

Exercise session #2 - Unemployment, Introduction into Solow model

Problem 1 - Effect of minimum wage law on unemployment rate

Consider an economy with the following Cobb-Douglas production function

$$Y = K^{1/3}L^{2/3}$$

The economy has 1000 units of capital and labor force of 1000 workers.

- Derive the equation describing labor demand in this economy as a function of the real wage and the capital stock.
- If the real wage can adjust to equilibrate labor supply and labor demand, what is the real wage? In this equilibrium, what are employment, output and the total amount earned by workers?
- Now suppose that Parliament, concerned about the welfare of the working class, passes a law requiring firms to pay workers a real wage of 1 unit of output. How does this wage compare to the equilibrium wage?
- Parliament cannot dictate how many workers should hire at the mandated wage. Given this fact, what are the effects of this law? Specifically, what happens to employment, output and the total amount earned by workers?
- Did parliament succeed its goal of increasing the welfare of working class?
- Do you think that this analysis provides a good way of thinking about a minimum-wage law?

Problem 2 - Solow model - Increase in depreciation rate

Consider a Solow economy that is in the steady state, assuming that there is no technological progress and no population growth. Now suppose that the depreciation rate increases. What happens to the steady state values of capital per worker, output per worker and consumption per worker? Sketch the paths of these variables as the economy moves to its new steady state.

Problem 3 - Solow model - Cobb Douglas production function

Suppose that production function is general Cobb-Douglas

- Find expressions for k^* , y^* and c^* as functions of the parameters of the model (e.g. s, δ, α)
- What is the golden-rule value of k ?
- What saving rate is needed to yield the golden-rule capital stock?

Questions

Lecture 5: Unemployment

- Define unemployment.
- What determines the natural rate of unemployment?
- Explain the flow equation in the labor market $sE = fU$.
- What is the main underlying cause of frictional unemployment?
- State three reasons for existence of search and matching frictions in the labor market.
- What are the main public policies targeting frictional unemployment?
- What is the main underlying cause of structural unemployment?
- What is the minimum wage in the Czech republic?
- Describe the effects of minimum wage law on the level of unemployment.
- What are the incentives for firm to pay higher than equilibrium wage - i.e. efficiency wage?
- What do you understand under adverse selection in the context of efficiency wages argument?
- What do you understand under moral hazard in the context of efficiency wages argument?
- How would you explain the argument of avoiding the adverse selection in the context of efficiency wages?
- What can you say about the duration of unemployment spell in the Czech Republic (e.g. compared to USA)?
- What can you say about the problem of youth unemployment in the European context?
- How are movements out and into labor force related to the interpretation of unemployment rate?

Lecture 6: Introduction to Solow model

- How would you define unconditional convergence
- How would you define conditional convergence.
- State at least 3 from Kaldor's stylized facts.
- Which assumption on production function allows us to work with per capital values?
- What are the two causes of the change in the capital stock?
- How would you support the assumption of the constant saving rate on micro level?
- Define the steady-state condition in the Solow model.
- What are the characteristics of the steady state in the Solow model?
- Draw the picture depicting the effect of increased saving rate on the steady state.