

**OLLSCOIL NA hÉIREANN, GAILLIMH  
NATIONAL UNIVERSITY OF IRELAND, GALWAY**

**SUMMER EXAMINATIONS 2002**

**PAPER I**

**ECONOMICS (EC100)**

1<sup>st</sup> B.A., 1<sup>st</sup> B.A. (Public & Social Policy),  
1<sup>st</sup> B. Comm., 1st B. Comm. International,  
1st B. Corp. Law, 1<sup>st</sup> B.Sc. in Financial Mathematics and Economics

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**TIME ALLOWED: 3 Hours**

**Total Marks Available: 375**

**There are three sections in this paper. Read all the directions for each section. Write your answers for each section in separate answer books.**

**Please allocate your time to each question according to the number of marks that the question is worth.**

## **SECTION A: Applied Economics (175 marks)**

**Answer three of the following questions. Each question is worth equal marks. Use a separate answer book(s) for this section. Only three answers will be corrected. If you answer more than three questions please clearly indicate which three answers you wish to be corrected. Otherwise the first three answers will be corrected.**

### **1. Tax Policy**

- a. Suppose that the government has decided to raise revenue by placing a per-unit tax on a certain product. However it is unsure whether the tax should be placed on the producers or consumers. Illustrate on a diagram the effects of a per-unit tax on this good under each possibility. Advise the government regarding whether it should place the tax on producers or consumers.
- b. Suppose that the government gives you the following information about the good in part a. The richest decile in the income distribution spend 6% of their income on this good while the poorest decile spends only 0.5% of their income on the good. The price elasticity of demand is 3.0 while the price elasticity of supply is 0.5. (The good might be yachts or holidays in 5 star hotels etc.). Based on this information do you think that the government is wise to choose to tax this good? Explain your answer clearly.
- c. "A tax that raises no revenue for the government cannot have any dead weight loss." Do you agree with this statement? Explain your answer clearly.

### **2. Consumers and Information**

- a. A consumer is buying two goods one expensive (e.g. sofa's) and the other cheap (e.g. t-shirts). Use diagrams to analyse how much time a rational consumer would spend searching for the lowest price of each type of good.
- b. Based on your analysis in part a, do you think that the prices of expensive items would vary more or less than the prices of cheap items? Explain briefly.
- c. A consumer is searching for a sofa and for a washing machine. She sees two advertisements in her local paper. One is for sofa's and says 10% reduction on a price of £2,200. The other is for washing machines and says £200 off on a washing machine that used to cost £350. The furniture shop is one mile away while the electrical shop is twenty miles away. Both advertisements state that there are only a limited number of units at these prices. Which sale should a rational consumer first visit? Explain clearly your reasoning.

- d. Consider two shops on opposite sides of a busy street. Both sell audio-visual equipment. Shop A has a large display of all the goods it sells and employs knowledgeable salespersons to advise potential buyers. Shop B simply contains a series of catalogues that briefly describe the goods that it sells. It employs receptionists who take orders from different customers. Both shops sell the same brands. Generally goods are much cheaper in Shop B than in Shop A. Which of the peculiar features of information can be applied to this situation? How might Shop A ensure that it stays in business?

### **3. Poverty**

Write a short report on poverty in Ireland. Your answer should cover (a) the definition of poverty, (b) how data on poverty is collected in Ireland, (c) which data is collected, (d) how data on different households is organised so that they can be compared, and (e) the extent of poverty in Ireland in 1998. How does the level and nature of poverty in 1998 compare to that in 1987?

### **4. Cost-benefit analysis**

- a. When considering large infrastructure projects such as roads and railways, governments often have to use estimates of the value of life. Outline the different ways in which economists measure the value of life.
- b. Suppose that it was shown conclusively that the use of mobile phones by car drivers was responsible for five fatalities a year in Freedland. Assume that the value placed on a fatality is £1,000,000. You are asked by the government to advise on whether the use of mobile phones by car drivers should be banned. Do you have enough information to make a recommendation? If yes, what would you recommend? If not, what additional information is required?
- c. Suppose you are working as a cost benefit analyst for an economic consulting firm. The local council receives a proposal to build houses on a site of archaeological and historical interest. At present, access to the site is open to the public. The local historical society employs you to help them argue that the site should be preserved in its present form. Outline a number of methods that might be used to estimate the benefits of this historical site. If you can, mention the difficulties with the methods that you have outlined.

## Section B: Microeconomics (200 marks)

**Answer four questions in this section. Each question is worth 50 marks. Use a separate answer book(s) for this section. Only four answers will be corrected. If you answer more than four questions please clearly indicate which four answers you wish to be corrected. Otherwise the first four answers will be corrected.**

1. There are three separate parts to this question. Answer each part.
  - A. Use carefully labelled diagrams to analyse the following situations.
    - a. What will happen to the equilibrium price and quantity of skateboards if the price of fibreglass, an ingredient for making skateboards, rises?
    - b. What will happen to the equilibrium to the equilibrium price and quantity of apples if apples are discovered to help prevent colds and a fungus kills twenty per cent of apple trees?
  - B. Assume that the gold-mining industry is competitive
    - a. Illustrate a long-run equilibrium using diagrams for the gold market and for a representative gold mine.
    - b. Suppose that an increase in jewellery demand induces a rise in the demand for gold. Using your diagrams, show what happens in the short run to the gold market and to each existing gold mine.
    - c. If the demand for gold remains high, what would happen to the price over time? Specifically, would the new long-run equilibrium be above, below, or equal to the short-run equilibrium price in part (b)? Is it possible for the new long-run equilibrium price to be above the original long-run equilibrium price? Explain. Will all the firms be earning zero economic profit in the new equilibrium?
  - C. When the price of a good changes, economists claim that are two reasons why the quantity demanded of that good changes – the ‘income’ reason (effect) and the ‘substitution’ reason (effect). For a normal good, identify what each reason implies when the price of a good increases. Consider two normal goods, one of whom represents a large proportion of one’s income (e.g. rent) while the other represents a small proportion of one’s income (e.g. a newspaper). Which good is likely to have a larger income effect? Why?

2. Two firms, Sludge Oil and Northwest Timber, have access to five different production processes, each of which has a different cost, and produces a different amount of pollution. The daily costs of the processes and the amount of tons of smoke emitted are shown in the following table.

Process	A (4 tons/day)	B (3 tons/day)	C (2 tons/day)	D (1 ton/day)	E (0 tons/day)
Cost to Sludge Oil	100	200	600	1,300	2,300
Cost to Northwest Timber	300	320	380	460	550

The numbers are the daily cost of each process to the two firms. For example the cost to Sludge Oil of switching from say C to D is £700 a day.

- Assume initially that pollution is completely unregulated. Which process will each firm choose? What will be the total amount of pollution produced?
- Suppose that the government decided that the level of pollution in part (a) is too high and wants to reduce it by 50 per cent from its initial level. It orders each firm to reduce its pollution by 50 per cent. What is the cost to each firm of this regulation?
- Environmental economists usually recommend that taxes are a better way of reducing pollution than regulation. Why? Show how a tax per unit of pollution in this case could achieve a better result than the regulation suggested in part (b).
- Another method favoured by economists is tradable pollution permits. How do these work? Show how tradable pollution permits might operate in this case. Indicate a possible equilibrium price for these permits if trading was allowed.
- Which method – pollution taxes or tradable pollution permits – is better from an economic point of view? Given that both are superior to regulation, why does the Irish government continue to rely on regulation in setting environmental policy?
- Some people might argue that both firms should be ordered to reduce pollution to zero. Explain briefly why economists think that the efficient level of pollution is not zero.

3. Suppose it takes Michael 1 hour to make a unit of cheese and 2 hours to make a unit of bread. Suppose it takes Ann 2 hours to make a unit of cheese and 8 hours to make a unit of bread.
- a. Assuming that each person works 40 hours, what is the maximum amount of each good that each person can produce in a week?
  - b. What is the opportunity cost of cheese, and of bread, for Michael?
  - c. What is the opportunity cost of cheese, and of bread, for Ann?
  - d. What is the difference between absolute advantage and comparative advantage? Illustrate the difference between these concepts by referring to this example.
  - e. Suppose initially that Michael produces 8 units of cheese and 16 units of bread while Ann produces 10 units of bread and 2.5 units of cheese. Suppose that Ann and Michael decide to specialise completely and trade. Ann agrees to trade 9 units of cheese in return for 3 units of bread. Show that this trade makes both people better off.
  - f. Would Ann have benefited had traded 10 units of cheese in return for 2 units of cheese? Explain your answer.
  - g. In both of these trades Ann buys bread from Michael. What is the maximum price that she is willing to pay for a unit of bread? Explain your answer.
  - h. Given that the net effect of tariffs is to reduce economic efficiency, why do you think that many governments continue to favour tariffs on imported goods? Refer to theories of interest groups in your answer.

4. Suppose that Dominique is the only person in a small town offering a translation service that some firms in the town need to use. There are eight firms in the town which are interested in having one document each week translated. The firms differ in the amount that they are willing to pay for this service. Dominique has a total monopoly of this industry in this town and there is no possibility of other translators entering this industry. The following table contains information about the demand curve facing Dominique each week.

Price	40	38	36	34	32	30	28	26
Quantity	1	2	3	4	5	6	7	8
Total Revenue								
Marginal Revenue								

- Copy this table into your answer book and complete it.
- The only cost that Dominique incurs is the opportunity cost of the time spent editing a document. He estimates this to be worth £29. Each document takes him the same amount of time. Suppose that he has to charge each firm the same price. How many documents will he translate if his goal is to maximise profit? Is there any difference between his accounting profit and economic profit? Explain your answer.
- In what sense is the outcome in part (b) inefficient? What would be the efficient solution in this market? Suggest a way whereby Dominique might reach this efficient solution.
- What is the relationship between changes in total revenue, changes in price and the elasticity of demand? Use this relationship to explain why a monopolist will always produce a quantity at which the demand curve is elastic.
- What is a natural monopoly? Sometimes industries change from being natural monopolies to become oligopolies. How might this happen?