UNIVERSITY OF OSLO
DEPARTMENT OF ECONOMICS

Exam: **ECON4620 – Public economics**

Date of exam: Thursday, November 30, 2006   **Grades are given: December 20**

Time for exam: 09:00 a.m. – 12:00 noon

The problem set covers 2 pages

Resources allowed:
- No resources allowed

The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

Problem 1

a)   Give a brief and general definition of a distortionary tax.

b)   Discuss one of the distortions that may be generated by taxing capital or capital income. State the assumptions on which you base your discussion.

c)   Mention a few other distortions due to capital taxation that you might have discussed. It is sufficient to indicate the various cases in terms of keywords.

Problem 2

Consider an economy where there are two types of individuals facing different wage rates – type 1 individuals that are low-skilled and type 2 individuals that are high-skilled. The government knows the number of each type but the skill level of any given individual is private information not available to the government. The government imposes a non-linear income tax, and possibly commodity taxes, for raising revenue and redistributing income, and it provides an amount G of a public good. Pareto-efficient provision of the public good can then be characterised by the following condition

$$\sum_{h=1}^{2} n_h MRS_{GB}^h = r + \lambda^* \left\{ MRS_{GB}^m - MRS_{GB}^1 \right\} - \sum_{h=1}^{2} n_h \sum_i t_i \frac{\partial x_i^h}{\partial G},$$

where n_h is the number of individuals of type h (h=1,2), x_i^h is the amount of commodity i consumed by an agent of type h, MRS_{GB}^h denotes the marginal rate of substitution between private disposable income, B, and the public good, G, ($h=1,2,m$; where m is the "mimicker"), r is the marginal cost of producing the public good, t_i is a commodity tax (per unit of commodity i), and λ^* is a positive parameter. Denoting the utility function by V,

$$MRS_{GB}^h = \frac{\partial V^h / \partial G}{\partial V^h / \partial B}.$$

a) Discuss the economic content of the condition above.

b) Explain how and why the last term should be modified in case commodity 1 generates an external effect where the external cost is e_1 per unit of the commodity (and the cost is measured in the same units as t_1).

Problem 3

a. Explain what is meant by a dual income tax.

b. The rate of return allowance is a key parameter in the Norwegian shareholder income tax model. Explain the purpose of granting such an allowance.

c. It is often claimed that the shareholder income tax model has resolved one of the problems posed by the dual income tax. In what sense may this argument be true?

d. In what sense does the shareholder income tax model fulfil the intention of the dual income tax?

e. Suppose that a shareholder receives a dividend equal to 100 in year t and has an unutilised rate of return allowance equal to 150 at that time. How is the tax base of the shareholder affected in year t?

f. Suppose that a shareholder sells her/his shares at a price of 200 at the end of year s and assume that the stepped-up basis of her/his rate of return allowance at that time is 150. How is the tax base of the shareholder affected in year s?