ℹ Candidate instructions

ECON3620/4620 - Public Economics I

This is some important information about the written exam in ECON3620/4620. Please read this carefully before you start answering the exam.

Date of exam: May 6
Time for exam: 9:00 AM
The problem set: The problem set consists of 3 problems. The weights are 25%, 35% and 40% for problem 1, 2 and 3, respectively.

Sketches: You may use sketches on all questions. You are to use the sketching sheets handed to you. You can use more than one sketching sheet per question. See instructions for filling in sketching sheets below. It is very important that you make sure to allocate time to fill in the headings (the code for each problem, candidate number, course code, date etc.) on the sheets that you will use to add to your answer. You will find the code for each problem under the problem text. You will NOT be given extra time to fill out the "general information" on the sketching.

Access: You will not have access to your exam right after submission. The reason is that the sketches with equations and graphs must be scanned in to your exam. You will get access to your exam within 2-3 days.

Resources allowed: No written or printed resources - or calculator - is allowed (except if you have been granted use of a dictionary from the Faculty of Social Sciences).

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

Grades are given: Monday, May 27

1 Problem 1 - 25%

1a. Explain two economic distortions from a standard corporate income tax, such as the one in place in Norway.

1b. Some argue that countries should implement an allowance for corporate equity (ACE) system, where the idea is to make equity investment costs deductible. What would you argue are the main benefits and drawbacks with that proposal?

Fill in your answer here and/or on sketching paper

Maximum marks: 0

Problem 2 - 35%

Suppose individuals work l hours to generate income wl and are then taxed according to a flat income tax t. Individuals shift part of their income e to tax havens. The budget constraint for the individual is $c = wl - t(wl - e).$ Both work and tax evasion are costly for the individuals (the latter in terms of money they pay for lawyers). The evasion cost is a convex function $k(e)$ in income evaded. Tax revenue to the government is equal to $t(wl - e).$

2a. How much does an individual receive from working one hour more (holding tax evasion constant)? How much does society in total receive when an individual works one hour more?

2b. When the individual has set the optimal hours of work and amount of tax evasion, what is the utility change for the individual for a small increase in tax evasion? What individual *gain* must the increase in the evasion cost $(k(e))$ be equal to for this to be the case?

2c. Show, by setting up the change in social efficiency, that the change in *tax revenue* provides a monetary measure of the *marginal social efficiency effect* of a small increase in tax evasion.

Fill in your answer here and/or on sketching paper

Maximum marks: 0

Problem 3 - 40%

Consider an economy with one representative individual with wage w. The individual works l number of hours and consumes h units of holiday travel and x units of all other goods. Total pre-tax income is wl.

The individual maximizes the utility function $U(h, x, l)$ subject to the budget constraint $(1 + \tau_h)p_h h + (1 + \tau_x)p_x x = wl - T(.)$, where p_h, τ_h and p_x, τ_x are prices and commodity taxes for holiday travel and other goods, respectively. $T(.)$ is a non-linear tax.

The government maximizes a social welfare function $W = U(h, x, l)$ such that it raises the required revenue $R = \tau_h h + \tau_x x + T(.)$.

3a. Assume first that the government can only tax goods (τ_h and τ_x) and nothing else ($T(.) = 0$). Explain how the government *implicitly* taxes income (wl) by using commodity taxes.

3b. What is the one key piece of information you need to decide whether commodity taxation should be uniform or differentiated when the non-linear tax is unavailable?

Instead of one representative individual, assume now that there are 10 individuals in the economy with different types/wages w_i, and thereby allocations h_i, x_i, l_i. They all maximize the same utility function subject to their budget constraints. The government maximizes a utilitarian social welfare function $W = \sum_{i=1}^{10} U(h_i, x_i, l_i)$.

3c. Assume first that the government can *observe* each individual's type w and set type-specific taxes $T(w)$. What is now the optimal level of commodity taxes (τ_h and τ_x) when $T(w)$ is set optimally?

In the following, the government cannot observe types, so the non-linear tax can only be a function of income, wl (and not w directly): $T(wl)$.

3d. Explain why taxation may be distortionary when types are unobservable to the government.

3e. What is the one key piece of information you need to decide the level of commodity taxes (τ_h and τ_x) when the non-linear income tax ($T(wl)$) is set optimally? Explain.

Fill in your answer here and/or on sketching paper

Maximum marks: 0