

Course name: Public Finance
Course code: EC2106
Examiner: Mikael Priks
Number of credits: 7,5 credits
Date of exam: 14th of January 2018
Examination time: 3 hours

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

Explain notions/concepts and symbols. Only legible exams will be marked. No aids are allowed.

The exam consists of 3 questions. The first and the second question give 40 points each and the last questions gives 20 points, 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.

If you think that a question is vaguely formulated: specify the conditions used for solving it.

Results will be posted on www.student.ladok.se on **the 5th of February** the latest.

Good luck!

Exam, Public Finance, January 14, 2018

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

Externalities (40)

- The production of honey affects neighboring apple production positively but the apple producers do not compensate the honey producers. Explain and show in a figure what the government can do to address this externality.
- State the first and the second part of the Coase theorem. How does free riding affect the implication of this theorem?
- Assume that the profit of one firm is given by $\pi_1 = pq_1 - q_1^2$ where q_1 denotes its production and p is the price level, which is taken as given. The profit of a second firm is given by $\pi_2 = pq_2 - q_2^2 - eq_1$ where q_2 is the production of firm 2 and eq_1 is an externality caused by firm 1 when it produces its goods. Solve for the production levels in the two firms. How does this compare to the society's optimum?
- Two firms produce a good which leads to pollution. Assume that the marginal cost for cleaning up in one firm is given by $MC_1 = 40 - 4q$ and for the other firm it is given by $MC_2 = 40 - (4/3)q$ where q is pollution. The marginal damage curve for the society is given by $p=q$. Derive and show in a figure the optimal level of pollution for the society, the optimal tax level and how much the firms clean up given this tax. Assume now that the government instead uses regulation so that the firms have to clean up an equal amount. Show in the figure why regulation is not cost efficient and derive the society's costs of regulation compared to taxation.

Public goods (40)

- How are the marginal valuations summed up in the case of a pure public good? Explain.
- What do the terms warm glow and social capital mean?
- Discuss with the help of a picture why there are inefficiencies in the consumption of a public good.
- Per and Sally are independently of each other about to decide how much to invest in a public good F . Each individual i has the utility $u = \ln X_i + F$ where X is a private good and $F = F_P + F_S$ where the subscript P denotes Per's investments in the public good and S denotes Sally's investments. Per's budget restriction is $80 = X_P + F_P$ and Sally's budget restriction is $100 = X_S + F_S$. Show Per's and Sally's private investment levels of the private good and the public good. Show how the solution is different from the social optimum. Explain.

Health (20)

- a) Why is the optimal health insurance policy constructed in a way that individuals bear a large share of medical costs within some affordable range and are only fully insured when costs become unaffordable?
- b) Why do Europeans smoke more than Americans according to Cutler and Glaeser (2009)?