

MACROECONOMIC POLICIES

Test 1: 05/04/2007

2h 30m

I (4 values)

Describe 3 of the following concepts:

1. The tragedy of the commons.
2. Market failure.
3. Absolute versus conditional convergence.
4. Unstable equilibrium.
5. Constant returns to scale versus diminishing marginal returns.

II (7 values)

In Newland the production function is given by $Y_t = A_t K_t^{1/3} N_t^{2/3}$, where N measures the number of workers. It is known that, in this country, 25% of income is saved, the population doesn't grow, the capital stock depreciates 3% each year and $A_t = 5e^{\frac{0.04}{3}t}$.

- a. Find out the equilibrium values of K/L, Y/L and K/Y of this economy, in which L represents labour in efficiency units. Discuss the stability of the equilibrium found and represent it in a graph.
- b. Describe the behaviour of per-capita income, wages and interest's rate, and find the capital and labour's shares of national income. Are those results consistent with empirical evidence?
- c. Find the saving's rate that should maximize per-capita consume in steady-state.
- d. Assume that saving rate jumped to the level found in c. Describe in a graph the time paths of $y=Y/N$, $c=C/N$ and of the interest rate during the adjustment period.
- e. Consider an economy with a level of per capita income corresponding to 10% of the one in Newland. Find out the saving rate of this economy admitting that this was the only difference between the two economies. Discuss.

III (5 values)

Consider an economy, where the production function is given by $Y=0,3K$, the population grows at 1% per year, capital depreciates at 3% and the saving rate is 25%.

1. Describe the main equations of this model. With the help of a graph describe the stability of this model.
2. Find out the growth rate of per capita income in this economy.
3. Consider now that in this economy, the government imposes a tax on production, τ , which proceedings are used for government consumption.
 - i. Describe the main income identities of this economy and place them in a flow income chart.
 - ii. Find out the growth rate of per capita income in this economy when: $\tau =0\%$; $\tau =25\%$ and $\tau =50\%$. Explain.
 - iii. Compare the growth rate of per capita income for the exogenous and endogenous saving rate model. How different values of τ are related to different values of growth in both setups?
4. Discuss.

IV (4 values)

Choose and comment one of the following sentences:

1. "The Solow model did not assume that technical progress was exogenous. Rather, the model made assumptions implying that technical progress had to be exogenous to the model."
2. "We can't treat both France and Nepal as water in a liquid state".