ECOM-G312 Growth and Cycles 2017 Autumn

September 2017, Palokangas

Evaluation

1. What are the stages of development in human history? Construct the dynamics of economic growth in the Malthusian stage. **(20 points)**

    - The three stages of development (p. 17-18) **(3 points)**
    - The production function with three factors (2.1) (p. 18) **(2 points)**
    - The two specific assumptions for the Malthus model (bullets at the top of page 19) **(3 points)**
    - The Malthus production function (2.2) **(3 points)**
    - The population growth function (equation 2.5 or alternatively the figure in page 20) **(3 points)**
    - The transition curve (equation 2.7 or alternatively the figure in page 21) **(3 points)**
    - The basic result must be mentioned: the standard of living (e.g. consumption per head) returns to the original level after any shock. **(3 points)**

2. How (a) land, (b) exhaustible resources can be incorporated into the Solow growth model? Construct the Solow decomposition for both models (a) and (b). On what conditions income per capita grows in these two models? **(20 points)**

    - The three-factor production function (7.1) (p 70) **(2 points)**
    - Solow's assumptions (7.2)-(7.4) (pp. 70-72) **(2 points)**
    - The per worker production function (7.5) (p. 72) **(2 points)**
    - The Solow decomposition (7.6) (p. 72) **(3 points)**
    - On what conditions income per capita grows with fixed land? (using Proposition 7.3) (p. 73) **(3 points)**
    - Exhaustion of resources (7.9)-(7.10) (p. 74) **(2 points)**
    - The Solow decomposition (7.11) (p. 74) **(3 points)**
    - On what conditions income per capita grows with exhaustible resources? (using Proposition 7.4) (p. 75) **(3 points)**

3. Show how the externalities of investment can lead to persistent endogenous growth. What is the difference between models of semi-endogenous and endogenous growth? **(20 points)**

   - The "learning by doing" equation (8.1) (p. 78) and its interpretation. **(1 point)**
   - The productivity of labor as a function of aggregate capital, equation (8.2) (p. t8) **(1 point)**
   - The microeconomic production function (8.3) (p. 78) **(2 points)**
   - The macroeconomic production function (8.4) (p. 79) **(2 points)**
   - The parametric difference between the semi-endogenous and endogenous growth (p. 80) **(2 points)**
   - The transition curve of the semi-endogenous growth model (figure in page 82) **(3 points)**
   - Semi-endogenous growth as an extension of the Solow model (proposition 8.1) (p. 84) **(3 points)**
   - The transition curve of the endogenous growth model (figure in page 86) **(3 points)**
   - The dynamics of the semi-endogenous growth model (proposition 8.3) (p. 87) **(3 points)**