

Original!

Exam: "Economics III" (Public Economics)

Examiner: Dr. Carsten Helm/Dr. Bertrand Koebel

Semester: Summer 2000

The following aids can be used: None

Examination questions:

Question 1 (20 %):

Write down the algebraic expressions for

- a utilitarian social welfare function,
- a Bernoulli-Nash social welfare function, and
- a Rawlsian social welfare functions.

Briefly elaborate on the distributional value judgements that are expressed by these alternative specifications of a social welfare function.

Question 2 (20 %):

The mayor wants to make Magdeburg a more attractive place for students. For that purpose she considers to subsidize students housing. Demonstrate graphically that there is an excess burden associated with the subsidy on housing. Do so for a unit subsidy with an upward sloping supply curve and a downward sloping demand curve.

Question 3 (60%): In a closed economy there are two competitive firms. The first one produces steel (the steel output is denoted by s) and is also polluting the nearby river (the amount of pollution is x). Its cost function is given by

$$C_s(s, x) = s^2 - xs + x^2 + 2x.$$

The second firm catches fish (in amount f) in the polluted river, and has a cost function given by

$$C_f(f, x) = f^2 + 2x.$$

(i) (15%) The first firm chooses the levels of s and x in order to maximize its profits. The second firm chooses the level of f which maximizes its profits. Let $p_s = 10$ and $p_f = 10$ be the given price levels for steel and fishes. Initially, no price has to be paid for pollution ($p_x = 0$). Give the individually optimal levels of s , x and f . Which pollution level of the steel firm would be optimal for the fishing firm?

(ii) (15%) Compute the levels of s , f , and x which maximize joint profits. Compare it with the decentralized allocation, and discuss why the decentralized allocation is problematic.

(iii) (30%) Discuss the various possibilities by which the problems arising in the decentralized economy can be solved?

(iv) (20%) Now, the State is thinking about taxing pollution by setting a positive price for it (that is, we have now $p_x \geq 0$). Which level of p_x would implement the efficient allocation?

(v) (20%) Now the cost function of the fishery is slightly modified and given by

$$C_f(f, x) = f^2 + 2x + \frac{1}{6}xf.$$

Compute the optimal supply of fish and give an economic interpretation of the main difference with point (i).

Klausur / written examination: Economic policy
Prüfer / examiner: Dr. G. Groh
Semester: Summer 2000
Keine Hilfsmittel zugelassen / No aid admissible

1. (20 points: (a): 10, (b): 10)
- (a) Consider the IS-LM-model with a normally sloped IS- and LM-curve. Compare graphically the effect of a
- debt-financed (thereby neglecting the Barro-Ricardian equivalence)
 - tax-financed
 - money-financed
- increase in government expenditure and give an explanation for the differences (an analytical derivation of the multipliers is not required).
- (b) What will happen in a normal AS-AD-model with prevailing unemployment, if
- the nominal wage increases
 - the nominal money supply is reduced
 - 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?
3. (25 points: (a): 5, (b): 10, (c): 10)
- (a) Derive from the government’s budget equation the dynamic equation for the development of the debt-to-GDP ratio (b_t) in time, assuming a constant growth rate of real output (n).
- (b) Let $b_{t-1} = 0.5$. Assume furthermore, that the (neo-) quantity theory of money holds with a velocity v of 1. Let the ratio between the primary deficit and GDP d_t be equal to 0.07 for all t . In addition to this, assume for the real rate of interest $R_{t-1} = R_t = 6\%$ for all t and a constant level of real output. Which rate of inflation will result, if the central bank wants to keep b_t on its current level (b_{t-1})?
- (c) Give a short verbal description of the main contents of the “unpleasant monetarist arithmetic”.

4. (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 $u(w) = 7w$ (utility function of a representative worker), $\bar{w} = 5$ (unemployment benefits), $R(L^d) = 600(L^d)^{1/2}$ (revenue function of the firm) and $L^s = \bar{L} = 4000$ (total labor supply).

- (a) Which unemployment rate will prevail in the competitive equilibrium (i.e. in the absence of a union)?
 - (b) Determine the labor demand (L^d) of the firm for the case, where the union can dictate the wage rate.
 - (c) Which level of the unemployment benefits (\bar{w}) would be required to lower the unemployment rate under the conditions of (b) to 10 % ?
5. (20 points: (a): 10, (b): 10) Consider the Mundell-Fleming model of an open economy. Show graphically the consequences of
- (a) a rise in government expenditure under fixed exchange rates and high (but not perfect) international mobility of capital
 - (b) a rise in money supply under flexible exchange rates and perfect international mobility of capital.

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