Written Exam for the B.Sc. or M.Sc. in Economics summer 2016

Public Finance

Re-examination

August 9, 2016

(3-hour closed book exam)

This exam consists of 4 pages in total (excluding this front page)

Please note that the language used in your exam paper must correspond to the language of the title for which you registered during exam registration. I.e. if you registered for the English title of the course, you must write your exam paper in English. Likewise, if you registered for the Danish title of the course or if you registered for the English title which was followed by "eksamen på dansk" in brackets, you must write your exam paper in Danish.

If you are in doubt about which title you registered for, please see the print of your exam registration from the students' self-service system.

You are supposed to answer ALL questions. The assignments (**1A**)–(**3E**) all carry the same weight in the assessment.

Part 1: Questions on various topics

Answer "yes" or "no" to each of the questions below, and provide an explanation for your answer.

(**1A**) Inequality and intergenerational mobility are the same concepts.

(**1B**) In a supply-demand model with fixed demand, the tax incidence is fully on the sellers.

(**1C**) In a model of labor supply with only extensive margin responses there will be no efficiency loss from taxation on labor.

Part 2: Tax evasion

Consider a model of tax evasion characterized by the following equations

$$U^e = (1 - q) Y^{nc} + q Y^c - \chi E \quad (1)$$
$$Y^{nc} = [(1 - t) Y + t E] \quad \qquad (2)$$
$$Y^c = [(1 - t) Y - F E] \quad \qquad (3)$$

where Y is true income of an individual, t is the tax rate, E is unreported income, q is the probability of being detected, F is a fine in proportion to the evaded income, and χ measures a loss of utility from being dishonest measured in proportion to evaded income.

(**2A**) Provide an economic interpretation of the contents in each of the three equations in (1)-(3).

(**2B**) Derive a condition showing whether a taxpayer will evade taxes or not. Provide an economic interpretation of this condition, including the relevance of the tax rate t for the decision to evade.

(**2D**) Is it possible with this model to have that nobody evades taxes if the probability of detection is small and the fine is small? Provide a thorough explanation of your answer.

Part 3: Social Insurance

Consider a benevolent social planner that wishes to implement an unemployment insurance system. Workers are identical and are either employed or unemployed. The consumption level if working equals $(1 - t) y$, where y is income and t is a labor market contribution paid by employed workers. The consumption level of an unemployed equals the benefit level b. The

probability of becoming employed depends on the search effort level e of the worker, and we assume for simplicity that the employment probability is equal to e. A worker gets utility from consumption according to the strictly concave function $u(c)$ and disutility from search effort according to the strictly convex function $v(e)$.

The social planner maximizes

$$U = e \cdot u((1-t)y) + (1-e) \cdot u(b) - v(e), \tag{1}$$

subject to the condition

$$(1-e)b \leq ety. \tag{2}$$

(**3A**) Describe how the existence of an unemployment insurance system may benefit workers and describe why unemployment insurance may lead to a so-called moral hazard problem.

(**3B**) Provide an economic interpretation of the equations (1) and (2) in the maximization problem of the social planner.

(**3C**) Demonstrate that if the social planner can choose t, b and e then the optimal solution is characterized by

$$(1-t)y = b, \tag{3}$$

and provide an economic interpretation of this relationship.

If the social planner can only determine t and b, while the effort level e is private information of the worker, then the optimal solution of the social planner is characterized by

$$\frac{u'(b) - u'((1-t)y)}{u'((1-t)y)} = \frac{\varepsilon}{e}, \tag{4}$$

where ε is the elasticity of the unemployment rate with respect to the unemployment benefit level.

(**3D**) Provide an economic interpretation of (4) and describe also the optimal solution in the special case where $\varepsilon = 0$.

(**3E**) Describe the empirical result obtained by Card, Chetty and Weber on the casual relationship between unemployment insurance benefits and unemployment illustrated on the next page, and describe the method underlying this result.
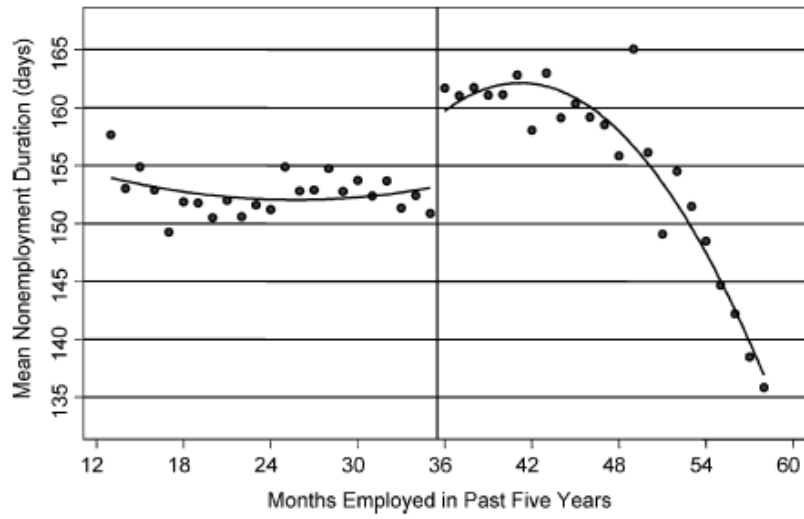
FIGURE VIIIa
Effect of Benefit Extension on Nonemployment Durations

Note: Copy of graph from article by Card, Chetty and Weber published in the Quarterly
Journal of Economics in 2007.

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