

Original

Exam: Economics III – Public Economics

Course No.: 5026

Lecturer: Ronnie Schöb

*+ Economic Policy
in Gresh*

Summer term 2002

Date: July 31, 2002

Name, First name

Student number

Degree/semester

INSTRUCTIONS

1. Non-programmable calculators and dictionaries are allowed.
2. The exam consists of 3 open questions and 5 multiple choice questions. You have to answer **all** questions. You can achieve a maximum of 100 points. For the multiple choice questions, there is only one correct solution. The right answer is worth 8 points, a wrong answer will yield 0 points.
3. You have 60 minutes to answer all questions.

Part A: Open Questions

- A1 Explain the expressions *tax incidence* and *excess burden of taxation*. 15 points
- A2 Explain how an output price regulation can force a monopolist to supply the Pareto-efficient quantity of output. What complementary policy measures would be necessary in the case of a natural monopolist? 20 points
- A3 Show by using an appropriate graph, how the introduction of a green tax allow the government to achieve both the optimal degree of environmental quality and cost-efficiency. 25 points

Part B: Multiple Choice

B1 At which price produces a natural monopolist the Pareto-efficient outcome?

- A price = marginal cost
- B marginal revenue = marginal cost
- C price = average cost
- D price = variable average cost
- E marginal cost = marginal profit

B2 A mountain village owns a common pasture where villagers graze their goats. The cost to a goat owner of owning and caring for a goat is € 4. The pasture gets overgrazed if too many goats share the pasture. The total revenue from all goats on the common pasture is $f(z) = 48z - 2z^2$, where z is the number of goats on the pasture. The town council notices that total profit from the pasture is not maximized if villagers are allowed to pasture goats for free. The council decides to allow a goat to use the common pasture only if its owner buys it a goat license. To maximize total profit (of villagers and council), how many Euro per goat should the council charge?

- A € 11
- B € 12
- C € 22
- D € 24
- E € 26

Questions B3-B5

Name _____

B3 For the optimal provision of a public good for two households A and B, the following condition must hold:

- A $MRT = MRS^A \cdot MRS^B$
- B $MRT = MRS^A - MRS^B$
- C $MRS^A = MRT - MRS^B$
- D $MRT = MRS^A = MRS^B$
- E $2 \cdot MRT = MRS^A = MRS^B$

B4 Assume that a reallocation of two goods between two households leads to a Pareto-improvement. Then we know that the new allocation that can be represented as a single point in the Edgeworth box is definitely

- A on the contract curve.
- B in the exchange lense.
- C On the common budget line through the initial endowment.
- D North-east of the indifference curves that passes through the initial endowment.
- E South-west of the indifference curves that passes through the initial endowment.

B5 Edmund and Gerhard are thinking of buying a sofa. Edmund's utility function is $u^E(s, m^E) = (1 + s)m^E$ and Gerhard's utility function is $u^G(s, m^G) = (4 + s)m^G$, where $s = 0$ if they don't get the sofa and $s = 1$ if they do and where m^E and m^G are the amounts of money they have respectively to spend on their private consumptions. Edmund has a total of € 800 to spend on the sofa and other stuff. Gerhard has a total of € 3,000 to spend on the sofa and other stuff. The maximum amount that they could pay for the sofa and still arrange to both be better off than without it is:

- A € 1,500
- B € 750
- C € 550
- D € 1,000
- E € 2,000

Assignment

Examination: Economics III (Economic Policy) Summersemester: 2002
Examiner: Dr. G. Groh
The following aids can be used: Electronic calculator and dictionary
Hint: 80 of the 100 points attainable are regarded as the maximum number one can reach in the time available.

Examination questions:

1. (25 points: (a): 10, (b): 5, (c): 10)

Consider the following concrete form of an IS-LM-model:

$$\begin{aligned}C &= 0.75(Y - \bar{T}), & \bar{T} &= 200; \\I &= 220 - 400(r - \pi^e), & \pi^e &= 0.05; \\G &= 200; \\Y &= C + I + \bar{G} \\ \frac{M^d}{p} &= 0.2Y + 470 - 3200r; \\ \bar{M} &= 700; & p &= 2\end{aligned}$$

- (a) Determine on this basis analytically the equilibrium values for the following variables:
- real income Y
 - nominal rate of interest r
 - real private investment I .
- (b) Assume now, that real government expenditure G is increased by 50 units to a new level $\bar{G}_{\text{new}} = 250$. By which amount $\Delta \bar{M}$ has the nominal money supply \bar{M} to rise in order to leave private investment unchanged?
- (c) What will happen in a normal AS-AD-model with prevailing unemployment, if
- the nominal wage decreases
 - the nominal money supply is increased
 - the labor productivity increases?

Which are the final effects of each of these events on real output, the price level and on the nominal rate of interest?

2. (15 points: (a): 3, (b): 10, (c): 2)

- (a) What is the difference between a "Cold turkey" and a gradualistic strategy of disinflation?
- (b) How do these two strategies differ with regard to the adjustment processes caused by them and on which factors do these processes depend?
- (c) How can the costs of a disinflation strategy be measured?

See overleaf

3. (20 points: (a): 6, (b): 8, (c): 6) Consider the following version of the “Right-to-manage”-model of the wage bargain between a union and a firm:

$$\text{Nash-Product} = [L^d(u(w) - u(\bar{w}))]^\alpha [R(L^d) - wL^d]^{1-\alpha}$$

with $u(w) = 18w$ (utility function of a representative worker), $\bar{w} = 8$ (unemployment benefits), $R(L^d) = 1440(L^d)^{1/2}$ (revenue function of the firm) and $L^s = \bar{L} = 9000$ (total labor supply).

- Which unemployment rate will prevail in the competitive equilibrium (i.e. in the absence of a union)?
 - Determine the labor demand (L^d) of the firm for the (extreme) case, where the union can dictate the wage rate. (Hint: Before starting with your computations, think about α .)
 - Which level of the unemployment benefits (\bar{w}) would be required to lower the unemployment rate under the conditions of (b) to 10 % ?
4. (20 points: (a): 7, (b): 9, (c): 4)

Assume a central bank wants to minimize the following loss function:

$$\mathcal{L}(U, \pi) = \theta \frac{U^2}{2} + (1 - \theta) \frac{\pi^2}{2}, \quad \theta = \frac{1}{3}$$

under the constraint given by the following Phillips curve:

$$\pi = \bar{U} - U + \pi^e \quad \text{with} \quad \bar{U} = 4.5\% = 0.045.$$

- Determine the short-run optimum with regard to U and π for $\pi^e = 1.5\% = 0.015$.
 - Determine now the rate of inflation of the sustainable long-run equilibrium and give a (qualitative) graphical representation as well as a short verbal explanation of your results.
 - Now imagine a “hard-nosed” central banker, who is only concerned about inflation but not at all about unemployment (i.e. $\theta = 0$). How would his indifference curves look like and what would be the consequences for the sustainable rate of inflation?
5. (20 points: (a): 11, (b): 9) Consider the Mundell-Fleming model of an open economy. Show graphically the consequences of

- a rise in government expenditure under flexible exchange rates and low international mobility of capital (BP-curve steeper than LM-curve)
- a reduction of money supply under fixed exchange rates and perfect international mobility of capital.

and give a short (verbal) description of the adjustment processes in both cases.