b) ***The conditions under which third-degree price discrimination might operate***

The conditions necessary for price discrimination are:

- the firm must have control over its prices [½]
- the different groups must be separable, *ie* it must not be possible to resell in a higher-priced market [½]
- the price-elasticity of demand must differ for each group. [½]

(c) ***How price and output levels are determined under third-degree price discrimination***

The firm will determine its total output level by equating its overall marginal revenue and marginal cost … [½]

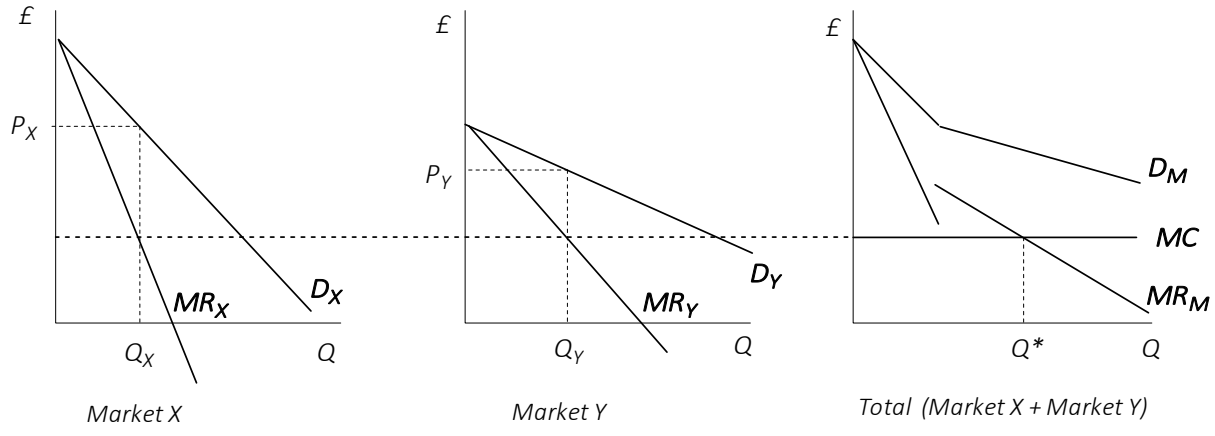
... and it will determine how much to sell in each market by setting marginal revenue equal to the marginal cost in each market separately. [½]

The price charged in each market is then determined by its respective demand curve. [½]

A higher price will be charged where demand is less elastic. [½]

[Maximum 4]

This is illustrated by the following diagrams, which are not required to score credit:



Solution X1.37

New question – please use the 2022 version of the solutions.

Solution X1.38 (was X1.37)

Markers: There are many possible responses to this question. Please reward any sensible answers.

(i) ***An increase in interest rates***

An increase in interest rates would raise the cost of borrowing, including mortgages. [½]

So, the effective cost of house purchases funded by mortgages would increase, making them less affordable, … [½]

… leading to a reduction in the demand for house purchases. [½]

At the same time, those house builders who are borrowing to finance builds would find that their overall costs increase. [½]

This increase in costs would lead to a fall in the supply of new homes. [½]

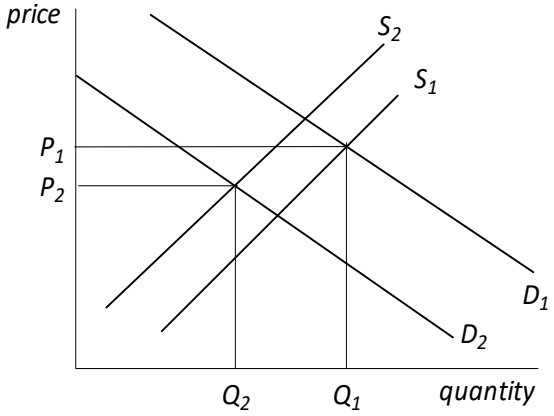
Finally, a large increase in interest rates could result in some existing homeowners defaulting on their mortgage payments, … [½]

… resulting in forced sales of existing properties and hence an increase in supply. [½]

If both the demand and supply of new homes reduce, there will be an overall reduction in the equilibrium quantity of properties traded in the market. However, the equilibrium price could either rise or fall, depending on the relative sizes of the shifts in demand and supply. [½]

[Maximum 3]

This is illustrated by the following diagram, which is not required to score credit:



(ii) ***An expected rise in house prices***

An expected rise in house prices in the *future* would be likely to increase *current* demand for house purchases, … [½]

… as people try to buy ahead of the anticipated price rise. [½]

This will be the case for both owner occupiers and investors. [½]

At the same time, house builders, current homeowners and property investors may limit the supply of housing onto the market with a view to instead selling later at a higher price, thereby increasing their profits in future. [½]

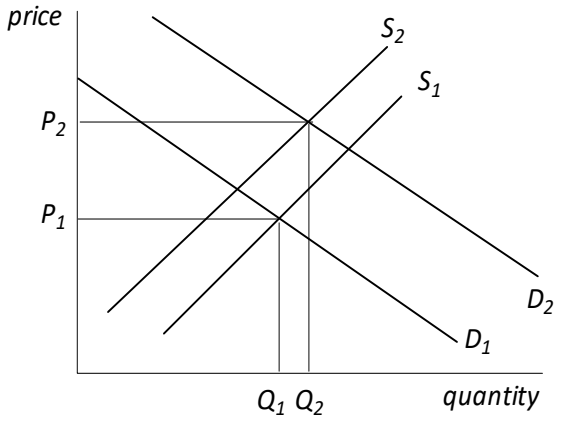
So, the supply of houses will reduce. [½]

An increase in demand combined with a decrease in supply will increase prices. [½]

However, the effect on the quantity traded would be dependent on the magnitude of the shifts in supply and demand. [½]

[Maximum 3]

This is illustrated by the following diagram, which is not required to score credit:



(iii) ***An increase in the rate of taxation for house builders***

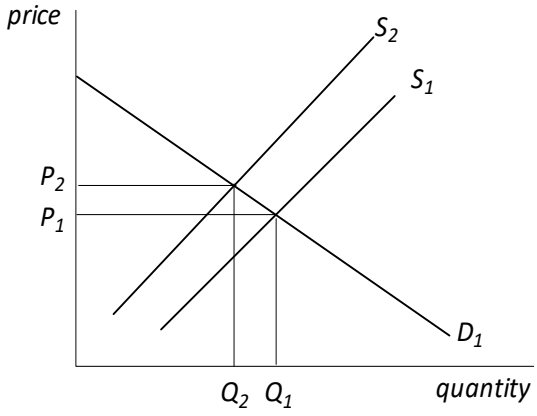
An increase in taxes for house builders would increase their costs. [½]

So, the supply of housing will reduce. [½]

As a result of the tax increase, the prices of new houses in particular, and houses in general, would increase, and the quantity of houses traded would fall. [1]

[Total 2]

This is illustrated by the following diagram, which is not required to score credit:



(iv) ***An appreciation of the domestic currency***

An appreciation of the domestic currency will make it relatively more expensive for overseas buyers to purchase holiday houses in the domestic market. [½]

So the demand for this type of housing may decrease. [½]

Domestic buyers will be able to get relatively more for their money than before the appreciation when buying holiday / retirement property abroad, which may increase the supply of domestic holiday houses. [½]

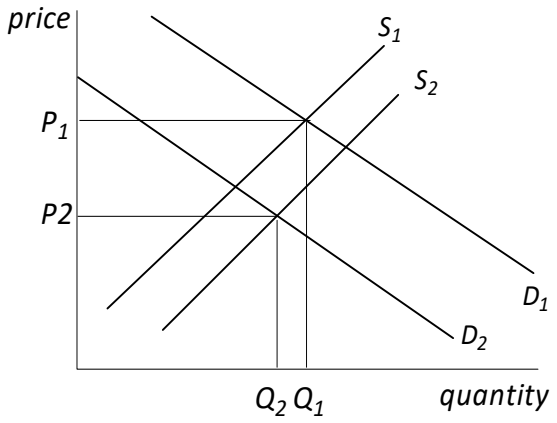
However, properties are long-term assets and the change in demand and/or supply is unlikely to be significant unless the appreciation is expected to be permanent and/or a sign of further appreciations. [½]

Property investors will be relatively unaffected by the appreciation because although domestic properties will now be relatively more expensive, the rental income earned on these properties will also be worth relatively more when converted into the foreign currency. [½]

The overall effect of lower demand and higher supply will be to decrease prices. The effect on the equilibrium quantity traded will depend on the relative changes in demand and supply. [½]

[Maximum 2]

This is illustrated on the following diagram, which is not required to score credit:



Solution X1.39

Markers, please reward genuine comparisons, rather than two separate lists.

Competitive conditions

Both perfect competition and monopolistic competition are characterised by:

- a large number of small firms [½]
- free entry and exit into the industry. [½]

Profit maximisation

In both cases, firms are assumed to maximise profits, and thus set their equilibrium level of output such that marginal revenue equals marginal cost. [1]

Profit in the long run

Normal profit is the amount of profit that could have been earned in the next best alternative business. It is counted as a cost of production. [1]

The assumption of free entry and exit of firms means that firms in both structures will make normal profits in the long run, ... [½]

... *ie* they produce at the level of output where their total revenue equals their total costs (including the normal profits). [½]

Profit in the short run

As it takes time to enter / leave a market, it is possible for both perfectly and monopolistically competitive firms to make losses, normal profits or supernormal profits in the short run. [1]

Shape of the demand curve

Perfect competition is distinguished from monopolistic competition by the additional assumptions that consumers have perfect information … [½]

… and that consumers behave rationally. [½]

Firms in perfect competition produce a homogeneous product, whereas those in monopolistic competition can differentiate their products from those of their competitors. [½]

Under these assumptions, if one firm in a perfectly competitive market is trying to sell its output at a higher price than all other firms, it will lose all its customers. [½]

The implication of this is that an individual firm can sell as much output as it likes at the market price, but none at all above that price. [½]

Thus firms are *price takers* and face a horizontal demand curve. [½]

In monopolistic competition, the output of firms is differentiated in some way. [½]

This gives firms some ability to affect the price that they charge, because they will not lose all their customers if they raise their prices. [½]

Firms in this type of industry are *price makers* and face a downward-sloping demand curve. [½]

Average cost

In the long run, firms in perfect competition produce at the lowest point on their average cost curve. [½]

However, in monopolistic competition, firms produce to the left of the lowest point on their average cost curve (so they have *excess capacity*). [½]

Therefore, assuming they have the same cost curves, firms under monopolistic competition sell a lower output at a higher price than firms under perfect competition. [1]

Social optimum

Finally, as price equals marginal cost in equilibrium for a perfect competitively firm, it produces at the socially optimal output level, ... [½]

... whereas under monopolistic competition, the equilibrium is such that price is above marginal cost, and the firm therefore produces less than the socially optimal output level. [½]

[Maximum 10]

Solution X2.35

A *financial intermediary* is a financial institution, *eg* a bank or building society, that acts as a means of channelling funds from lenders/depositors to borrowers. [1]

The main services provided by financial intermediaries include:

- providing *expert advice* to customers, on the best ways to save money and also how best to borrow it, … [1]

  … in particular enabling the transfer of consumption across time, *eg* so that households can save for pensions and funerals [1]

- using their *expertise to channel funds* to investments with the highest returns relative to the risk involved, so ensuring the most efficient use of investment funds [1]

- *maturity transformation*, *ie* borrowing funds from savers in the form of short-term deposits and lending the money to borrowers on a long-term basis, *eg* via mortgages and personal loans; … [1]

  … this matching of lenders and borrowers removes the need for all lenders (households) to access the creditworthiness of borrowers and so reduces transaction costs [1]

- *risk transformation*, *ie* by lending to a large number of borrowers, they are able to spread the risk of default [1]

- the *transmission of funds*, *ie* they provide alternative means of making payments, such as internet banking and credit cards. [1]

[Maximum 5]

Solution X2.36

(i) ***Why pollution causes a misallocation of resources***

In the diagram:

- *MPC* represents the *marginal private costs* of production, and is the supply curve for the industry [½]

- *MSC* represents the *marginal social costs* of production, which includes the effects of production on third parties who are not directly involved in the transaction (*ie* external costs and benefits) [½]

- MEC_P represents the *marginal external costs of production*, in this case the pollution created by the production process [½]

- *D = MPB* represents the *marginal private benefits* of consumption, and is the demand curve for the industry, … [½]

  … and assuming no external costs and benefits of consumption, this is equal to the *marginal social benefits* of consumption (*MSB*). [½]

In a free market, firms aim to maximise profits by considering their private costs and their private revenues, *ie* they do not consider the effects of their production on third parties. [½]

Assuming a perfectly competitive market, the free-market equilibrium occurs where supply (*MPC*) is equal to demand, *ie* Q_F. [½]

However, if the industry's production causes pollution, this imposes costs on society, … [½]

… *eg* air pollution causes respiratory illnesses and hence distress and health costs. [½]

When these external costs of production (MEC_P) are added to the private costs of production, we can see that the marginal *social* cost of production (*MSC*) exceeds the marginal *private* cost of production (*MPC*). [½]

The socially optimal output level, at which the marginal social benefit (*MSB*) is equal to the marginal social cost (*MSC*), is therefore equal to Q_S … [½]

... and so the free market results in overproduction of $Q_F - Q_S$ … [½]

… and a consequent loss of social welfare equal to the shaded area on the diagram. [½]

[Maximum 5]

(ii) ***Comparing taxes and legislation as a means of correcting market failure***

Markers, please reward direct comparisons more highly than a separate analysis of each policy.

Taxation is a market-based solution that internalises the externality ... [½]

... to ensure that the polluter pays for the external costs. [½]

If $MSC > MPC$, an indirect 'Pigouvian' tax (*ie* one that is equal to the marginal external cost at the social optimum) is imposed, to bring the private cost up to the social cost. [½]

The tax increases private costs so that the profit-maximising output becomes the social optimum Q_S. [½]

Legislation is a more traditional way of dealing with environmental problems. Laws can:

- *prohibit* certain products or processes, *eg* the use of single-use plastic containers and bottles [½]
- *restrict* behaviour, *eg* by setting standards (*eg* maximum emission levels) and imposing punishments on firms that do not meet these standards [½]
- *regulate* behaviour, *eg* by setting up regulatory bodies to investigate cases of pollution, to report on their findings and recommend action. [½]

The advantages of taxation over legislation include the following:

1. Taxation policy works within the market mechanism, whereas restrictions replace the market to some extent. [½]

   Firms are therefore still free to make their own decisions when taxation is used. [½]

2. If the tax is equal to the marginal external cost, the result is the socially optimal level of output. [½]

This may be more difficult to achieve via legislation. [½]

3. Taxation provides incentives to introduce cleaner technology and reduce pollution whereas restrictions do not. [½]

   For example, a company will pay less in carbon tax, if it lowers its emissions of carbon dioxide by using cleaner processes and fuels. On the other hand, if legislation sets a 'safe' maximum for emissions, there is no incentive to reduce them below this. [½]

4. Taxation has an immediate effect on costs and so firms are likely to change their behaviour quite quickly, ... [½]

   ... whereas some firms might resist legal changes if they feel (a) they will not be caught and (b) the fines are manageable. [½]

   This means that an efficient regulatory system must lots of inspectors who make unexpected visits and impose large fines. [½]

5. Taxes (net of administrative expenses) earn revenue for the government, ... [½]

   ... which could be used to subsidise 'green' energy ... [½]

   ... whereas regulatory systems involving inspections can be expensive to operate (though they can earn revenue from fines). [½]

The advantages of legislation over taxation include the following:

1. Restrictions are simple, clear and easy to administer, whereas taxation can be complex. [½]

2. Restrictions, especially prohibitions, are safer than taxation when the danger is great, *eg* the use of asbestos. [½]

3. Restrictions can be quickly implemented in the case of an emergency, whereas it would take time for firms to respond to changes in taxation. [½]

4. Restrictions do not require the precise measurement of the external costs of production, whereas this is essential if taxation is to work efficiently. [½]

Ideally, a policy should distinguish between different firms and different pollution problems. Both taxation and regulation go some way towards achieving this. [½]

For example, taxes can be higher on more polluting products or processes, *eg* diesel *vs* petrol ... [½]

... and similarly, regulatory bodies that adopt a case-by-case approach can adopt the most appropriate remedy for each firm. [½]

However, under the taxation system, it is sometimes impractical and sometimes impossible to determine appropriate rates for each firm ... [½]

... and likewise, it is expensive to provide a regulatory system that can cope with the different requirements of each firm. [½]

In conclusion, we can see that both taxation and legislation have their merits. It seems inevitable that both will play their part in pollution policy. [½]

[Maximum 10]

(ii) ***The change in the real exchange rate index***

Using the formula, the new value of the *RERI* can be found as:

$$RERI = NERI \times \frac{P_X}{P_M} = 90 \times \frac{120}{80} = 135$$ [½]

Therefore the real exchange rate index has increased by 35%. [½]

Solution X3.35 (was X3.36)

The *international trade multiplier* refers to the effect on the national income of Country Y of a change in exports (or imports) of Country X. [1]

For example, suppose the USA adopts an expansionary fiscal policy in order to increase domestic national income and employment. The resultant increase in the demand for imports will increase the exports from other countries that trade with the USA, thereby increasing national income and employment in those countries. [1]

The key influence on the value of the international multiplier is the openness of a country's economy to international trade. [½]

More specifically it will be highest for those countries for whom exports represent a high percentage of national income. [½]

[Total 3]

Solution X3.36 (was X3.37)

(i)(a) ***Effect of an increase in the demand for exports using the IS-MP model***

An increase in exports raises aggregate demand … [½]

… which shifts the *IS* curve to the right, … [½]

… and increases real national income. [½]

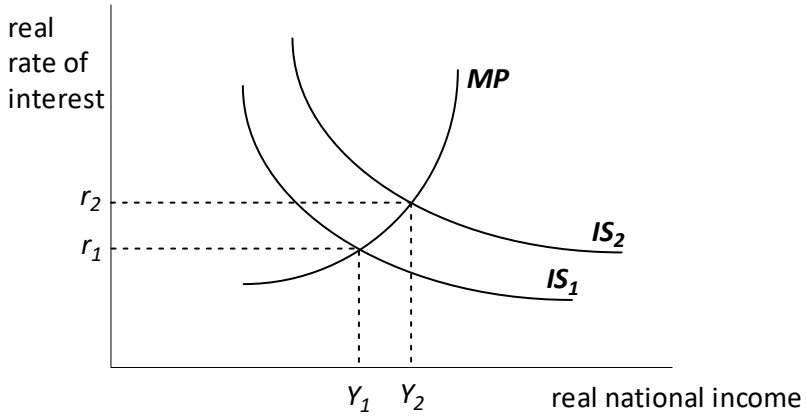
The increase in real national income leads to an increase in the inflation rate, so the central bank raises interest rates … [½]

… to curb inflationary pressures and meet the inflation target, … [½]

… *ie* there is a movement along the *MP* curve. [½]

[Maximum 2]

This is illustrated by the following diagram, which is not required to score credit:



(i)(b) ***Effect of a loosening of monetary policy using the IS-MP model***

A looser monetary policy means that the central bank sets a lower interest rate for any given level of real national income and rate of inflation, … [½]

… which shifts the *MP* curve to the right, … [½]

… and interest rates fall. [½]

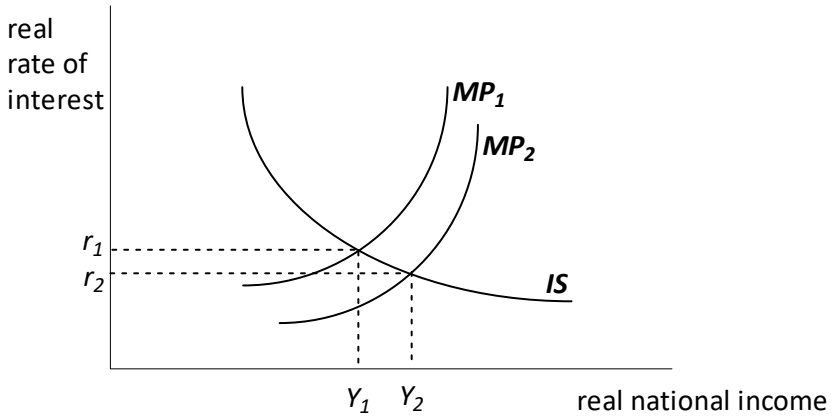
In response to the lower interest rates, there is a greater incentive to borrow, so consumption and investment increase, … [½]

… thus increasing aggregate demand and real national income, … [½]

… *ie* there is a movement along the *IS* curve. [½]

[Maximum 2]

This is illustrated by the following diagram, which is not required to score credit:



(ii)(a) ***Effect of an increase in the money supply using the extended IS-LM model***

An increase in the money supply will lead to an excess supply of money and hence a fall in the interest rate. [½]

The *LM* curve will therefore shift to the right. [½]

The direct effect of the fall in interest rates on the *domestic* economy will be an increase in consumption and investment, leading to an increase in aggregate demand and hence real national income. [½]

Remember that any change in the goods market due to a ***change in the interest rate*** *results in a* ***movement along the IS curve****.*

However, in an *open economy*, the reduction in interest rates will also lead to a depreciation of the currency … [½]

… which results in:

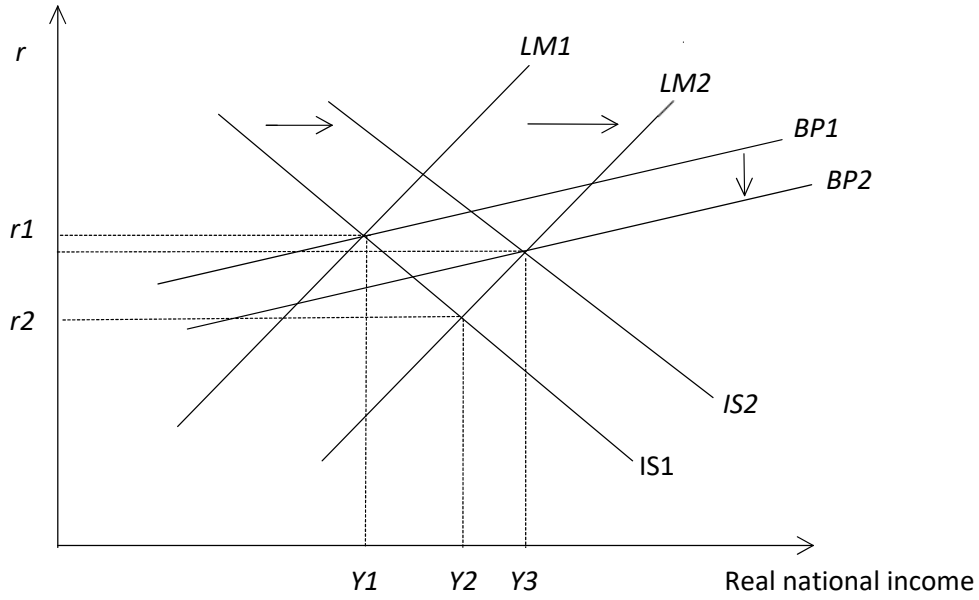
- the *BP* curve shifting downwards [½]
- net exports increasing, … [½]

  … which further increases aggregate demand, thereby shifting the *IS* curve to the right. [½]

In other words, the effect of an expansionary monetary policy on real national income is *reinforced* by the fall in the exchange rate, which further increases real national income. [1]

[Maximum 3]

This is illustrated by the following diagram, which is not required to score credit:



(ii)(b) ***Effect of an increase in taxation using the extended IS-LM model***

An increase in taxation will reduce consumer and investment spending in the economy and so aggregate demand and real national income will fall. [½]

The *IS* curve will therefore shift to the left. [½]

The direct effect of the fall in real national income on the goods market will be a decrease in the demand for money, leading to a decrease in the interest rate. [½]

Remember that any change in the money market due to a ***change in real national income*** *results in a* ***movement along the LM curve****.*

The reduction in interest rates will lead to a depreciation of the currency … [½]

… which results in:

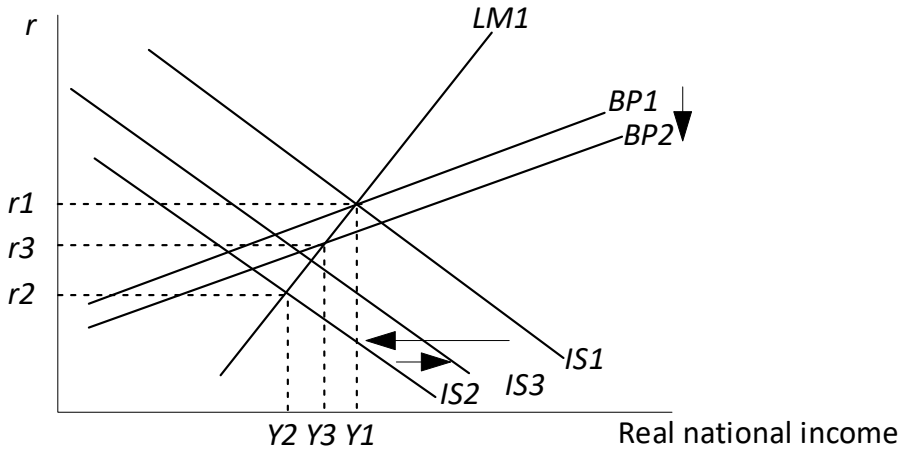
- the *BP* curve shifting downwards [½]
- net exports increasing, … [½]

  … which increases aggregate demand, thereby shifting the *IS* curve back to the right. [½]

In other words, the effect of a contractionary fiscal policy on real national income is *reduced* by the fall in the exchange rate, which limits the fall in real national income. [1]

[Maximum 3]

This is illustrated by the following diagram, which is not required to score credit:



Solution X3.37 (was X3.38)

Markers: This question draws on many aspects of the course, hence the large number of potential marks.

The government has two main objectives, regarding economic growth (ie the growth of real national output):

1. *to ensure that actual output is equal to potential output*
2. *to increase the potential output of the economy.*

Policies to ensure that actual output is equal to potential output [½]

Governments may use demand-management policies to try to ensure that aggregate demand is sufficient to keep all firms operating at normal capacity utilisation at all times. [½]

This *fine-tuning* policy aims to smooth out the economic cycle, minimising booms and slumps. [½]

The stability offered by such a policy gives businesses confidence to invest, and therefore contributes to an increase in potential output too. [½]

Some economists argue that such policies may not always work; and if they don't, they can be destabilising rather than stabilising. [½]

Others argue that businesses thrive when they are left alone to cope with the market economy, and that government intervention weakens market forces and encourages inefficiency. [½]

[Maximum 2]

Policies to increase potential output [½]

Growth in potential output derives from increases and/or improvements in the quantity and quality of the factors of production and in the efficiency with which they are used. [½]

Governments may introduce *interventionist policies* (*ie* those that replace or regulate the market) or *market-orientated policies* (*ie* those that remove or reduce restrictions on the free working of markets). [½]

[Maximum 1]

1. *Capital*

The government could increase its own investment, *eg* in new roads or hospitals. [½]

This might *pump prime* the economy, *ie* encourage businesses to invest in new capital equipment. [½]

Alternatively, it could seek to encourage private sector investment by ensuring that economic conditions are conducive to new investment by firms. [½]

Firms will invest if they expect high levels of demand for their products and high levels of profit. [½]

Business confidence can usually be increased by a record of stable growth and sensible macroeconomic policies. [½]

A policy of low real interest rates will encourage investment since, at a lower cost of capital, a greater number of potential new projects will appear to be profitable. [½]

Tax relief and subsidies for investment expenditure could also be used to encourage investment by firms. [½]

Over the long term, savings will need to increase to finance this increase in investment, so governments might wish to encourage savings by, for example, offering tax-free savings schemes. [½]

Reductions in the taxation of profit will enable firms to plough back more profit into investment and encourage further investment. [½]

Policies that reduce the power of labour and increase the flexibility of labour markets, such as short-term contracts and restrictions on the powers of trade unions, ... [½]

... could also increase profitability and business confidence and hence increase investment. [½]

[Maximum 3]

Technological improvements will increase the marginal productivity of *capital*. [½]

Much new investment will incorporate technological advances and therefore increase both the quantity and the quality of the capital stock. [½]

In order to encourage research and development (R&D), the government could:

- provide R&D itself through its research institutions or via funding to universities and other research councils [½]
- offer tax breaks and subsidies to private firms to carry out R&D [½]
- strengthen the patent system so that firms will benefit more from R&D [½]

- encourage the diffusion of R&D by providing information or subsidies to adopt new technology. [½]

[Maximum 1]

2. *Labour*

The quantity of labour in an economy can be increased via increases in:

- the *population* – *eg* by offering incentives to have children or by attractive relocation packages for immigrants [½]
- the proportion of the population that is employed, *eg* by improvements to childcare facilities or by increasing the retirement age [½]
- working hours, *eg* by reducing income tax rates or making a pension conditional on working a 40-hour week. [½]

[Maximum 1]

In addition, investment in *human capital* increases the effectiveness of the physical stock of capital, and contributes to technological progress and spillover effects as ideas are spread and developed. [½]

Government investment in education, training and better health services can improve the quality of the labour force. [½]

The government could also encourage private industry to undertake more training. For example, it could provide subsidies for training or it could work in partnership with industry and unions to provide industry-wide training programmes. [½]

[Maximum 1]

3. *Land and raw materials*

The overall quantity of land available is usually fixed, though there has been some reclamation of land from the sea, *eg* in Holland. [½]

In order to increase the supply of raw materials, the government could offer subsidies and/or tax breaks to encourage the exploration for, and mining of, natural resources. [½]

The quality of *land* can be improved, by, for example, using fertilisers to increase the yield from agricultural land and/or by constructing taller buildings. [½]

[Maximum 1]

4. *Efficiency*

Efficiency could be further improved by:

- promoting freer world trade and reducing protectionism [½]
- restricting anti-competitive practices and encouraging competition [½]
- encouraging economic activity, by, for example, lower marginal tax rates. [½]

[Maximum 1]

[Maximum 10]

