

INTRODUCTION TO MICROECONOMICS: TUTORIAL PACK

St Hilda's College
Michaelmas 2005

Introduction

The purpose of the tutorial series is for you to build a solid understanding of the microeconomic concepts given in lectures. There will not be a heavy emphasis on mathematics, but coverage will nonetheless be rigorous and analytical. You will learn how to identify how concepts can be applied to real-world situations. Finally, you will develop your essay writing skills.

This tutorial pack contains the questions for you to complete in each of the eight weeks of term. Some of the questions merely require you to read the applicable textbook pages or your lecture notes, while others will require you to apply your minds. Some questions will be hard, so please give yourselves enough time to do the tutorials. *All questions are compulsory; failure to complete them satisfactorily will be taken most seriously.* If you fail to demonstrate a high level of effort *on time* then you may be refused entry into the tutorial and will have to redo the work for early the following week.

Economics at Oxford is very demanding, and you simply will not cope if you don't work hard. It is therefore essential that you get into a disciplined work routine. I expect you to put in a great deal of effort. One of the challenges presented by the transition to university is you have to do most of the work yourself. We will not be able to cover all the work set in the tutorials. You will nonetheless get feedback on every question through a combination of tutorial time, careful marking and printed solutions.

Tutorial and hand-in times

You have been placed into 3 groups:

Group A: Anita, Katharina, Elsa, Hee-Jae, Safiyah

Group B: Daria, Young Jae, Anasuya, Ivy

Group C: Nadja-Stefanie, Assyl, Katie, Haimeng, Lydia

On most weeks, Group A will meet at 2pm for an hour, group B will meet from 3-4pm and group C will meet from 4-5pm on Fridays. The venue is the Chester Room in Nuffield College on most weeks (1,2,3,5,7,8). In weeks 4 and 6, we are likely to split you up into smaller groups and have slightly different teaching arrangements. We will give you details in good. You must hand your assigned work into my pigeon at Nuffield by 7pm the Thursday before. ***Don't be late.***

Essay writing advice

It is essential that you answer the question. Examiners are ruthless on people who don't answer the question directly, even if the student clearly knows what she's talking about. You must structure the essay appropriately. To do this, you must have thought about your answer and done all the relevant reading *before* you start. In your introduction, you must introduce and define the terms you are going to use and show how the next few pages will answer the question. Your body must have each of the points you wish to make separately introduced and explained before moving on. Your conclusion should summarise your points in a way that leaves a good impression. Finally, do not reproduce passages from your textbooks! I know it's tempting and easy, but it's also pointless. The required essay length varies, but should be at *least* 3 handwritten sides of an A4 page long. Bear in mind that, in the exam, you will have about 45 minutes so don't make it too long.

References

Most of the work is covered in

Katz, M & H Rosen (1998); *Microeconomics 3rd edition*; McGraw-Hill

Varian, H (2003); *Intermediate Microeconomics: A Modern Approach 6th edition*; WW Norton & Company

I believe Katz & Rosen is more appropriate for a first year course, especially if you have not done Economics for A-levels. It emphasises the important concepts without resorting to mathematics, which is often included in an appendix anyway. Varian is however closer in structure to your lectures. Lecturers appreciate Varian because it is very precise, but I think this can only be appreciated once you know some economics. You will certainly need Varian if you carry on with economics, and the mathematically inclined may prefer the style. I don't mind which book you use, but suggest Katz and Rosen if you are unsure.

These books are widely available in college libraries and in the Social Science Library, but I strongly recommend you purchase one of the books. It really isn't worth the time and hassle involved in going to the library, and only being able to keep it for a limited time (if they aren't all taken).

For the section on International Trade, there is one chapter in Begg, D, S Fischer & R Dornbusch, *Economics 7th edition*; McGraw-Hill devoted to trade. It covers the basics really well and makes sure you don't get caught up in non-essential ideas. Caves, Frankel & Jones 9th (2002), *World Trade and Payments: An Introduction* (or earlier) is more thorough and the presentation is good.

Contact details

The easiest is by email: alberto.behar@nuf.ox.ac.uk

My office telephone number is 78979 or you can pidge me at Nuffield College. Any relevant tutorial materials will be available at <http://www.nuff.ox.ac.uk/users/behar/>

Please contact me for any academic or other queries. In particular, should you be having trouble with the week's tutorial and/or some concepts, please contact me by lunch time on Wednesdays. I'd be happy to meet and give you some tips.

Outline

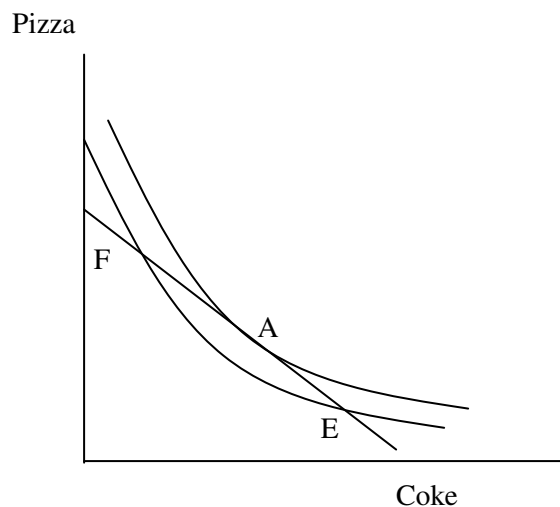
1. Consumer Theory I
2. Consumer Theory II
3. Production I
4. Production II & Market Structure I
5. Market Structure II and Game Theory
6. General Equilibrium and Welfare Economics I
7. Welfare Economics II, Externalities and Market Failure
8. International Trade

WEEK 1: CONSUMER THEORY I

Reading: K1- K3, K4.4, K11.3; V1-2, V14-16

- 1) (MCQ) A rightward shift of the demand curve occurs and demand increases when
 - a) income falls
 - b) price falls
 - c) the price of an input used in its production falls
 - d) the price of a complementary good falls
 - e) none of the above
- 2) If the price elasticity of demand for good X > 1 , then
 - a) Demand can be said to be relatively inelastic; a given % change in price leads to exactly the same % change in quantity demanded.
 - b) Demand can be said to be relatively elastic; a given % change in price leads to a smaller % change in quantity demanded.
 - c) Demand can be said to be relatively inelastic; a given % change in price leads to a smaller % change in quantity demanded.
 - d) Demand can be said to be relatively elastic; a given % change in price leads to a larger % change in quantity demanded.
- 3) If the price elasticity of demand for good x < 1 and a firm wants to maximise revenue
 - a) The firm should lower its price to sell more x
 - b) The firm should lower its price and sell less x
 - c) The firm should raise its price to sell more x
 - d) The firm should raise its price and sell less x
 - e) One cannot tell, as we have no information on costs
- 4) Consider the elasticity of supply (ES).
 - I) ES is defined as the percentage change in quantity supplied divided by the percentage change in price
 - II) If $0 < ES < 1$, then supply is said to be relatively elastic
 - III) If $1 < ES < \text{infinity}$, the supply is said to be relatively elastic
 - IV) $ES = 0$ if the supply curve is vertical.
 - a) I and II
 - b) I and III
 - c) III and IV
 - d) I, III, IV
 - e) I, II, IV
- 5) Oil is an input in the production and delivery of video cassette recorders (VCRs).
 - a) With the aid of a diagram, explain the effects on the television market – paying attention to both demand and supply effects – of the recent rise in the oil price.
 - b) With the aid of a diagram, explain the effect of the introduction of DVD players – paying attention to both demand and supply effects – on the market for VCRs.
- 6) The equilibrium price of Oxford-Heathrow bus trips is £15. The government decides this is too expensive and imposes a price ceiling of £10. Using clearly labelled diagrams and making explicit reference to the notions of consumer and producer surplus, explain whether you think these moves are a good idea.

7) The following diagram represents a portion of David's indifference map and his budget constraint.



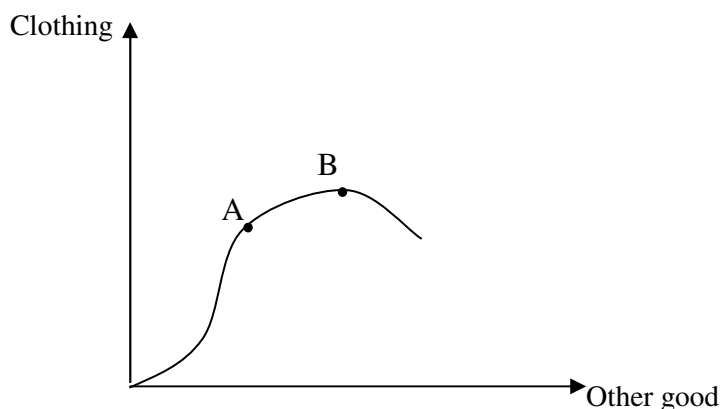
[Redraw the diagram and leave some space below as you will need it to answer part e)]

- At which point does David maximise his utility subject to his budget constraint? What condition holds at this point?
- Assume that the slope of the budget constraint is $\frac{1}{2}$. Assume further that the MRS_{YX} (as defined in Katz & Rosen) at point E is $\frac{1}{4}$ and at point F is 1. If David is consuming bundle E, show that David will be better off if he purchases more pizza and less coke. If David is consuming bundle F, show that David will be better off if he purchases less pizza and more coke.
- If $MRS_{YX} > P_X/P_Y$, what should David do? Which point in the diagram does this refer to?
- Mark out new equilibrium points corresponding to a rise and fall in the price of coke.
- Use your diagram to derive the demand curve for coke.

WEEK 2: CONSUMER THEORY II

Reading: K2-K4; V2-6, V8, V14

- 1). Frank drinks only whiskey and Coke. After three whiskeys, he switches to coke, indicating that:
 - a) the marginal utility of whiskey falls below zero after drink 3
 - b) the marginal utility of the additional coke exceeds the average utility of the three glasses of whiskey
 - c) total utility will start to fall after drink 3
 - d) the marginal utility per dollar of Coke is higher than the marginal utility per dollar of whiskey after drink 3.
- 2) If $MRS_{t,c}$ of turkey for chicken is higher than p_t/p_c for a consumer at a point on the budget line, the consumer should consume:
 - a) More turkey and less chicken
 - b) More chicken and less turkey
 - c) More turkey and the same amount of chicken
 - d) Less turkey and the same amount of chicken
- 3) The axioms of consumer preferences do not assume that consumers:
 - a) can rank bundles cardinally
 - b) can rank two bundles
 - c) have transitive preferences
 - d) have complete preferences
- 4) A student strictly prefers Coke to Fanta and Fanta to Soda Water, and is indifferent between Bitter Lemon and Fanta . The student therefore
 - a) prefers Bitter Lemon to Coke
 - b) is indifferent between Bitter Lemon and Soda Water
 - c) is indifferent between Coke and Bitter Lemon
 - d) strictly prefers Bitter Lemon to Soda Water
- 5) Between points A & B on the income consumption path below, as income rises:
 - a) The consumer spends more money on clothes, and spends more on clothes as a percentage of his income; clothing is a normal good
 - b) The consumer spends more money on clothes, but spends less on clothes as a percentage of his income; clothing is a normal good
 - c) The consumer spends less money on clothes, and spends less on clothes as a percentage of his income; clothing is a normal good
 - d) The consumer spends more on clothes, but spends less on clothes as a percentage of his income; clothing is an inferior good
 - e) The consumer spends less on clothes, and spends less on clothes as a percentage of his income; clothing is an inferior good.



- 6) Are the following statements true or false?

- a) For a Giffen good, the income effect has the opposite sign to the substitution effect.
- b) For a fall in price, the income effect will always be positive, no matter the type of good involved.
- c) The substitution effect will always be negative for an increase in price.
- d) Normal goods have upward sloping price-consumption lines.

Essay questions:

7) “If goods are perfect complements, the effect of a price change consists solely of an income effect.” Discuss.

8) In the face of high oil prices, Chancellor Gordon Brown is considering a reduction in the fuel levy. Treat this as a fuel subsidy. Compare and contrast the concepts of CV and EV and explain what the effects of such a move are likely to be.

WEEK 3: PRODUCTION I

Reading: K7-9, K10.1; V18-22

Questions 1-4 refers to figure 1 below

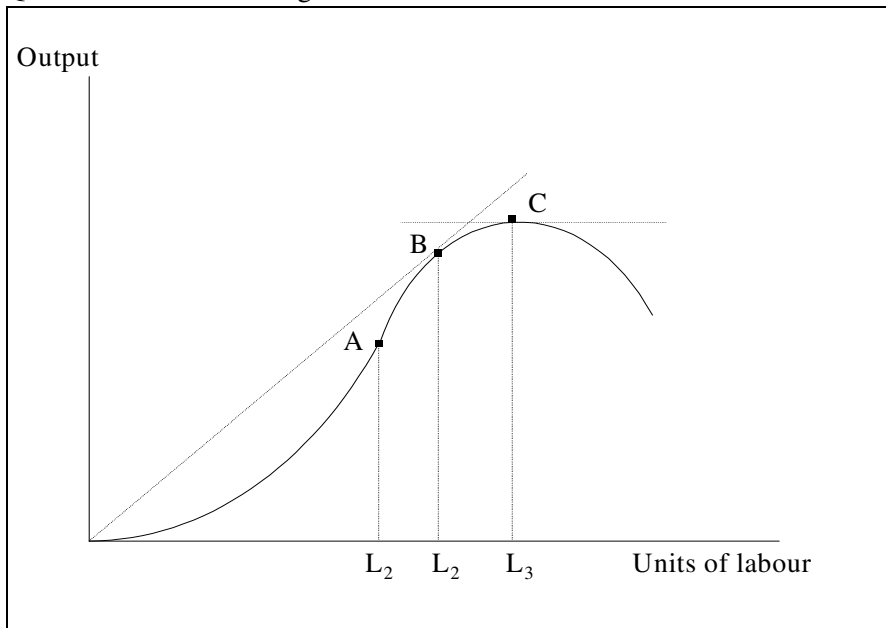


Figure 1

- 1) Making use of points A, B & C, draw the corresponding MP and AP curves
- 2) (MCQ) If output is at point A:
 - I. Marginal product is at its highest
 - II. The slope of the total product curve is at its steepest
 - III. Marginal product is positive, but not at its highest
 - IV. Average product is at its highest
 - V. Diminishing marginal returns are being experienced
 - a) I, II
 - b) II, III, IV
 - c) I, IV, V
 - d) I, III, II, IV
 - e) II, III, IV, V
- 3) (MCQ) If output is at point B:
 - I. Marginal product is at its highest
 - II. Marginal product is positive, but not at its highest
 - III. Average product is at its highest
 - IV. Diminishing marginal returns are being experienced
 - V. Marginal product equals average product
 - a) I, III
 - b) I, IV
 - c) II, III, IV
 - d) II, III, V
 - e) II, III, IV, V
- 4) (MCQ) If output is at point C:
 - I. Total product is at its highest
 - II. Marginal product is at its highest
 - III. Diminishing marginal returns will start if more is produced
 - IV. Average product is at its highest
 - V. The marginal product curve is cutting the x-axis

- a) I, V
- b) I, III, V
- c) I, III, IV
- d) II, III, IV
- e) III, IV, V

5) Figure 2 below represents the short run TC and TFC.

- a) Draw the MC, AVC, AFC and ATC curves. Label your diagram clearly.
- b) At which point does diminishing marginal returns set in? After this point, is marginal cost rising or falling? Is marginal product rising or falling?

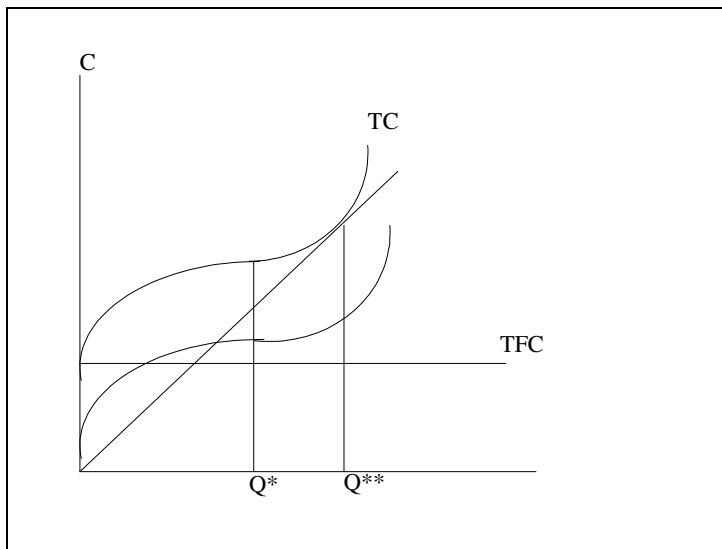


Figure 2

- 6) Are the following statements true or false?
 - a) As long as $MC < AVC$, AVC will have a negative slope
 - b) The marginal product (MP_L) function reaches a maximum when TP is at its flattest point
 - c) As long as $MP_L > AP_L$, AP_L will have a positive slope, but as soon as $MP_L < AP_L$, AP_L will have a negative slope. This is irrespective of the slope of MP_L .
 - d) When MC is rising, MP_L is falling and the firm is experiencing diminishing marginal returns.
- 7) If the total cost of producing rucksacks is £2400 per week, the wage rate is £40 per week and the cost of renting machinery is £120 per week:
 - a) Using the total cost equation ($C = rK + wL$), make K the subject of the formula. Substitute the actual prices in to find an expression for K . What is this line called and what does it show?
 - b) Draw this line on a set of axes. What is the value of the slope? What economic term does it represent?
 - c) Draw in the isoquant such that the firm is maximising output subject to its cost constraint.
 - d) Using the relative prices of capital and labour, what is the MRTS at this point?
- 8) MCQ: The marginal rate of technical substitution is shown in the
 - a) Slope of the isoquants
 - b) Space between isoquants
 - c) Shape of the isoquants
 - d) Slope of the marginal cost curve
- 9) MCQ: If, after doubling the capital and labour employed, output increases by 50%, the firm is experiencing:
 - a) Increasing marginal returns, because output increased
 - b) Decreasing marginal returns, because output increased by less than the inputs in percentage terms
 - c) Increasing returns to scale, because output increased
 - d) Decreasing returns to scale, because output increased by less than the inputs in percentage terms

10) Refer to figure 3 below:

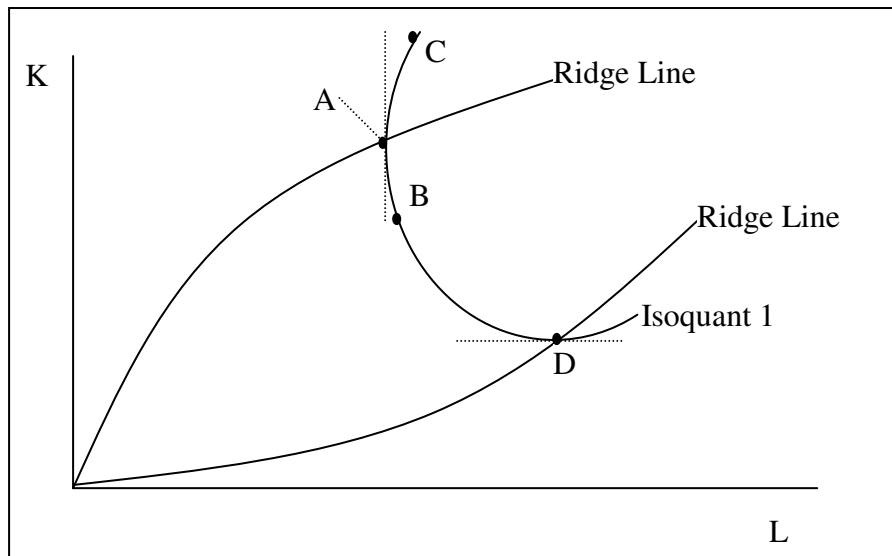
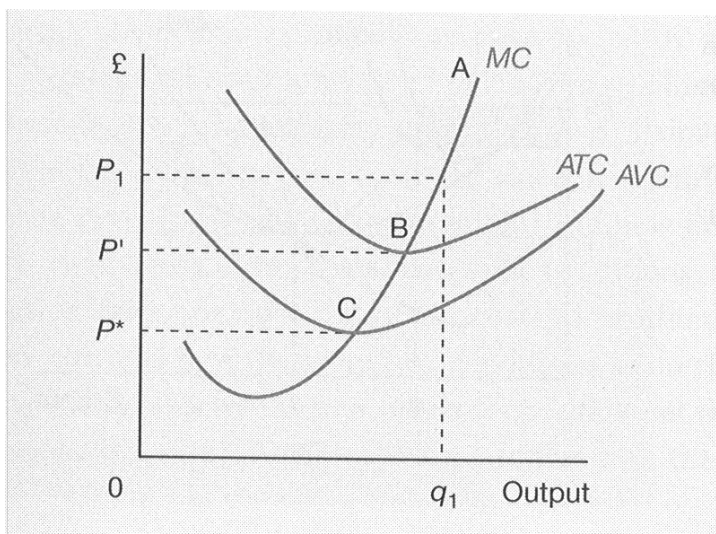


Figure 3

- The firm moves from point A to point B. What happens to output? What happens to the amount of Capital and Labour employed? Can we say anything about economic efficiency at point B?
- The firm moves from point A to point C. What happens to output? What happens to the amount of capital and labour employed? What will happen to costs? Can point C be efficient?
- If the firm moves from A to D, what happens to the amount of capital and labour employed? What happens to the MP_L and MP_K ? What can you tell about the $MRTS_{LK}$?

11) Refer to the diagram below. Are the following true or false?



- At P_1 , the firm is making economic profits
- If P^* is charged, the firm is making normal profits
- If the price the firm can charge is below P^* , the firm's profit maximising output is 0 in the short run
- At a price below P' , the firm's profit maximising output is 0 in the short run
- In the short run, this firm (and others with the same cost curves) will leave the industry if the price it can charge is P^* , causing it to rise to P' .
- In the long run, P_1 is unsustainable
- P_1 is a signal to enter the industry
- The firm's supply curve is AC in the long run

12) Essay:

Assume that a profit-maximising firm in perfectly competitive factor markets has only two inputs, capital and labour. Is it true that a rise in the price of capital will always lead to a rise in the quantity of labour demanded?

WEEK 4: PRODUCTION II AND MARKET STRUCTURE I

Reading: K8-11, K13; V18-22, V24-25

Essays:

- 1) A competitive industry with external economies of scale experiences a contraction in demand for its product. What happens to firm and industry price and output in the long run and the short run?
- 2) “Monopoly markets are undesirable relative to perfectly competitive markets.” Discuss.
- 3) “A monopolist that price discriminates reduces efficiency because it removes the entire consumer surplus.” Discuss.

WEEK 5: MARKET STRUCTURE II AND GAME THEORY

Reading: K13-16; V24-25, V27-28

1) (MCQ) An industry characterised by monopolistic competition differs...

- a) from monopoly because there are no economic profits
- b) from perfect competition because there is no free entry
- c) from oligopoly because they can't set quantities
- d) from monopoly because each firm's demand curve is not downward sloping

2) Solve and discuss the game below, being careful to define any concepts you use.

	L	C	R
T	0,4	4,0	5,3
M	4,0	0,4	5,3
B	3,5	3,5	6,6

3) There is currently only one seller of academic gowns in Oxford, called Herealready, but Thinkingofcoming is considering entry into this lucrative market. Currently, Thinkingofcoming has a payoff of zero. Herealready has the choice to produce two levels of output. If it produces a high level, its profits are £150. If it produces a low quantity, profits are £180. If Thinkingofcoming were to enter and Herealready produces a high quantity, profits would be -£20 and £100 respectively. If Thinkingofcoming were to enter and Herealready produces a low quantity, profits would be £20 and £120 respectively.

- i) If Herealready produced a low level of output, what would Thinkingofcoming's best response be? What would the best response be if Herealready produced a high level of output?
- ii) If Thinkingofcoming stayed out, what would Herealready's optimal quantity be? If Thinkingofcoming entered, what would the best response be?
- iii) Now set this problem out in extensive form, solve the game, and comment.

Essay questions:

4) "If all monopolistically competitive firms started selling identical products, we would have a perfectly competitive outcome." Discuss.

5) In a duopoly, why does it matter whether we model firms as (i) setting prices or quantities and (ii) doing so simultaneously or not?

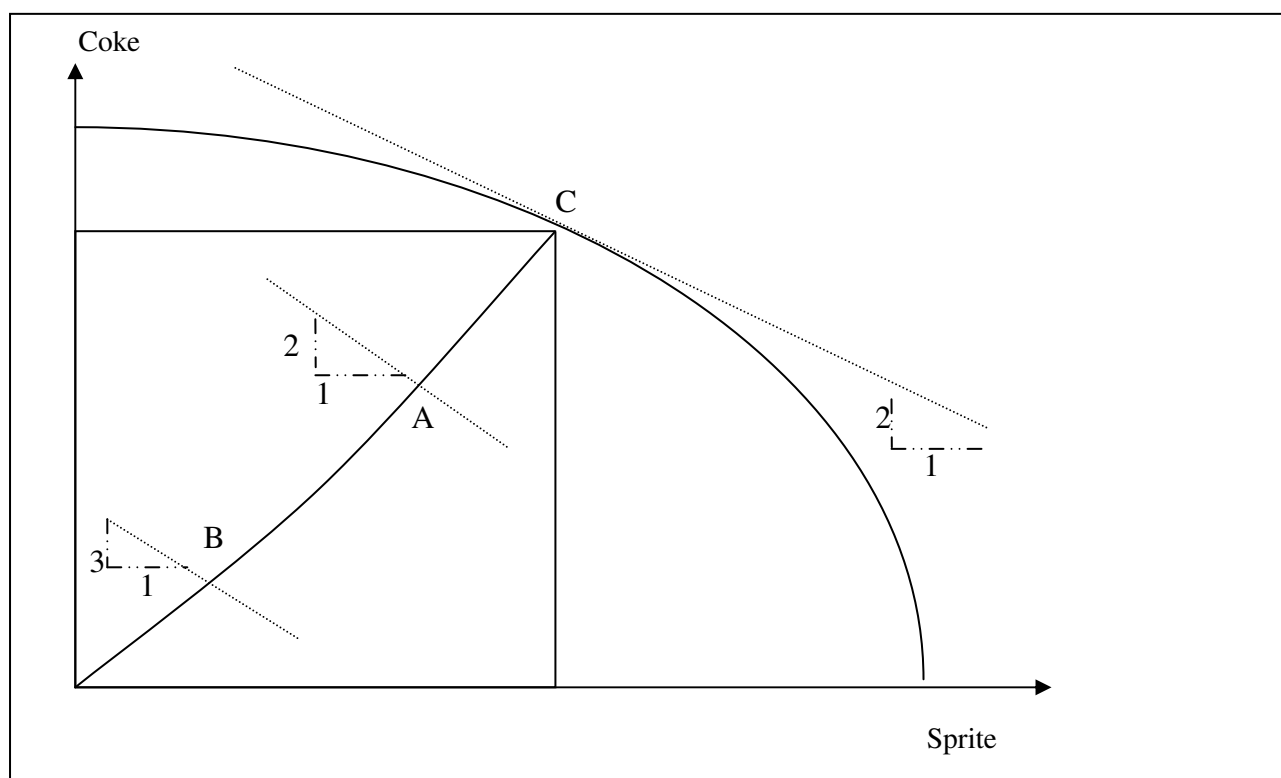
WEEK 6: GENERAL EQUILIBRIUM AND WELFARE ECONOMICS I

Reading: K12, V30-33

1) John produces 5 oranges and Pete produces 8 pears. After exchange, John consumes 3 oranges and 4 pears. John's Marginal utility of oranges is 1 and his marginal utility of pears is 2. Pete's marginal utility of oranges is 2 and his marginal utility of pears is 4.

- Use a clearly-labelled Edgeworth Box to depict this.
- Discuss the following statements *fully*:
 - the economy is consumption efficient
 - the economy is maximising social welfare
 - the marginal rate of technical substitution between pears and oranges is 2

2) Consider the following production possibilities curve for Coke and Sprite, assuming Capital and Labour are the only inputs and production takes place at C.



- True or false
 - Point C indicates the economy could produce 2 more units of Sprite if it produced one Coke less
 - Point C tells us the marginal rate of transformation between capital and labour
 - The economy is productively efficient
 - If the economy is on the contract curve, it is Pareto efficient
 - If B is how the production is divided between two consumers, the economy is allocation efficient
 - For the economy to be allocation efficient, the consumers must each value an additional unit of Coke by twice as much as an additional unit of Sprite.
 - If the economy is production efficient, $MRTS_{LK} = 2$
 - If the assumptions of the first welfare theorem of welfare economics hold, then the economy will be at A in the Edgeworth Box.

3) Essay question. "A society can be Pareto efficient yet totally disgusting."

WEEK 7: WELFARE ECONOMICS II, EXTERNALITIES AND MARKET FAILURE

Reading: K12.2, K16.3, K18; V32-33, V35

1) The UK recently introduced a congestion toll, which basically charges cars £5 every time they drive into certain zones in the city of London. Cars' number plates are monitored by cameras and a computer system checks whether the appropriate payment has been made. Answer the questions below in detail.

- a) Are these zones' roads public goods?
- b) Raising tax revenue is one motivation for the charge. Are there any others?
- c) After the implementation, some authorities have suggested the charge may have been "too high". Use a diagram to explain what this might mean.

2) Laurel and Hardy are neighbours. They have a third neighbour whose dog is currently barking non-stop. Laurel and Hardy are each trying to watch a DVD, which they each value watching at at least £2. Because of the barking, however, neither can hear his DVD so each person's value from watching it is 0. However, if one person were to get up and give the dog a snack, there is a 50% chance it would keep quiet¹. The problem is that both Laurel and Hardy are nicely settled, and the cost of getting up, purchasing the snack and feeding the dog is £3.

- a) Is it more efficient for the dog to be barking or not?
- b) What does the Coase theorem predict will happen?
- c) Depict the above situation as a game and try to solve it. Discuss your solution.
- d) Is this an externalities or a public goods problem?

3) Essay: "The fundamental theorems of welfare economics convincingly eliminate any need for government intervention. However, if the assumptions underlying the theorems break down, then government intervention is required." Discuss.

¹ Note we will ignore the dog's utility, or at least assume he is indifferent between barking and snacking.

WEEK 8: INTERNATIONAL TRADE

Begg, Fischer & Dornbusch ch33; Caves Frankel & Jones 2-6,7,10,11 (key chapters are 5, 7 and 10)

1) Assume that the value of corn and silk is measured in terms of hours of labour. Thus the opportunity cost of producing a barrel of corn is the amount of labour required since this labour is not being used to produce silk. Then the labour costs will determine the price of corn and silk. The table below describes the production relationship of corn and silk between England and the Rest of the World (ROW).

	England	Rest of the world
Labour per barrel of corn	60	45
Labour per yard of silk	90	45

- a) Assuming no international trade, complete the table below by determining the prices of corn and silk in England and the ROW in order to answer the following questions.

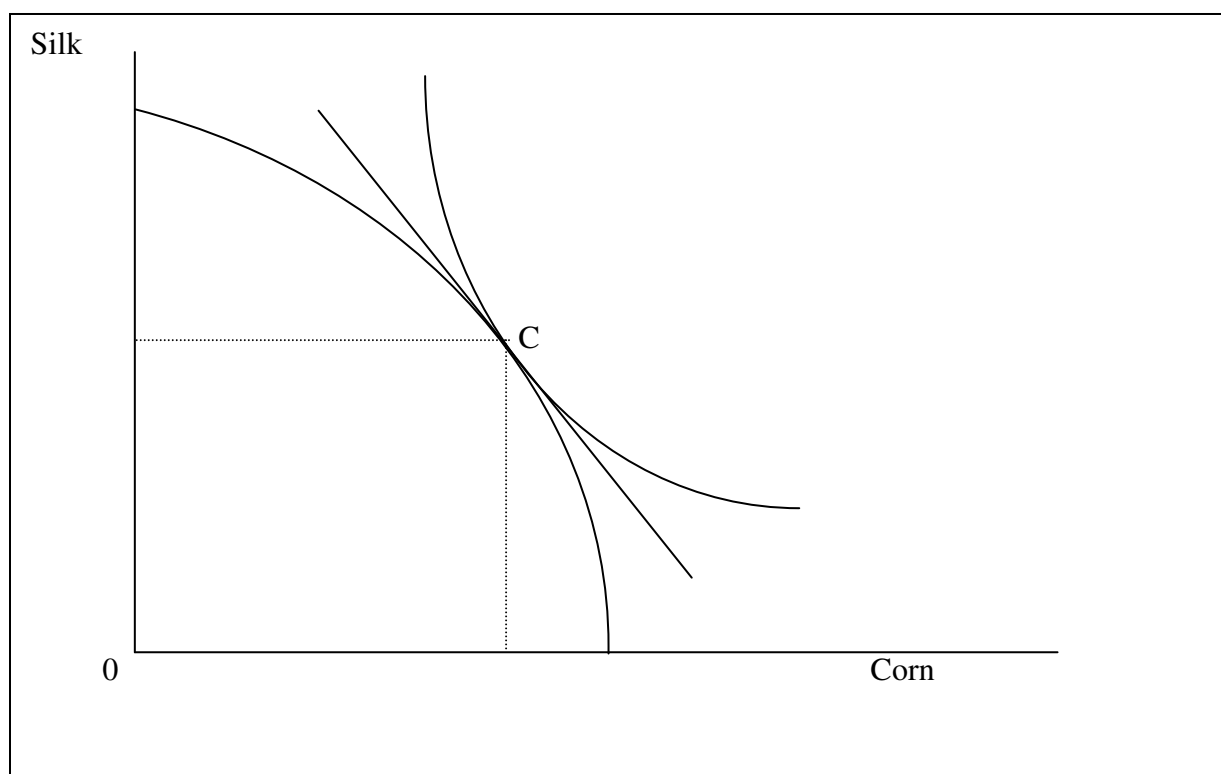
	England	ROW
Price per barrel of corn	? yards of silk/barrel of corn	? yards of silk/barrel of corn
Price per yard of silk	? barrels of corn/yard of silk	? barrels of corn/yard of silk

- For each barrel of corn how many yards of silk does England give up. How many yards of silk does the ROW give up?
 - For each yard of silk, how many barrels of corn does England give up. How many barrels of corn does the ROW give up?
- Where is corn cheaper? So who should be making corn?
 - Where is silk cheaper? So who should be making silk?
 - Does England have an absolute advantage in producing corn? Does England have an absolute advantage in producing silk?
 - Does the England have a relative comparative advantage in producing corn? Does England have a relative comparative advantage in producing silk?
 - If there is now free trade, use the theory of comparative advantage to explain which product England will export and which product England will import?
 - What will be the international price of a barrel of corn? A yard of silk?
 - What happens to the quantity of corn demanded in England? To the quantity of corn supplied in England?
 - What happens to the quantity of silk demanded in England? To the quantity of silk supplied in England?

2) Now let's represent question 1 in terms of production possibility curves. The diagram below refers to England.

- What is a production possibility curve?
- What does the slope of the PPC represent?
- What is a community indifference curve?
- If the slope of the tangent at C is 0.6 how much does a barrel of corn cost?
- If the slope of the tangent in a diagram corresponding to the ROW is 1, how much does a barrel of corn cost in the ROW?
- Which country has a relative comparative advantage in producing corn? (Assume tastes are the same in both countries ie their indifference curves are the same.)
- Now assume the countries trade. Who exports what?
- Complete the following table:

	England	ROW
Cost of corn (rises/falls)		
Tangent slope (steeper/flatter)		
Quantity silk supplied (rises/falls)		
Quantity corn supplied (rises/falls)		
Movement along PPF (down&right/up&left)		
Quantity silk demanded (rises/falls)		
Quantity corn demanded (rises/falls)		

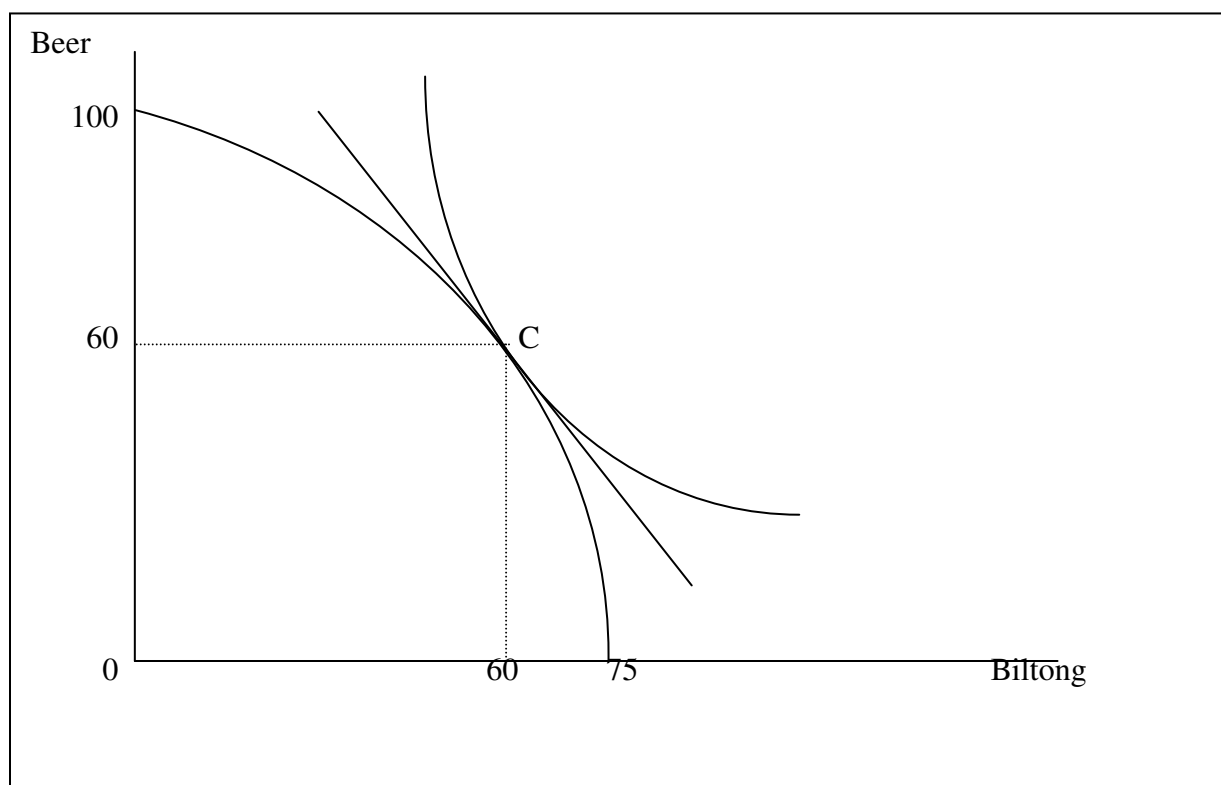


3) The diagram below refers to Namibia.

- In a closed economy, what is Namibia's production and consumption point? Why is this the optimal combination of beer and biltong?
- If the slope of the tangent at C is -1 , how much does a unit of beer cost?
- If the slope of the tangent in a diagram corresponding to Mozambique is $-1/2$, how much does a unit of beer cost in Mozambique?
- Can we tell which country has a relative comparative advantage in producing beer? (Assume tastes are the same in both countries i.e. their indifference curves are the same.)
- Can we tell which country has an absolute advantage in producing beer?
- From now on, assume the countries trade. Who exports what?
- Complete the following table:

	Namibia	Mozambique
Cost of beer (rises/falls)		
Tangent slope (steeper/flatter)		
Quantity beer supplied (rises/falls)		
Quantity biltong supplied (rises/falls)		
Movement along PPF (down&right/up&left)		
Quantity beer demanded (rises/falls)		
Quantity biltong demanded (rises/falls)		

- Assume that the world price of beer is 1.5 biltong. Namibia makes 85 units of beer and 30 units of biltong. Draw in the new tangent at this point.
- With the aid of this tangent, show how Namibia can trade such that it ends up consuming the same amount of beer as before but is able to consume more biltong than before. Calculate how much more biltong.
- Graphically, how can you tell Namibia is better off?



4) Venezuela has 1000 units of labour and 500 units of capital. Brazil has 200 units of labour and 150 units of capital. State whether each of the following is true or false.

- a) Venezuela is labour-abundant
- b) Venezuela is capital-abundant
- c) Brazil is capital-abundant
- d) Capital is relatively expensive in Venezuela
- e) Ceteris Paribus, Brazil will export the more labour-intensive good.

5) Essay: “It is hard to understand why the European Union is so stubbornly refusing to remove agricultural tariffs and subsidies, as it is clearly in its own interest to do so.”