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Course name:	INTERMEDIATE MACROECONOMICS
Course code:	EC2201
Type of exam:	Retake.
Examiner:	Anna Seim.
Number of credits:	7.5.
Date of exam:	Saturday May 2 2020.
Examination time:	5 hours (9:00-14:00).
Aids:	Open-book exam to be written at home. Literature may be accessed. Calculators are allowed but are not necessary and will not be useful.

Write your personal number (Swedish personnummer) on each answer sheet.

Start each new question on a new answer sheet.

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.

The exam consists of 5 questions, worth 100 points in total. The maximum number of points on each sub-question are stated within parenthesis. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points.

Question 4 may be answered in English or Swedish. All other questions should be answered in English.

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

Good luck!

Question 1: Short questions (25 points in total)

Please write no more than one page (maximum) when answering each of these questions.

a. Explain what is meant by the time inconsistency problem of monetary policy. Why does it arise? Can it be solved? (5 points)

b. According to theory discussed in the course, we should treat currencies as financial assets in the short run. How is the nominal exchange rate determined according to this theory? Explain which factors affect the decision of an investor considering investing in a given currency. (5 points)

c. Consider the search and matching model discussed in the course. The Beveridge curve, the job-creation condition and the wage setting curves, respectively, are given by:

$$u = \frac{\lambda}{\lambda + \theta q(\theta)}$$
$$p - w - \frac{(r+\lambda)pc}{q(\theta)} = 0,$$
$$w = (1 - \beta)z + \beta p(1 + c\theta).$$

Analyse the effects of an increase in z. (5 points)

d. Consider a country with a debt-to-GDP ratio of 150 percent. The GDP growth rate in the economy is 3 per cent and the interest rate is 5 per cent. Is it possible to stabilise the debt-to-GDP ratio in this economy? If so, how? Motivate your answer. (5 points)

e. Briefly explain why institutions are thought to affect economic growth. (5 points)

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Question 2: Economic growth (20 points)

Consider a simple version of the Solow model where the population is constant and labour efficiency is constant and normalised to one. Capital depreciates at rate δ. The production technology is Cobb-Douglas and given by:

$$Y_t = K_t^{1/4} L^{3/4}$$

a. Show that the production function is homogenous of degree one. (2 points).

b. What is the steady state condition in this economy? Illustrate the equilibrium in a diagram. (4 points)

c. Explain why the economy reaches the steady state, i.e. describe the mechanism. (4 points).

d. Derive expressions for the steady-state levels of capital and output, i.e. K^* and Y^*. (6 points)

e. Suppose instead that the production function is given by

$$Y_t = K_t$$

Capital is still accumulated as in the Solow model above. Derive an expression for the output growth rate under these assumptions. (4 points)

Question 3: The AS-AD model (25 points)

Consider the AS-AD model discussed in the course. Assume that the interest rate only affects investment, not net exports. The AS and AD curves are given by

$$\tilde{Y}_t = \alpha - \beta\mu(\pi_t - \bar{\pi})$$
$$\pi_t = \pi_{t-1} + v\tilde{Y}_t + \sigma$$

a. What must be true of the model parameters and variables in the long-run equilibrium, i.e. in the steady state? Motivate your answer. (5 points)

b. Analyse the effects of a temporary supply shock, specifically an increase in σ that lasts for one period. Provide an example of such a shock. Describe the mechanisms that bring the economy back to long-run equilibrium. Does the central bank react to the shock? If so, how? (7 points)

c. Analyse the effects of a temporary demand shock, specifically a decrease in α that lasts for 10 periods. Provide an example of such a shock. Describe the mechanisms that bring the economy back to long-run equilibrium. Does the central bank react to the shock? If so, how? (7 points)

d. Should governments try to offset shocks to supply and demand by means of fiscal policy? Are there any risks involved in doing so? No formal analysis is required but please motivate your answer. (6 points)

Question 4: Cross-country differences in hours worked (20 points)

This is an essay question where you are supposed to refer to material covered in the course. Please be brief and to the point. You may answer in English or in Swedish. Write no more than 3 hand-written pages, or 2 pages on a computer (maximum).

Your task is to discuss theories for why Americans work more than Europeans. Do you think that taxes play a role? Why/why not? Try to motivate your answer referring to theories covered in the course.

Question 5: Consumption and saving (10 points)

This is a credit question that should only be answered by students who have not received course credit from the seminar exercises. Students who have obtained course credit automatically receive 10 points on this question and cannot obtain extra points by answering it.

Consider a household living for two periods. The intertemporal budget constraint is given by

$$c_1 + \frac{c_2}{1+r} = y_1 + \frac{y_2}{1+r}$$

where c is consumption, y is income and r is the interest rate. The household's preferences are characterised by the utility function

$$U(c_1, c_2) = u(c_1) + \beta u(c_2)$$

where $u(c_t)$ is the period utility function and $\beta < 1$ is the discount factor.

a. Formulate the household's optimisation problem and derive the Euler equation. (4 points)

b. Suppose that $u(c_t) = \ln c_t$, that $r = 0$, $\beta = 1/2$, $y_1 = 4$ and $y_2 = 8$. Solve for the levels of optimal consumption, i.e. c_1 and c_2. (6 points)