

UNIVERSITY OF OSLO
DEPARTMENT OF ECONOMICS

Exam: **ECON3620/4620 – Public Economics I**

Date of exam: Monday, May 14, 2018 **Grades are given:** June 6, 2018

Time for exam: 14.30 – 17.30

The problem set covers 3 pages (incl. cover sheet)

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)

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

1. **True/False statement (40%).** Determine whether each statement is true, false, or uncertain and explain why. Answers with no explanation will receive no points.
 - (a) If an excise tax of 5 NOK per liter soda is paid by the producers, the price that consumers pay will not change, but the producers will get a 5 NOK lower price per liter soda they sell. [Draw a graph that is consistent with your answer]
 - (b) If an income tax does not change the labour supply there is no excess burden associated with that tax.
 - (c) In a small open economy with *perfect* international mobility of capital (international rate of return is equal to r), taxing corporate profits ends up hurting the workers and not the capitalists residing in the small economy.
 - (d) Cost benefit analysis that put equal weight on the rich and the poors' willingness to pay for public projects implicitly favor the interests of the rich.
 - (e) The marginal cost of public funds is always above 1.
 - (f) The crucial element for the identification of the elasticity of taxable income is exogenous variation in the income tax rate.
 - (g) It is never optimal to complement an optimal Mirrlees income tax with a tax on consumer goods.
2. **Dividend tax (20%)** Explain what is meant by “double taxation of dividends.” Explain why this may be seen as harmful to investment under some condition(s), but not under other conditions.
3. **Income tax (40%)** The economy is made up of individuals with identical preferences defined over consumption c and labor l . Individuals have different productivity or wage rates. An individual with wage rate w supplying labor l , earns $z = wl$ and consumes $c = z - T(z)$ where $T(\cdot)$ is the income tax.
 - (a) Assume that the government imposes the following two-bracket income tax: $T(z) = -R + \tau_1 \cdot z$ if $z \leq \bar{z}$ and $T(z) = -R + \tau_2 \cdot z$ if $z > \bar{z}$. Assume that $0 < \tau_1 < \tau_2$ and $R > 0$, plot the budget constraint on a diagram in (l, c) .
 - (b) Discuss the welfare effects of increasing the threshold \bar{z} . (What are the relevant arguments when discussing the costs and benefits of increasing the threshold \bar{z})
 - (c) Assume now a simpler tax scheme with only one tax rate τ that applies to all income. The utility function for each individual takes the simple form:

$$u(c, l) = c - \frac{1}{(1+k)} l^{1+k}$$

where $k > 0$ is a given fixed parameter. Suppose there is a distribution of skills w with density $f(w) > 0$ over $[0, \infty)$. The total population is normalized to one so $\int_0^\infty f(w) = 1$. Solve for the optimal labor l and earnings $z = wl$ choice for an individual with wage w . Derive the uncompensated and compensated elasticities of labor supply as a function of k . Is there an income effect on labour supply?

- (d) Suppose taxes collected are all rebated through the demo-grant so that $R = \tau Z$ where Z is average earnings. Solve for the Rawlsian optimal tax rate τ (i.e., the tax rate that maximizes the utility of the worst-off individual). Solve for the utilitarian optimal tax rate τ (i.e., the tax rate that maximizes the sum of utilities). In both cases, explain the intuition behind your results.