Summer 2015 examination

EC426
Public Economics

2014/2015 Syllabus

Instructions to candidates

Time allowed: 3 hours

This paper contains **Twelve** questions and is divided into **two** sections.

ALL candidates should answer **two** short questions and **one** long question from **each** section.

Each short question has a weight of 10% (of the overall mark) and each long question a weight of 30% (of the overall mark). In multipart questions, answer all parts.

Calculators are **not** allowed in this examination.

Section A

Short questions: Answer TWO questions (each question carries 10 marks)

1 Are provision-point mechanisms more effective at providing public goods than voluntary-contribution schemes? *[Explain why voluntary provision of public goods under provides and why subscription schemes and commitment devices typically fail. Explain the standard provision point mechanism and discuss results in Rondeau et al (2005)]*

2 Should luxury goods be taxed more heavily than other types of goods? *[Discuss Atkinson-Stiglitz generalised Ramsey rule argument and fairness concerns. Good answers should also point out that the argument depends crucially on whether the tax policy can also consider direct (income) taxes as well as taxes on commodities.].*

3 Consider the following statement: "The market for health insurance is adversely selected if individuals who would like to buy insurance are denied insurance due to their bad health." Why is it wrong? Discuss the role of the observability of health characteristics in this context. *[A market is adversely selected if individuals do not buy insurance due to the high equilibrium prices, reflecting the higher risk of the average buyer. They would be willing to buy insurance at actuarially fair prices. If insurance companies could observe individuals' health characteristics, they could charge higher prices (or deny insurance) to high-risk individuals. Hence, the observability crucially determines whether it is the high-risk or the low-risk individuals who are less likely to buy insurance.]*

4 Discuss the following statement: "The fiscal imbalance of the Social Security in developed countries is due to its pay-as-you-go, defined-benefit design and justifies transitioning to a fully-funded, defined-contribution system." *[A good answer should discuss that the demographic changes (e.g., increase in age without increases in retirement age) would be problematic for DC system as well, i.e., for given contributions, you would have less benefits. Decrease in fertility and wage growth is indeed problematic for pay-as-you-go system. However, transition to a fully-funded system is difficult because of the legacy debt of the PAYG system.]*

Section A

Long questions: Answer ONE question (each question carries 30 marks)

5

(a) Does greater income mobility imply greater inequality? Does it imply greater equality of opportunity? *[9 marks] [Higher mobility can be consistent with higher or lower inequality of outcome. Explain basic concepts of EOp and the intuitive link with mobility. However intuition is a little misleading and answers should discuss the three approaches in Van de gaer et al (Economica 2001)]*

(b) Can the social objective of greater mobility be reconciled with individual risk aversion? *[5 marks] [Explain the basic paradox that income variability is commonly considered undesirable from the individual's point of view and that individual risk aversion can be taken as the foundation of inequality-aversion by society using a Harsanyi-type argument]*

(c) Can the objective of greater mobility be reconciled with standard social-welfare functions? *[7 marks] [Standard SWF approach is indifferent to mobility, but Gottschalk-Spolaore (REStud 2002) have suggested a way of incorporating mobility into a multiperiod model of welfare. There is also evidence that people value mobility per se – see Amiel et al, (Social Choice and Welfare 2015)]*

(d) To what extent can mobility be considered a substitute for income-redistribution programmes? *[9 marks] [Discuss Hirshman's "tunnel effect" and the "land of opportunity" argument (Alesina and La Ferrara 2005) ,Explain Bénabou-Ok's POUM hypothesis and evidence on whether this appropriately captures people's attitudes to redistribution.].*

6 Consider an unemployed agent at the start of a 2-period model. In the first period, the agent exerts effort e_1 to find employment with probability $\pi(e_1)$. If the agent is successful, she earns a wage w and remains employed in the second period as well. If the agent is unsuccessful, she exerts effort e_2 to find employment with probability $\pi(e_2)$ in the second period. The utility cost of exerting effort equals c(e)=e in both periods. The unemployment policy specifies a tax τ paid when employed and benefit levels b_1 and b_2 paid when unemployed in the first and second period respectively. There is no discounting and the agent has no savings in this model.

(a) What is the government's budget constraint? What are the incentive compatibility constraints that characterize the effort exerted by an unemployed agent in the first and second period? [8 marks] *[The budget constraint equals*

$$[\pi(e_1)\times 2+(1-\pi(e_1))\pi(e_2)]\tau=(1-\pi(e_1))b_1+(1-\pi(e_1))(1-\pi(e_2))b_2.$$

The IC constraints equal

$$\pi'(e_2)[u(w-\tau)-u(b_2)] =1$$

$$\pi'(e_1)[2\times u(w-\tau)-[u(b_1)+\pi(e_2)u(w-\tau)+(1-\pi(e_2))u(b_2)]+e_2] =1]$$

(b) Use your answer in part a. to show that the budgetary impact of a change in the benefit level in the second period b_2 depends on the benefit level in the first period b_1. Does this additional effect increase or decrease the cost of providing a higher benefit level b_2? [8 marks] *[From the second IC constraint, we see that the agent will exert less effort e_1 when b_2 increases and thus is more likely to be unemployed in the first period, increasing the probability that the government needs to pay b_1. This increases the welfare cost of increasing benefits in the second period]*

(c) This additional effect in a 2-period model depends on the agent being forward-looking. How would you design a test to evaluate the importance of this force? Discuss. [7 marks] *[We would need (random) variation in the benefits when LT unemployed and see how this affects exit rates among the ST unemployed. E.g., Schmieder et al. compare younger and older workers (RDD) to show that exit rates decrease early in the spell in anticipation of longer benefit durations. Students could also refer to the increase in exit rates in anticipation of exhausting their benefits.]*

(d) Now assume that the agent starts the unemployment spell with some savings. Do you think she would value benefits more when unemployed in the second period or when unemployed in the first period? Can you think of a test to evaluate this? Discuss. [7 marks] *[The LT unemployed would have ran down some of their savings and therefore consume less and thus value an increase in benefits more. One could simply look at how much consumption (or savings) decrease with the time spent unemployed.]*

Section B

Short questions: Answer TWO questions (each question carries 10 marks)

7 Consider the policy choice between school vouchers and free public education. Discuss how your recommendation depends on whether the goal is to increase total educational attainment or to target the children with low educational attainment. *[Free public education at a fixed quality may decrease the educational attainment for some students. More than full crowd-out is a consequence of the discrete school choice. However, free public education will increase the education for students with otherwise low education attainment in a private market and can thus effectively target this group. Students can illustrate this graphically. Vouchers could be made income-dependent and improve the targeting as such.]*

8 Consider a regression of hours worked on the net-of-tax wage rate (and other observable controls) using cross-sectional data. Describe the key sources of bias in the estimated coefficient on the net-of-tax wage rate. Is the estimate likely to be upward or downward biased? Explain. [*Answer: The two key identification issues are omitted variable bias due to unobserved heterogeneity in taste for work (likely to create upward bias) and reverse causality as the tax rate is endogenous to hours worked in a nonlinear tax system (creates downward bias). The net effect of these biases is unknown.*]

9 Many transfer programs are targeted to single parents. Describe the key conditions under which such targeting is socially optimal. How might you empirically evaluate the desirability of such targeting? Discuss. [*Answer: This is a form of tagging and the answer should list the three key conditions for the optimality of tagging: (i) observability, (ii) correlation with ability, and (iii) immutability. The key condition here is immutability, i.e. whether targeting to single parents induce higher rates of single parenthood. The answer should describe how one might estimate the effect of such transfers on single parenthood using a quasi-experimental approach.*]

10 The standard economic model of tax evasion predicts that agent evade some tax whenever $p \cdot (1+\theta) < 1$, where p is the audit probability and θ is the penalty rate. Describe the intuition behind this prediction. Is the prediction consistent with the data? Why or why not? Discuss. [*Answer: The economic intuition should be stated in terms of the marginal benefit and expected marginal cost of an extra dollar of tax evasion. The prediction is inconsistent with the data: the low empirical values of p and θ implies that everybody should evade, whereas empirically most people do not evade. A good answer might also discuss the key reasons why the basic model gets it wrong.*]

Section B

Long questions: Answer ONE question (each question carries 30 marks)

11 Each individual in society experiences utility u(x) when smoking x cigarettes. For each cigarette an individual smokes, she imposes a health cost d on society due to the air pollution. The price per cigarette equals p, which is set equal to its constant production cost c.

(a) Describe the individual's behaviour and show that this is socially inefficient. [6 marks] *[This follows the standard argument that individual behaviour accounts for private benefits and costs, not for the social cost. Students should show formally that a decrease in x increases welfare due to reduction in the air pollution (while the impact on the private benefits for consumers and producers is of second order)]*

(b) Describe three different policy interventions which can lead to the efficient amount of smoking? [6 marks] *[Answer: A tax equal to d. A quantity restriction (on each individual) to smoke x such that u'(x)=c+d. Or a Coasian solution to provide "rights to pollute" or "rights to clean air".]*

(c) The electronic cigarette is argued to eliminate the air pollution and thus the costs to society. However, a survey suggests that individuals underestimate the costs of smoking for their own health. While their decision utility equals *u(x) - d*x*, their true utility equals *u(x)*. Would you still recommend the policy interventions you discussed in b? [6 marks] *[The internality leads to the same inefficiency as the externality and thus to over-consumption. Hence, the exact same tax or quantity regulation would again be a welfare-increasing policy. A good answer notices that implementing the Coasian solution is problematic in case of internalities. Simply providing information would satisfy a libertarian paternalist]*

(d) Some policy makers dispute the results in the survey and argue that smokers are well aware of the health consequences (i.e., *d=0*). Show formally why introducing a small tax on smoking increases welfare even if most of the smokers are indeed well aware. [6 marks] *[The cost of a very small tax is "second order" for smokers who are aware of the health consequences, while the gain of reducing the smoking of those who are underestimate the health consequences is "first order". Students may illustrate this graphically.]*

(e) Discuss the equivalence between a price policy and quantity regulation when for some individuals *d=0* and for other individuals *d>0*. [6 marks] *[This is related to the Weitzman analysis, but still quite different. With a tax you will decrease consumption of both rational and over-consumers and their chosen consumption levels will be different. With a quantity policy you can induce the same behaviour for everyone, but the constraint may not be binding. In fact, in this case you implement the efficient outcome by setting an upper bound on smoking x=b such that u'(b)=p. This constraint is only binding for those who would smoke too much initially.]*

12 Consider workers with a utility function $u(z-T(z),z/n)$, where z is before-tax earnings, $T(.)$ is a tax function, and n is ability which is smoothly distributed in the population. To begin with, there is a linear earnings tax, i.e. $T(z) = t \cdot z$, and individuals can adjust their earnings in response to taxes without any friction.

(a) Assume that the marginal tax rate is increased from t to $t+\Delta t$ at the income threshold z^*. Characterize behavioural responses to this kink, and describe an empirical strategy that exploits the kink to estimate an elasticity of earnings with respect to the marginal net-of-tax rate. What earnings elasticity is being estimated? Explain. [10 marks]

[Follows Saez (2010)]

(b) Instead of the kink analysed above, assume that tax liability is increased from $T(z^*)$ to $T(z^*)+\Delta T$ at the income threshold z^*, with no change in the marginal tax rate. Characterize behavioural responses to this notch, and describe an empirical strategy that exploits the notch to estimate an elasticity of earnings with respect to the marginal net-of-tax rate. What earnings elasticity is now being estimated? Explain. [10 marks]

[Follows Kleven & Waseem (2013)]

(c) Assume now that a fraction of individuals a^* (at any earnings level) are affected by some form of optimization friction that make them unresponsive to kinks or notches. If this issue is ignored, what elasticity is being estimated in the empirical strategies described above? Explain. Describe how one might estimate a^* and account for such friction in the strategies based on kinks and notches, respectively. [10 marks]

[See Chetty et al. (2011); Kleven & Waseem (2013)]