UNIVERSITY OF OSLO
DEPARTMENT OF ECONOMICS

Exam: **ECON4620 – Public economics**

Date of exam: Monday, December 1, 2008   **Grades are given: January 6, 2009**

Time for exam: 2:30 p.m. – 5:30 p.m.

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

Suppose that a non-linear income tax and transfer policy is optimised in the special case where a Rawlsian welfare function is maximised. It has been shown (subject to certain qualifications) that the optimal tax schedule then satisfies the condition:

$$(1) \quad \frac{T'(z)}{1-T'(z)} = \frac{1-G(z)}{\varepsilon_s(z)g(z)}$$

where
z denotes gross income,
$T(z)$ is the income tax function,
$T'(z)$ is the marginal income tax,
$\varepsilon_s(z)$ is the (compensated) wage elasticity of labour supply (measured by z),
$G(z)$ is the cumulative income distribution function,
and $g(z)$ is the corresponding density function.

Present your economic interpretation of (1).
(You are not supposed to derive the condition in your answer.)

Problem 2

Suppose that income taxation is designed in accordance with the Mirrlees tax model and is supplemented by optimal commodity taxes. There are m commodities. Assume that there are two types of agents; a low-skilled type, labelled 1, and a high-skilled type, labelled 2. Normalise the number of each type to unity. Denote by x_k^j the amount of commodity k consumed by type j (j=1,2), and denote by S_{ik} the aggregate, compensated derivative of commodity i with respect to the price of commodity k, i.e. $S_{ik} = \partial x_i / \partial Q_k$ where x_i is aggregate, compensated demand, and Q_k is the consumer price of good k. Let t_i denote the

(specific) tax on commodity i. Finally, let $\hat{x}_k^2$ be the demand of the high-skilled type for commodity k if they were to mimic the low-skilled type.

Conditions characterising the optimal tax structure are then given by the formula

(2) $\sum_{i=1}^{m} t_i S_{ik} = \lambda^* (x_k^1 - \hat{x}_k^2)$ for k=1, 2,…..,m,

where λ^* is a positive parameter.

a)   Explain the economic content of (2) with emphasis on social efficiency trade-offs.

If you find it hard to interpret (2), you may still try to explain the role for a commodity tax alongside a non-linear income tax.

b)   What kind of goods would be suitable for being taxed at a strictly positive rate according to (2)?
c)   What may be major difficulties with implementing a commodity tax structure based on (2)?
d)   Can you think of other reasons for levying commodity taxes than those captured by (2)? Briefly explain each argument for a tax.

Problem 3
Discuss implications for tax policy of cross-border mobility.

Please do not forget the periodic course evaluation for ECON4620, which you will find on the website for the course. The deadline is December 15.