MACROECONOMICS (1103)

2nd Semester - 2011/2012

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Midterm Exam

Duration: 1h15m

1. True or False?

Discuss the arguments for your choice – there is no credit without explanation.

i. "According to the Solow growth model, if the saving rate increases then the long-run GDP growth rate increases."

ii. "Cross-country data for the period 1960-2000 shows that the growth rate of real per capita GDP bears little relation to the level of real GDP in 1960. This finding conflicts with the predictions of the Solow model."

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iii. "In the aggregate, B = 0. This means that the total amount of bond savings in a closed economy has to be necessarily zero at any period. If the economy has N individuals, (N/2) of them will borrow money and the other half will be lenders."

iv. "An older person's marginal propensity to consume (MPC) out of a temporary increase in income is different than the MPC of a younger person."

v. "The market clearing model assumes a general price formation mechanism based *only* on agents that optimize for given prices."

vi. "The Beveridge curve has no empirical support in the data."

2. Intertemporal Choices

An economy has N identical consumers. Each of these consumers is small , in the sense that no individual can affect market prices. People in this economy live for 2 periods ($t=1, 2$). They have access to a bond market where they can borrow and lend at rate i to smooth their consumption over time and to a commodity market where they can trade goods at a constant price P. There is no capital market in this economy and individuals inelastically supply one unit of labor every period of time. Each period's production is denoted by y_t where t is the time period. Consumers preferences are given by

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

where $\beta \in (0,1)$ is the subjective discount rate.

i. Write down the consumer s budget constraint at time t=1. Assume the representative consumer's initial holdings of bonds are b_0.

ii. Write down the consumer s budget constraint at time t=2.

iii. Argue that $b_2 = 0$ in equilibrium.

iv. Write down the consumer's optimization problem, making clear what the choice variables are.

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v. Derive (do not simply state) the intertemporal budget constraint for a representative consumer in this economy using the one-period budget constraints for t = 1 and t = 2.

vi. Re-write the simplified consumer's problem, using the intertemporal budget constraint. What are the choice variables now?

vii. How would you solve this problem? There is no need to make calculations, simply state and explain the steps you would follow to obtain the optimality conditions for this problem.

viii. Suppose that this consumer learns at time $t = 1$ that she will get a pay raise in period $t = 2$.

What will happen to the consumer's choices for C_1 and C_2 compared to the baseline scenario where there is no change in pay. Explain with detail.

3. Foreign aid to Afrikaland

Suppose a (private) Portuguese NGO sent a one-time gift of machinery equipment to Afrikaland, a poor African country, hoping to contribute to increasing its productive capacity.

i. How would you record this gift in Portuguese and in Afrikaland's national accounts?

ii. Use a diagram to show how this shock affects the market for capital in Afrikaland. Assume capital is **inelastically** supplied. What happens to the stock of capital in this economy (K) and to the real rental price (*R/P*) in Afrikaland? What happens to the interest rate (i) in Afrikaland? Explain all steps in your answer with detail.

iii. Use a diagram to show how this shock affects the labor market in Afrikaland. What happens to labor input (L), assuming it is **elastically supplied**? What happens to the real wage rate (w/P) in Afrikaland? Explain all steps in your answer with detail.

iv. What happens to output (Y), consumption (C) and investment (I) in Afrikaland? What happens over time to the stock of capital (K) in Afrikaland? Explain all steps in your answer with detail.

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