

STOCKHOLM UNIVERSITY  
Department of Economics

Course name: Public Finance  
Course code: EC2106  
Type of exam: Retake  
Examiner: Mikael Priks  
Number of credits: 7.5 credits  
Date of exam: Saturday February 16th, 2019  
Examination time: 13:00- 16:00 (3 hours)  
Aids: No aids are allowed.

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Write your identification number on each answer sheet (the number stated in the upper right hand corner on your exam cover).

Start each new question on a new answer sheet.

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Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked.

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The exam consists of 3 questions worth 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

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Your results will be made available on your Ladok account ([www.student.ladok.se](http://www.student.ladok.se)) within 15 working days from the date of the examination.

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**Good luck!**

## Exam, Public Finance

### Mikael Priks

This exam consists of three questions. The first and second question give 40 credits each and the last question gives 20 credits.  $p$  denotes prices and  $q$  quantities. To get full credit, you need to state and explain your results clearly. Good luck!

#### Theoretical Tools of Public Finance (40)

- What is the difference between a utilitarian social welfare function and a Rawlsian social welfare function?
- Define the marginal rate of substitution.
- The demand of a good is given by  $p=600-2q$  and the supply is given by  $p=q$ . How large is the consumer surplus? How large is the producer surplus? Which theorem characterizes this equilibrium?
- Assume that an individual has the following problem

$$\max_{x,y} \sqrt{x * y}$$

$$st. 800 = 100x + 400y$$

where 800 is her income, the price of good  $x$  is 100 and the price of good  $y$  is 400. Solve for the optimal level of consumption of goods  $x$  and  $y$ . How large is the individual's utility in this optimum?

#### Public Goods (40)

- Define the concepts altruism and warm glow.
- Assume that two individuals each has the marginal valuation  $MV=4-q$  of a pure public good. Show in a figure how the marginal valuation curves should be summed up when the government decides on the optimal level of public good provision. Why are the curves summed in this way? Derive and show in the figure the optimal level of provision if the marginal cost of building the public good is 4 per unit of production.
- The demand for a pure public good is given by  $p=100-2q$ . How much will be consumed? Explain the problem in this situation.
- Ben and Jerry will invest in fireworks,  $F$ , viewed by both as a private good,  $X$ . Each individual  $i$  has the utility  $U=2\ln(X_i)+\ln F$  where  $F$  is the sum of Ben's investments in fireworks,  $F_B$ , and Jerry's investments in fireworks,  $F_J$ , so  $F=F_B+F_J$ . The budget restriction for each of them is  $100=X_i*1+F_i*1$ . In other words, their income is 100, the price of the private good is 1 and the price of fireworks is also 1. Solve Ben's and Jerry's problems and show how much of the private good and fireworks each of them will buy. Show also how the solution is different from the social optimum. Explain.

### **Taxation (20)**

- a) Define the tax wedge. What does full shifting mean?
- b) Why does taxation generate welfare losses?