

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

SEMESTER II EXAMINATIONS 2004/2005
B.A. AND B.COMM. Degree Examination
Visiting Students

EC386 Public Economics

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5 Questions, Attempt 3.

Time allowed: 2 hours

1. Taxation and Labour Supply

- (i) Describe recent policies in the tax-benefit system to reduce work disincentives in Ireland. In your answer refer in particular to unemployment and poverty traps and individualization.
- (ii) Why can we not say from economic theory what effect the introduction of a proportional income tax will have on labour supply? Answer giving a graphical example.
- (iii) What do we mean by a backward bending labour supply curve? Give a graphical example and give reasons why it is backward bending.
- (iv) Consider an income taxation system with an allowance, a 20% band and a 40% band. What happens to labour supply if the basic rate fell from 20% to 10%? Consider separately individuals who have changes to their marginal tax rate and individuals whose marginal tax rate does not change.

2. Taxation and Saving

- (i) Describe what we mean by an inter-temporal budget constraint. Graph this in the case where (a) an individual cannot borrow and (b) can borrow at the same interest rate, r they can save at. In both cases they have endowments of m_1 and m_2 in periods 1 and 2 respectively.
- (ii) Show graphically what happens to a saver if the interest rate increases. Explain why this is the case.
- (iii) Where the inter-temporal budget constraint is defined as:

$$\left[\sum_{t=1}^T [w_t / (1+r)^t - 1 + I] \right] = \sum_{t=1}^T [C_t / (1+r)^{t-1} + B / (1+r)^T]$$

w – wages, I inheritances, r interest rate, C is consumption and B Bequests, show that a proportional tax on wages and inheritances is equivalent to a tax on consumption and bequests. How is the choice of taxation instrument likely to influence savings?

3. Insurance Market Failure

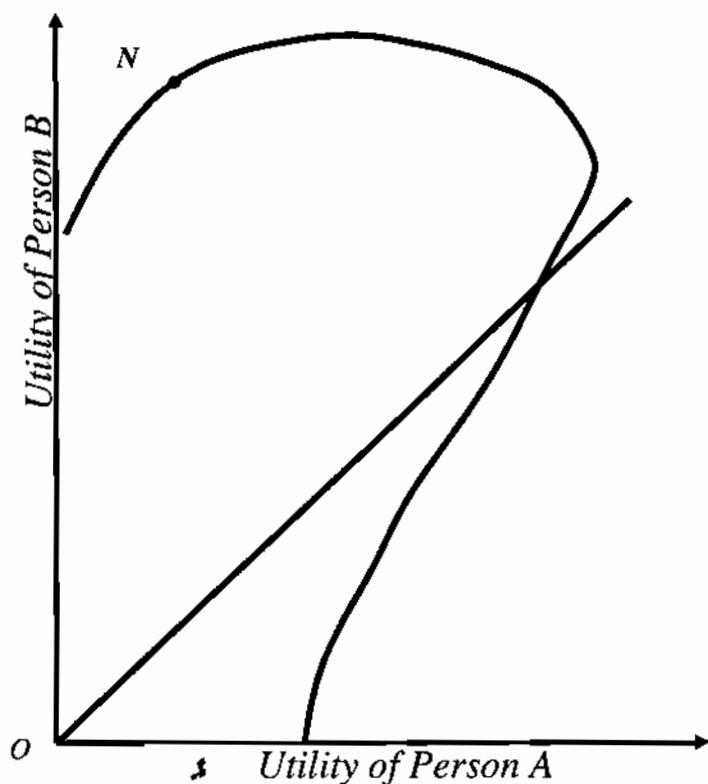
- (i) Describe the evolution of the Irish social insurance system. To do so, (a) Describe the structure of benefits and contributions. (b) Describe the trend in membership of the system and give reasons for these trends. (c) How does the system cover individuals who are not in employment? (d) Give reasons why the social insurance system is redistributive. (e) How has this changed over time?
- (ii) Using the notion of expected utility, show graphically what we mean by a risk premium. Justify your answer.
- (iii) Show how pooling reduces insurance risk. [Hint: Show how the variance of insured income is lower]
- (iv) What is moral hazard? In the absence of moral hazard, the expected utility of income is $EU = (1-p)U(Y_1) + pU(Y_2)$, where Y_1 is income without the insurable risk occurring and Y_2 is income if the risk occurs at probability p . Extend this definition of expected utility to incorporate the effect of effort in reducing the risk of an event occurring on expected utility. Show that there is no incentive to make an effort in reducing the probability of the risk occurring. How do insurance companies enforce individuals to make this effort?

4. Distortionary Behaviour and Excess Burden

- (i) Using a graph, explain what we mean by excess burden in the case of a two good model of consumption. What is Equivalent Variation? Remember to describe the graph.
- (ii) Derive the formula for excess burden ($EB = 0.5e P_1 Q_1 t^2$) in terms of taxation, elasticity, price and quantity (the formula based upon a single good using a supply and demand curve).
- (iii) In the case of the proposed Carbon Tax, give a reason why the introduction of a tax distortion is not necessarily a bad thing. Briefly describe this proposal. Describe how the proposal may result in a double dividend?
- (iv) In terms of reducing polluting behaviour what are the economic grounds for introducing such a tax? Compare and contrast with the use of regulation.

5. Social Welfare Functions

- (i) What is a social welfare function? Describe the difference between Utilitarian and Rawlsian theories of State. Describe this difference graphically in relation to their social welfare functions.
- (ii) In the following two person economy, where the curve represents the utilities of two classes of people, rich (B) and poor (A). The figure plots the range of desirable potential points according to the different political philosophies or theories of state. Consider starting at point N. This is the position advocated by Nozick, the Minimal state. Draw this diagram in your exam booklet and with a written justification, describe the level of redistribution advocated by (a) Pareto optimality, (b) Marxists, (c) Rawlsians and (d) Benthamites.



- (iii) What is an isoelastic social welfare function? Show that if the inequality aversion parameter, e is greater than zero that more weight is placed on welfare gains of poorer individuals. What is the mathematical relationship between the Utilitarian, Rawlsian and Isoelastic social welfare functions.
- (iv) Optimising a social welfare function, to determine an optimal linear income tax, what four characteristics will result in a higher marginal income tax rate? Justify your answer.