

I (4,5 values)

Describe **3** of the following concepts:

- i. Absolute versus conditional convergence.
- ii. The tragedy of the commons.
- iii. Seigniorage versus inflation tax.
- iv. Fixed exchange rate regime.
- v. The time inconsistency argument.

II (8,5 values)

A. In Unevenland, the aggregate production function can be described as a linear function between output and physical capital, $Y = EK$, where E denotes for aggregate efficiency and K denotes for physical capital. The later depreciates at the rate $\delta=0,05$. Capital markets are perfect and there is no uncertainty, so households are able to smooth consumption intertemporally, according to $\gamma = r - 0,1$.

1. Find out the growth rate of per capita income in this economy in terms of E . Describe the dynamic properties of the model.
2. Elaborating a bit more, suppose that the efficiency term is better described as a ratio of two terms, $E = 0,5A/P_I$, where A is constant and P_I denotes for the relative price of capital goods. Which policies or country circumstances may be captured by P_I ?
3. Assume that initially $A = 1/2$. Compute the growth rates of per capita income in this economy when $P_I = (1/2)^{1/2}$ and when $P_I = (3/2)$. With the help of a graph, compare with the impact of a similar change in the context of the Solow model.

B. The economy underlying the AK production function described above is actually more complex than at the first sight. In particular, each individual firm i faces a production function of the form: $Y_i = AK_i^{1/2}H_i^{1/2}$, where H is human capital and $A = (G/Y)^{1/2}$, where G denotes for a public good. The government budget constraint is given by $G = (1/2)[\tau_K/(1 + \tau_K) + \tau_H/(1 + \tau_H)]Y$, where τ_K is the tax rate on physical capital incomes and τ_H the tax rate on human capital incomes. P_I becomes $P_I = [(1 + \tau_K)(1 + \tau_H)]^{1/2}$.

4. Compute the aggregate production function and explain why there is a market failure.
5. The benevolent planner of Unevenland chooses the intervention level G/Y so as to maximize the growth rate of per capita income or - which is the same - the efficiency term, E . For the moment, however, assume that the government can only levy taxes on physical capital τ_K (that is, $\tau_H = 0$). Find out the optimal level of τ_K and the corresponding level of government intervention.

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6. Now assume that the government is able to impose a uniform tax rate (that is, $\tau_H = \tau_k$). Find out the optimal level of τ_k and the corresponding level of government intervention. Explain the effect on P_I and compare this case to the one in question 3.
7. Compare the solutions of 5 and 6 and discuss.

III (5 values)

Consider a small open economy endowed with 3 units of labour, producing a tradable good (T) and a non-tradable good (N). The corresponding production functions are $Y_N = L_N$ and $Y_T = L_T^{1/2}$. It is further assumed that: the utility function is given by $U = A_T^{1/2} A_N^{1/2}$; labour is perfectly mobile across the two sectors; the foreign price of the tradable good is $P_T^* = 1$; the nominal exchange rate is $e = 1$.

1. Find out the expression for the production possibilities frontier.
2. Assuming that the economy is initially in internal and external balance, compute the equilibrium values of Y_N , Y_T , $\lambda = P_T/P_N$, P_N . Compute the value of domestic income in units of domestic currency.
3. Assume that there is a permanent contraction in aggregate demand (say, to pay interest on a old debt), so that its level falls in nominal terms to $3/2$. If prices remained unchanged (short run), what would be the implied levels of Y_N , Y_T , A_N , A_T and the trade balance? Discuss.
4. Now assume that wages and prices were fully flexible. Explain, with the help of a graph, the adjustment of the economy to its long run equilibrium.
5. In light of 10 and 11 (but not only) discuss the pros and cons of having a fixed but adjustable exchange rate regime.

IV (2 values)

Choose and comment one of the following sentences:

1. "Some corruption is better than no corruption at all".
2. "A purely flexible exchange rate regime has the advantage of allowing the real exchange rate to be more aligned with its equilibrium long run level".