

Written Exam at the Department of Economics Summer 2017

Public Finance

Re-examination Exam

August 8, 2017

(3-hour closed book exam)

Please note that the language used in your exam paper must correspond to the language for which you registered during exam registration.

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

NB: If you fall ill during the actual examination at Peter Bangsvej, you must contact an invigilator in order to be registered as having fallen ill. Then you submit a blank exam paper and leave the examination. When you arrive home, you must contact your GP and submit a medical report to the Faculty of Social Sciences no later than seven (7) days from the date of the exam.

You are supposed to answer ALL questions. The assignments (1A)-(4E) all carry the same weight in the assessment.

Part 1: Questions on various topics

Answer "True" or "False" to each of the questions below, and provide an explanation for your answer.

(1A) In a market for a good, where supply is perfectly elastic, a higher demand elasticity implies that the incidence of a tax on the consumer is lower.

(1B) Starting from a situation with no initial taxation, the deadweight loss of introducing a tax is larger under perfect competition than when the market is supplied by a monopoly.

(1C) In the paper “Unwilling or Unable to Cheat? Evidence from a Tax Audit Experiment in Denmark” by Kleven, Knudsen, Kreiner, Pedersen and Saez (published in *Econometrica* in 2011), the empirical results primarily support that tax evasion in Denmark is low because the Danes are unable to evade.

Part 2: Social Insurance: Adverse Selection

Consider an economy where individuals face a risk of becoming unemployed. If they become unemployed they incur a loss of income $d = 1$ assumed to be the same for all individuals. The risk of becoming unemployed θ is exogenous and heterogenous across individuals. Assume that θ is uniformly distributed between $[0, 1]$ in the population. The individuals’ willingness to pay for an insurance that fully compensates them in the case of unemployment is given by:

$$w(\theta) = (1 + \alpha)\theta, \tag{1}$$

where α is a measure of risk aversion.

(2A) Give the intuition for why the individuals’ willingness to pay for insurance is consistent with the individuals being risk averse. Describe the first best allocation of insurance. What share of the population should be covered by insurance?

In a private insurance market with the market price (π) only individuals with a willingness to pay above π buy insurance. Assuming that the market is characterized by perfect competition the market equilibrium price (π) is equal to the expected costs of providing insurance,

i.e:

$$\pi = E[\theta \cdot d | w(\theta) > \pi] = E[\theta | (1 + \alpha)\theta > \pi] \quad (2)$$

(2B) Show that the market equilibrium price equals $\pi^* = \frac{1+\alpha}{1+2\alpha}$. Compare the share of individuals who buy insurance at this price with the first best allocation in (2A).

(2C) Discuss how government intervention could achieve the first best allocation in (2A). Would this intervention be a Pareto improvement if the government financed the insurance scheme with a lump sum tax of $1/2$ per individual?

Part 3: Social Insurance: Moral Hazard

Consider an unemployed individual, who has to decide how hard to search for a new job. If the individual chooses a search level of s , he finds a job with probability $p(s) = s$, however searching for a new job has the disutility cost of $v(s)$ with $v'(s) > 0$ and $v''(s) > 0$. Once employed, the individual earns an income of y and pays taxes τ . If the individual remains unemployed, he receives the benefits b . The individual's expected utility is given by:

$$U = s \cdot u(y - \tau) + (1 - s) \cdot u(b) - v(s), \quad (3)$$

where $u(\cdot)$ is the utility of consumption with $u'(\cdot) < 0$ and $u''(\cdot) < 0$. The government's budget constraint is given by $s \cdot \tau = (1 - s)b$.

(3A) Show that the first best insurance scheme (where the government can control s directly) implies that individuals have full insurance ($y - \tau = b$).

(3B) Show that the individual optimization, when b and τ are taken as given, implies $v'(s) = u(y - \tau) - u(b)$. What would be the consequence if the individual had full unemployment insurance in this case? Can government intervention overcome the problem?

Part 4: The elasticity of taxable income

Consider an economy where the public sector taxes labor income with a constant tax rate t . Assume that labor supply is increasing in the after-tax wage rate and that labor demand is perfectly elastic at a pre-tax wage rate of 1.

(4A) Illustrate the equilibrium in the labor market with a given tax rate t in a diagram with

the number of hours worked l on the primary axis and the wage rate (w) on the secondary axis.

(4B) Consider a reform that increases t marginally. Illustrate the effect on the market equilibrium and government revenue. Provide the intuition for why the marginal deadweight loss of a small increase in t is equal to the behavioral effect on the government revenue. What are the key parameters that determine the size of the marginal deadweight loss?

(4C) Give the intuition for why it might be more correct to look at a broader concept of labor supply responses than just hours worked. That is, why would it be more correct to look at the change in taxable income with computing the marginal deadweight loss?

In the paper “The Effect of Marginal Tax Rates on Taxable Income: A Panel Study of the 1986 Tax Reform” by Martin Feldstein (published in the Journal of Political Economy in 1995), the author investigates the effect of the 1986 tax reform on the taxable income reported by different income groups. The reform significantly reduces marginal tax rates on taxable income while broadening the tax base. Below is a copy of Table II from the article showing the main estimate from the paper.

TABLE 2
ESTIMATED ELASTICITIES OF TAXABLE INCOME WITH RESPECT TO NET-OF-TAX RATES

Taxpayer Groups Classified by 1985 Marginal Rate	Net of Tax Rate (1)	Adjusted Taxable Income (2)	Adjusted Taxable Income Plus Gross Loss (3)
Percentage Changes, 1985–88			
1. Medium (22–38)	12.2	6.2	6.4
2. High (42–45)	25.6	21.0	20.3
3. Highest (49–50)	42.2	71.6	44.8
Differences of Differences			
4. High minus medium	13.4	14.8	13.9
5. Highest minus high	16.6	50.6	24.5
6. Highest minus medium	30.0	65.4	38.4
Implied Elasticity Estimates			
7. High minus medium		1.10	1.04
8. Highest minus high		3.05	1.48
9. Highest minus medium		2.14	1.25

NOTE.—The calculations in this table are based on observations for married taxpayers under age 65 who filed joint tax returns for 1985 and 1988 with no age exemption in 1988. Taxpayers who created a subchapter S corporation between 1985 and 1988 are eliminated from the sample.

(4D) Describe the empirical analysis and explain, using Table 2 above, how the author arrives at the estimates of the implied elasticity of taxable income (ETI). What are the main identifying assumptions needed for the estimates to be the causal effect of the marginal tax rates on taxable income?

(4E) Describe how you could validate the main identifying assumptions needed in (4D) and what kind of data you would need to do so.