GX429

OLLSCOIL NA hEIREANN, GAILLIMH
THE NATIONAL UNIVERSITY OF IRELAND, GALWAY

SUMMER EXAMINATIONS 2001/2002

EC226 Cost Benefit Analysis

Second Year

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Time allowed: TWO hours.

Instructions:
There are four sections in this paper. Answer one question from Sections A, B and C. Section D consists of multiple-choice questions. There are separate instructions for Section D.

Section A (22 marks)

1. State the technical condition that describes each of the following. In addition, write a brief explanation *to demonstrate clearly that you understand the meaning of each*:

   Pareto Efficiency in

   (a) Production

   (b) Consumption

   (c) Distribution

   For one of the above cases, illustrate the concept of Pareto Efficiency with a carefully labeled diagram.

2. Answer both (a) and (b)

   (a) A simple economy produces two goods, food and clothing, with two inputs, capital and labour. Given the current allocation of capital and labour between the two industries, the marginal rate of technical substitution between capital and labour in food production is 4, while the corresponding MRTS in clothing production is 2. Is this economy efficient in production? If so, explain why. If not, describe a reallocation that will lead to a Pareto improvement.

(b) Given the current allocation of productive inputs, the marginal rate of transformation of food for clothing in a simple two-good economy is equal to 2. At the current allocation of consumption goods, each consumer's marginal rate of substitution between food and clothing is 1.5. Illustrate this situation with a carefully labeled diagram. Is this economy efficient in terms of its product mix? Is so, explain why. If not, describe a reallocation that will lead to a Pareto improvement.

Section B (16 marks)

3. Answer both parts of this question.

(a) What is meant by the term 'market failure' within economic analysis?

(b) List three examples of market failure, the technical condition that gives rise to each, and the appropriate government response.

4. Answer both parts of this question.

(a) A firm in a perfectly competitive industry has patented a new process for making widgets. The new process lowers the firm's average costs, meaning this firm alone can earn positive economic profits in the long run.

(i) If the market price is 20 per widget and the firm's marginal cost curve is given by MC = 0.4q where q is the daily widget production for the firm, how many widgets will the firm produce?

(ii) Suppose a government study has found that the firm's new process is polluting the air and estimates the marginal social cost of widget production by this firm to be MSC = 0.5q. If the market price is still €20, what is the socially optimal level of production for the firm? What should the amount of a government-imposed excise tax be in order to bring about this optimal level of production?

(b) Suppose that there are three people in society who vote on whether the government should undertake specific projects. Let the net benefits of a particular project be €150, €140 and €50 for persons A, B and C respectively.

(i) If the project costs €300 and these costs are to be shared equally, would a majority vote to undertake the project? What would be the net benefits to each person under such a scheme? Would total net benefits be positive?

(ii) Suppose the project cost €375 and again costs were to be share equally. Now would a majority vote for the project and total net benefits be positive?

(iii) Suppose (presumably contrary to fact) votes can be bought and sold in a free market. Describe what kinds of results you might expect in parts (i) and (ii).

(iv) Is there another voting rule that you think would be better than majority rule for the situation in part (i)? Discuss briefly.

Section C (16 marks)

5. The government recently rescinded rules that essentially allowed geographic monopoly franchises to pharmacies in Ireland. Present an analysis of the welfare effects in a village or small town comparing the situation where only one pharmacy serves the local population to the one where two pharmacies compete for this service. What will be the most important judgments that you must make in determining which situation provides the greatest social welfare?

6. Ticket prices at the local cinema are presumably sufficient to allow the owner(s) to cover all the costs of this service and still make a reasonable profit. The prices for plays at the Town Hall are higher in spite of the fact that the government provides a direct subsidy to this enterprise. Are such government subsidies justified? Explain fully the economic reasoning that supports your conclusion.

Section D (16 marks)

For each of the following questions, write which answer, if any, you have chosen in your answer book. Negative marking will be used for the multiple-choice questions. For each question, you will receive 2 marks for a correct answer, 0 marks if the question is not answered, and –0.5 marks for an incorrect answer.

7. In order to assure allocative efficiency
   (a) people's marginal rate of substitution must equal the economy's rate of product transformation
   (b) people's marginal rate of substitution must equal the firm's rate of technical substitution among inputs
   (c) a firm's rate of technical substitution must equal the economy's rate of product transformation
   (d) all of the above

8. An externality causes competitive markets to be inefficient because
   (a) one economic actor's well-being is affected by another in a way that is not taken into account by the normal operations of the market system
   (b) the market system does not make an economic actor aware of the full social consequences of his actions
   (c) consumers are public spirited
   (d) a and b

9. The rivalry aspect of a good indicates
   (a) how much it costs to extend the benefits of the good to an additional person
   (b) whether an individual can be excluded from consuming the benefits of a good once the good has been produced
   (c) whether the good is produced in a competitive industry
   (d) whether the good is sold by exclusive shops

10. An allocation of goods among people in an exchange economy is efficient if
   (a) no one person can be made better off (through a reallocation of goods) without making someone else worse off
   (b) the marginal rate of substitution between any two goods is the same for everyone
   (c) the allocation is such that it lies on the "contract curve"
   (d) all of the above

11. In an Edgeworth production box diagram, if two isoquants intersect, it means
   (a) the well-being of the two consumers could be improved without changing the output of either good
   (b) by allocating inputs differently between firms, output could be increased at no additional cost
   (c) the marginal rate of substitution between consumers does not equal the marginal rate of technical substitution
   (d) none of the above

12. When a competitive general equilibrium in production has been attained
   (a) the economy is on the production possibility frontier
   (b) the marginal rates of technical substitution between inputs are equal
   (c) the price ratios of the inputs are equal across industries
   (d) all of the above

13. Suppose an economy produces two goods, corn and wine. If the marginal rate of substitution between corn and wine for consumers is not equal to the marginal rate of transformation, it means that
   (a) The economy is not operating on the production possibility frontier
   (b) both consumers could be made better off with a different distribution of the goods between them
   (c) the output mix is not efficient
   (d) the quantity demanded does not equal the quantity supplied

14. If the marginal rate of substitution between goods is not equal for Hank and Monica it means that
   (a) the quantity supplied does not equal the quantity demanded
   (b) both consumers could be made better off with a different distribution of goods between them
   (c) inputs are being allocated inefficiently
   (d) the efficient output mix is not being produced