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# Introduction

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## Introduction to the subject area

Every day people make decisions that belong within the realm of economics. What to buy? What to make and sell? How many hours to work? We have all participated in the economy as consumers, many of us as workers, some of us also as producers. We have paid taxes. We have saved our earnings in a bank account. All of these activities (and many more) belong to the realm of economics. Households and firms are the basic units of an economy and are concerned with the economic problem: how best to satisfy unlimited wants using the limited resources that are available? As such, economics is the study of how society uses its scarce resources. Its aim is to provide insight into the processes governing the production, distribution and consumption of goods and services in an exchange economy.

The previous paragraph could be taken to imply that the 'realm of economics' is limited and clearly defined. However, if economics is viewed as a way of thinking, or a set of tools that can be used to analyse human behaviour and the world around us, then you will find that the principles of economics can be applied to many different areas of life. The scope is thus very broad, but the principles of analysis are well defined and these are what you will become familiar with through undertaking this course. Although the course provides some information that is descriptive, such as how the banking system works, for example, its main focus is on introducing models and concepts which are used as tools of economic analysis. Concepts such as opportunity cost and approaches such as marginal analysis can be widely applied and prove very useful in understanding various aspects of society and people's lives.

Studying economics doesn't just impart knowledge; it also develops skills such as logical and analytical thinking and problem-solving skills, which are useful beyond the formal study of economics. For some of you, economics is not the main area of study, and you may not be intending to pursue a career as an economist. However, we are sure that an understanding of basic economic concepts will still prove useful to you in whatever direction your studies and subsequent career may take.

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## Aims of the course

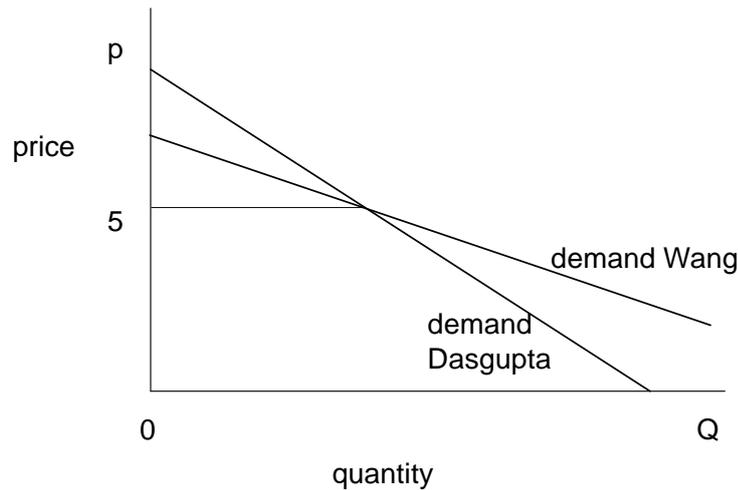
The course aims to:

- introduce you to an understanding of the domain of economics as a social theory
- introduce you to the main analytical tools which are used in economic analysis
- introduce you to the main conclusions derived from economic analysis and to develop your understanding of their organisational and policy implications
- enable you to participate in debates on economic matters.

Section A: Answer all questions.  
Choose the correct answer, no explanation needed.

Multiple choice question 1: (4 marks)

The figure shows the demand curves of the Wang household and the Dasgupta household. The price of the good is £5. Which statement **is** correct?



Multiple choice question 1

- (a) The elasticity of demand is the change in the quantity demanded divided by the change in the price.
- (b) The elasticity of demand is the percentage change in the quantity demanded multiplied by the percentage change in price.
- (c) The Wangs' demand for the good increases by more than the Dasguptas' demand if the price of the good falls from £5 to £4.
- (d) If the price falls from £5 to £4 then the increase in the total amount spent on the good by the Wangs is less than the increase in the total amount spent by on the good by the Dasguptas.

*(c) is correct. See BVFD chapter 4 and block 3 of the study guide. See the definition of elasticity for (a) and (b). The Wangs' demand curve is flatter so more elastic than the Dasguptas'. Thus, as the diagram shows, the price decrease results in a larger increase in the quantity demanded by the Wangs' than on the quantity demanded by the Dasguptas. Therefore the total amount spent on the good by the Wangs increases by more than the total amount spent on the good by the Dasguptas.*

**Multiple choice question 2: (4 marks)**

Which statement about an indifference curve diagram with good 1 on the horizontal axis and good 2 on the vertical axis is **NOT** correct?

- (a) Indifference curves are downward sloping because consumers have transitive preferences.
- (b) The marginal rate of substitution tells you how many units of good 2 you are willing to give up in order to get one more unit of good 1.
- (c) Diminishing marginal rate of substitution implies that an indifference curve becomes flatter as the number of units of good 1 increases.
- (d) Transitivity and preferring more to less imply that indifference curves cannot cross.

*(a) is not correct. Indifference curves are downward sloping because consumers prefer more to less. See BVFD chapter 5.1 and block 4 of the study guide.*

**Multiple choice question 3: (4 marks)**

A firm has an inverse demand function  $p = 12 - Q$  and a total cost function  $TC(Q) = Q^2$ . Find the profit maximizing level of output. Which statement about the profit maximizing level of output  $Q$  and price  $p$  **IS** correct?

- (a)  $Q = 3$  and  $p = 9$
- (b)  $Q = 4$  and  $p = 8$
- (c)  $Q = 5$  and  $p = 7$
- (d)  $Q = 6$  and  $p = 6$ .

*(a) is correct. See BVFD 6.5, in particular maths boxes 6.1 and 6.2. Profits are*

$$\pi(Q) = TR(Q) - TC(Q) = pQ - Q^2 = (12 - Q)Q - Q^2 = 12Q - 2Q^2.$$

*This is a quadratic in  $Q$  with a negative coefficient of  $Q^2$  so the first order condition give a profit maximum. The first order condition is*

$$\frac{\partial \pi}{\partial Q} = 12 - 4Q = 0$$

*so  $Q = 3$  and  $p = 12 - 3 = 9$ . It is also possible to find the solution by noting that  $MR = 12 - 2Q$  and  $MC = 2Q$  so setting*

$$\text{marginal revenue } 12 - 2Q = 2Q \text{ marginal cost.}$$

*also gives  $Q = 3$ .*

**Multiple choice question 4: (4 marks)**

An industry is a Cournot duopoly with two firms A and B. Industry inverse demand is  $p = 10 - Q$ . Both firms produce with a constant average and marginal cost 4. Which statement **IS** correct?

- (a) Firm A has a reaction function  $Q_A = 3 - \frac{Q_B}{2}$ .
- (b) Both firms produce 3.
- (c) The industry price is 5.
- (d) Both firms make losses.

*See BVFD 9.5, in particular maths 9.1.*

*(a) is correct. As the marginal and average cost are both 4 total cost for firms A and B is  $4Q_A$  and  $4Q_B$ . Given the industry inverse demand price  $p = 10 - (Q_A + Q_B)$  and firm A makes profits*

$$\pi_A = pQ_A - 4Q_A = (10 - (Q_A + Q_B))Q_A - 4Q_A = 6Q_A - Q_A^2 - Q_AQ_B.$$

*As this is a quadratic in  $Q_A$  with a negative coefficient on  $Q_A^2$  so the first order condition give a maximum. The first order condition is*

$$6 - 2Q_A - Q_B = 0$$

*so*

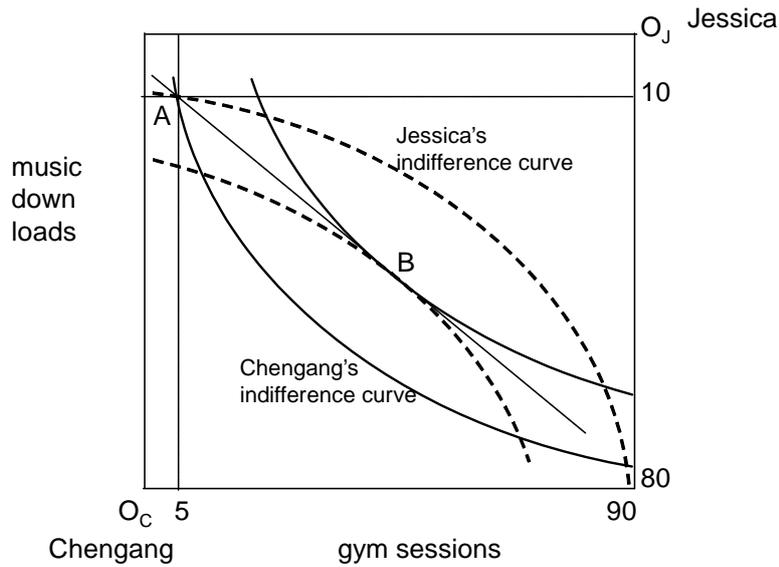
$$Q_A = 3 - \frac{Q_B}{2}.$$

*Thus (a) is correct. Taking the argument further firm B has a reaction function*

$$Q_B = 3 - \frac{Q_A}{2}.$$

*Treating the reaction functions as simultaneous equations in  $Q_A$  and  $Q_B$  gives  $Q_A = Q_B = 2$ . The price is  $10 - Q_A - Q_B = 6$ . Firm A makes profits  $pQ_A - 4Q_A = 4$ . Firm B also makes profits 4.*

**Multiple choice question 5: (4 marks)**



Multiple choice question 5

The figure shows an Edgeworth Box representing an economy with two consumers (Chengang and Jessica) and two goods (gym sessions and music downloads). A is the endowment point. Which statement is **not** correct.

- (a) Chengang's endowment is 5 gym sessions and 70 music downloads.
- (b) The endowment point A is Pareto efficient.
- (c) The point B is Pareto efficient.
- (d) Given the endowment point A the point B is a general competitive equilibrium.

See BVFD 13.2, in particular concept 13.2, and block 11 of the study guide.

(a) is correct. The coordinates of the endowment point starting from Chengang's origin is (5,70). The 70 is because Jessica is endowed with 10 downloads, and the total number of downloads in the economy is 80, so Chengang's endowment of downloads is  $80 - 10 = 70$ .

(b) is not correct because B is a Pareto improvement on A.

(c) is correct, B is Pareto efficient because it is at a tangency between Chengang's and Jessica's indifference curves.

(d) is correct because it establishes that if the ratio of prices  $p_g/p_m$  is - the gradient of the line AB then at these prices both market clear.

**Multiple choice question 6: (4 marks)**

Which of the following statements is **NOT** correct?

- (a) Macroeconomics is concerned with economy wide issues such as unemployment and inflation.
- (b) National income accounting shows the relationship between value added, fiscal policy and imports and exports.
- (c) Macroeconomics is the economics of the public sector.
- (d) Macroeconomics takes account of imports and exports.

*(c) is not correct. See BVFD 15.1 for a discussion of the scope of macroeconomics, 15.4 for national income accounting, and 17.1 for what fiscal policy is. See also the study guide block 14.*

**Multiple choice question 7: (4 marks)**

Which of the following statements about inflation targeting **IS** correct?

- (a) If inflation is above the target the central bank increases the nominal interest rate to a level which increases the real interest rate.
- (b) Central banks with an inflation target ignore what is happening to output.
- (c) Inflation targeting was immediately abandoned after the 2009 financial crisis.
- (d) If inflation is above target the central bank sets an interest rate which immediately reduces the inflation rate to target.

*(a) is correct, see BVFD 21.1 and 21.8 and block 17 of the study guide.*

**Multiple choice question 8: (4 marks)**

Which of the following statements about the labour market **IS** correct?

- (a) The labour force consists of people who are of working age and do not have caring responsibilities
- (b) The participation rate is the fraction of the population of working age in the labour force.
- (c) Structural unemployment includes people spending a short time unemployed as they move between jobs.
- (d) Classical unemployment occurs when output is below full capacity.

*(b) is correct, see BVFD 23.1 and 23.2. See also block 19 of the study guide.*

**Multiple choice question 9: (4 marks)**

Which of the following statements about the real exchange rate between two countries is **not** correct?

- (a) The real exchange rate adjusts the nominal exchange rate for inflation.
- (b) The real exchange rate depends only on the rates of inflation in the two countries.
- (c) If there is no inflation in either country the real exchange rate and the nominal exchange rate are the same.
- (d) The purchasing power parity exchange rate is the path of the nominal exchange rate that maintains a constant real exchange rate.

*(b) is not correct, the real exchange rate also depends on the nominal exchange rate. See BVFD 24.4 and block 20 of the study guide.*

**Multiple choice question 10: (4 marks)**

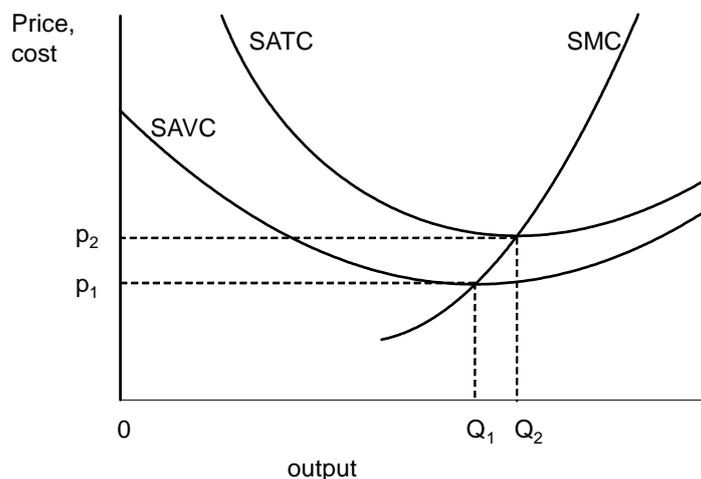
Which of the following statements about the Solow growth model is **not** correct?

- (a) In the absence of technical progress the economy converges to a state in which output per worker always increases.
- (b) In the absence of technical progress the economy converges to a steady state in which output and consumption per worker is constant.
- (c) In the absence of technical progress an increase in the saving rate results in a steady state with higher output per worker.
- (d) If there is labour augmenting technical progress the economy converges to a state in which output per worker always increases.

*(a) is not correct. See BVFD 28.5 and block 23 of the study guide.*

Section B: Microeconomics. Answer one of the two following long questions. It is essential that you explain your answers.

Microeconomics long question 1 (30 marks total, each sub-question specifies the marks available.)



Microeconomics long question 1

- (a) **2 marks** Explain the distinction between short and long run costs for a firm.
- (b) **8 marks** Figure shows short run marginal cost, (SMC), short run average total cost (SATC) and short run average variable cost (SAVC) of a firm. Explain the following features of the graph.
- The SATC curve lies everywhere above the SAVC.
  - SATC is decreasing when  $SMC < SATC$  and increasing when  $SMC > SATC$ .
  - $SMC = SAVC$  at the level of output  $Q_1$  which minimizes SAVC.
  - $SMC = SATC$  at the level of output  $Q_2$  which minimizes SATC.
- (c) **6 marks** Assume that the firm is in a perfectly competitive industry. Answer the following questions, giving explanations.
- What is the lowest price at which the firm will produce in the short run?
  - How much output does the firm produce? Does the firm make an economic loss at this price? Does it make an accounting loss?
  - What is the firm's short run supply curve?
- (d) **2 marks** Assume all firms are identical, that the industry is perfectly competitive and that input prices do not change as the industry expands. Explain using a graph how the industry supply curve is derived from the firms' short run supply curves.
- (e) **6 marks** Under what conditions is the long run industry supply curve horizontal? Explain your answer.
- (f) **6 marks** Is it possible for the long run industry supply curve to be upward sloping if all firms are identical? Do any firms make economic profits in this situation? Explain your answers.

- (a) See BVFD 7.3 and 7.4. In the long run all inputs are variable, in the short run some inputs are fixed.
- (b) i See BVFD 7.3.  $SATC = SRFC + SAVC > SAVC$  if there are positive fixed costs in the short run.
- ii See BVFD 7.3 for an intuitive discussion of the relationship between average and marginal in terms of football goals, if the latest score (the marginal score) is higher than the previous average score then the average increases. Similarly if the marginal score is less than the average score the average score decreases. An alternative answer using calculus would use the formula

$$AC(Q) = \frac{C(Q)}{Q}$$

so using the quotient rule the derivative of  $AC$  is

$$\frac{\frac{dC(Q)}{dQ}Q - C(Q)}{Q^2} = \frac{1}{Q} \left( \frac{dC(Q)}{dQ} - \frac{C(Q)}{Q} \right) = \frac{1}{Q} (MC(Q) - AC(Q)).$$

Thus the derivative is positive implying that  $AC$  is increasing if  $MC(Q) > AC(Q)$ . The derivative is negative implying that  $AC$  is decreasing if  $MC(Q) < AC(Q)$ . At a minimum of average cost the derivative of  $AC$  is 0 so  $MC(Q) = AC(Q)$ .

- iii - iv This argument applies to both  $AVC$  and  $ATC$ . The reason is that

$$STC = SFC + SVC.$$

By definition  $SFC$  does not change with output so marginal total cost  $SMTC$  and marginal variable cost  $SMVC$  are the same and the same notation,  $SMC$  is used for both. From ii this implies that  $SMTC = SMC = SATC$  at the minimum of  $SATC$ . Similarly  $SMVC = SMC = SAVC$  at the minimum of  $SAVC$ .

$$SMTC = SMVC = SMC$$

Thus at the minimum of  $SATC$

$$SATC = SMTC = SMC.$$

At the minimum of  $SAVC$

$$SAVC = SMVC = SMC.$$

- (c) See BVFD 8.2.  $p_1$  is the lowest price at which the firm will produce in the short run, at this price the firm will produce  $Q_1$ . See BVFD 6.2, in particular concept 6.1 for a discussion of the relationship between economic and accounting profits. In the short run the fixed inputs cannot be varied so their opportunity (economic) cost is zero and as  $p_1 = SAC(Q_1)$  the firm makes zero economic profits. However if the fixed assets may have an accounting cost the firm will make an accounting loss. The firm's short run supply curve is the part of the  $SMC$  curve which lies above  $SRVC$ , that is above the horizontal line at  $p_1$ .
- (d) See BVFD 8.3. The industry short run supply curve is the horizontal sum of the firm short run supply curves.
- (e) See BVFD 8.3, in particular the discussion of horizontal long-run supply curves.
- (f) See BVFD 8.3. Yes it is possible for the long run industry supply curve to be upward sloping even if all firms are identical, if the price of inputs increases as the industry expands. In this situation all firms make zero economic profits, but if industry output increases firms' costs increase due to the increase in input prices.

## Micro Long question 2 (30 marks total, each sub-question specifies the marks available)

- (a) **7 marks** Show in a diagram the budget constraint of a worker who is choosing how much to work and how much to consume. Answer the following questions about your diagram and explain your answers.
- What are the variables on the axes?
    - Where does the budget constraint meet the axes?
    - What is the slope of the budget line?
  - 3 marks** Show in the diagram the effects of an increase of the wage on the budget constraint. Explain your answer.
  - 10 marks** Now consider the decision whether to accept a job offer made to the husband of someone who is already employed. Accepting the job offer would require buying an additional car. Show the budget constraint in a diagram. Under what conditions will the job offer be accepted? Explain your answers.
  - 10 marks** Does the theory of labour supply predict that a worker will increase the number of hours worked if the hourly wage increases? Explain your answer using a graph.

- (a) See BVFD 10.4 for the budget constraint, in particular the first figure in maths 10.2. This shows leisure on the horizontal axis and consumption on the vertical axis. With wage  $W$  and price of consumption  $P$ , the real wage is  $w = W/P$ , and the slope of the budget line is  $-w$ . The diagram shows a choice over 1 day (24 hours), the budget constraint meets the horizontal axis at 24 and the vertical axis at  $24w$ . See maths 10.2.
- (b) See BVFD 10.4 for the budget constraint, in particular the first figure in maths 10.2 which shows how the budget constraint changes as the wage increases from  $w$  to  $w_1$  and then  $w_2$ .
- (c) This is the participation decision discussed in 10.4, in particular figure 10.5. The answer should include this diagram
- (d) The standard model of labour supply is that it is backward bending, this is discussed in 10.4, in particular in figure 10.4. The answer should include this diagram and an explanation of the role of income and substitution effects.

An extremely good answer would show this graphically in the indifference curve diagram. Chapter 5.3, in particular figure 5.14 discusses how to show the income and substitution effects in an indifference curve diagram for an increase in the price of good 1. The reasoning in figure 5.14 and start at the original point, call it  $C$ . Then draw a budget line parallel to the new budget line, but tangent to the original indifference curve. Call the tangency point  $D$ . The move  $C$  to  $D$  is the substitution effect. Then look at the move from  $D$  to  $E$ ; this is the income effect, so called because it comes from a parallel shift in the budget line which is what a change in income does.

Now consider the first figure in maths box 10.2. The original point is  $A$ . When the real wage rises from  $w$  to  $w_1$  the worker moves to  $B$ . To find the substitution effect draw a line which is tangent to the indifference curve through the original point  $A$  but parallel to the new budget line through  $B$ . Call the tangency point  $G$ . Then  $A$  to  $G$  is the substitution effect which decreases leisure and increases hours worked. The move from  $G$  to  $B$  is the income effect. It increases leisure so increases hours worked, so works in the opposite direction to the substitution effect.

**Section B: Macroeconomics.** Answer one of the two following long questions. It is essential that you explain your answers.

Macro Long question 1 (30 marks total, each sub-question specifies the marks available.)

- (a) **5 marks** What is the accounting relationship between investment, savings, government expenditure and taxes in a closed economy? ( For simplicity you can assume that all taxes are direct and the government does not pay benefits to households.) Explain why this relationship holds.
- (b) **5 marks** Show the IS schedule in a diagram. What variables are on the axes? Explain why the schedule is downward sloping. Explain what causes a movement along the IS schedule.
- (c) **6 marks** In a closed economy which variables are being held constant when the IS schedule is drawn? Explain how changes in these variables result in an upward shift in the IS schedule.
- (d) **6 marks** What additional variables can cause an upward shift in the IS curve in an open economy? Explain your answer.
- (e) **8 marks** The aggregate demand schedule shows the relationship between output and the inflation rate. Explain how this relationship is derived.

- (a) *The accounting relationship is*

$$Y = C + I + G = C + S + T$$

*where*

- $Y = \text{income}$
- $C = \text{consumption}$
- $I = \text{investment}$
- $G = \text{government expenditure}$
- $S = \text{savings}$
- $T = \text{tax revenue.}$

*This can also be written as  $I - S = T - G$ . The relationship is explained in BVFD 15.4, in particular maths 15.1 which shows the circular flow.*

- (b) *See 17.2 for a discussion of aggregate demand in a closed economy, and 20.2, in particular figure 20.1, for a discussion of the IS schedule. The IS schedule shows the combinations of interest rate and income that are compatible with goods market equilibrium, that is where aggregate demand ( $C + I + G$  in a closed economy) equals actual income. Movements along the IS curve are caused by changes in the interest rate.*
- (c) *When the IS schedule is drawn government expenditure and taxes, and the degree of optimism about the future are held constant. An upward shift in the IS schedule is caused by an increase in factors other than the interest rate which affect demand. One possibility is expansionary fiscal policy, an increase in government expenditure or a decrease in tax revenue. Another is increased optimism about what will happen in the future which increases planned investment at each level of interest rate.*

- (d) *In an open economy increased demand for exports or reduced demand for inputs also shifts the IS curve outwards.*
- (e) *See 21.1, in particular concept 2.1.*

Macro Long question 2 (30 marks total, each sub-question specifies the marks available.)

- (a) **9 marks** Explain what the functions of money are. Explain the motives for holding money.
  - (b) **9 marks** Explain how banks create money. Explain what happens to a bank's budget sheet when it creates money.
  - (c) **12 marks** Explain the following aspects of the 2007-8 financial crisis.
    - i What is a subprime mortgage?
    - ii What were the risks associated with subprime mortgages?
    - iii Which banks carried the risk associated with subprime mortgages? Why did they take on these risks?
    - iv Was the crisis a solvency crisis or a liquidity crisis for the banks involved?
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- (a) *See BVFD 18.1 for a discussion of the functions of money, and 18.5 for a discussion of the demand for money.*
  - (b) *See BVFD 18.3.*
  - (c) *See BVFD 18.6 for a discussion of financial crises. Note that the question is very specific, a general essay on the financial crisis will not get a good mark. Very good answers would show reading beyond the textbook.*