

Seminar in macroeconomics - Economic equilibrium, 3rd week

1. ☺ According to the neoclassical theory of distribution the real wage of each worker should be equal to her marginal productivity. Let us use this theory to compare the long-run changes in wages for farmers and barbers.

- During the twentieth century the productivity of farmers as a result of technological progress increased dramatically. What would be the impact on their real wage?
- In what units is the real wage measured?
- In the same period, productivity of barbers has remained constant. What would be the impact on their real wage?
- What are the units in which the real wage is measured?
- Suppose that workers can move freely between agriculture and barber sector. What is the consequence of the mobility for nominal wages of farmers and barbers?
- What is the price of a haircut relative to the price of food?
- Who profits more from the technological advances in agriculture - farmers or barbers?

2. ! What is impact of the following events on the real wages and the real cost of capital according to the neoclassical theory of distribution (use a graph):

- an influx of immigrants increases the labor supply
- an earthquake destroys part of the capital stock
- technological progress improves the production function

3. ! Suppose that the economy is characterized by this Cobb-Douglas production function:
 $Y = 60K^{1/3}L^{2/3}$

- What are the returns to scale of the production function? Show it.
- If firms in the economy decide to hire 8,000 workers and 64,000 units of capital, what is the total product in the economy, what is the equilibrium real wage and the equilibrium real price of capital?
- If firms in this economy decide to increase the number of hired workers to 12,000 workers and keep the number of units of capital equal to 64,000, what happens to the equilibrium wage and what happens with the share of wages in total income? Explain.

4. ! Suppose that the production function of the economy is a Cobb-Douglas function with the parameter $\alpha = 0.3$.

- Derive what share of total income goes to labor and what share to capital.
- Assume that immigration increases the workforce by 10%. What is the percentage change in total output in this economy? What is the percentage change in real wage and real price of capital?
- Suppose that EU subsidies increase the domestic capital stock by 10%. What is the percentage change in total output in this economy? What is the percentage change in real wage and real price of capital?
- Assume that technological advances increase the value of the parameter α by 10%. What is the percentage change in total output in this economy? What is the percentage change in real wage and real price of capital?

5. ☺ Suppose that the economy is characterized by a Cobb-Douglas production function with three inputs: K-capital (number of machines), L-work (number of employees), H-human capital (number of university degrees in the population). Production function is
 $Y = K^{1/3}L^{1/3}H^{1/3}$

- a) The wage of an unskilled worker equals to her marginal product of labor, while the wage of a skilled worker equals to her marginal product of labor plus marginal product of human capital. What is the ratio of wages of skilled and unskilled workers?
- b) How does an increase in the amount of human capital affect this ratio? Explain.
- c) Some politicians say the government scholarships for university studies help to create a more egalitarian society, other politicians argue that the scholarships help only those who are studying. Decide based on previous results.
- 6. !** Use the model of loanable funds to explain what is the impact of a rise in taxes on consumption, investment and interest rates.
- 7. !** Suppose the government decides to reduce taxes with the goal of increasing spending on private consumption and investment.
- a) Can such a policy to succeed in achieving both goals?
- b) What is the impact of this policy on the equilibrium interest rate?
- 8. !** If the government raises taxes by 100 billion and the marginal propensity to consume is 0.6, what is the change in the following variables: a) public savings b) private savings c) national savings d) investment
- 9. !** Suppose that a caretaker government reduces government purchases and increases taxes.
- a) What will be the long-run impact of such government policies on private savings, government savings and national savings?
- b) Use the model of loanable funds to determine what will be the impact of such policies on savings, investments and real interest rate.
- c) How will the results change if the caretaker government is replaced by a socialist party that increases social benefits and reduces the income tax of low-income households? (Assume government purchases of fixed)
- d) How will your answer to (c) change if savings are an increasing function of the interest rate?
- 10. !** Suppose that a conservative government reduces both government spendings and taxes.
- a) What is the long-run impact of this policy on private savings, public savings and national savings given the spendings and taxes are reduced by the same amount?
- b) Use the model of loanable funds to determine what is the impact of such policies on savings, investments and real interest rate
- c) Explain how the size of these changes from the point b) depend on the marginal propensity to consume.
- 11. !** Suppose that our economy is characterized by the following equations:
 $Y = C + I + G \quad Y = 200 \quad C = 23 + 0.8(Y - T) \quad I = 50 - 9r \quad G = 60 \quad T = 40 + 0.1Y$
- a) Calculate national savings, private savings and public savings.
- b) Determine the equilibrium interest rate.
- c) Suppose that the output increases to 209. Calculate (a) and (b) again. Explain why the interest rate changes.
- d) What has caused the change in private savings? What is the reason for the change in public savings?