Université des Sciences Sociales de Toulouse
MPSE
2006-2007
M2 Macroeconomy II — Cours de Fabrice Collard & Franck Portier
Session de Septembre (2 heures)

Questions

Please propose a structured answer to each question, with as much economic content as possible. Please define the main terms and use mathematics if needed.

1. General Equilibrium and Price Rigidities.

   Consider an economy with two agents, one firm and one household. The firm production function is

   $$y = F(\ell).$$

   The household supplies inelastically ℓ_0 units of labor, has preferences given by $U = \alpha \log(c) + (1 - \alpha) \log(m/p^e)$, with obvious notations (p^e is given and exogenous). The household is endowed with m_0 and receives profits

   $$\pi = py - w\ell.$$

   Its budget constraint is

   $$pc + m \leq w\ell + \pi + m_0$$

   where m_0 is the money endowment. There is no extra money creation. When the price does not clear the market, voluntary exchange is assumed (no one is forced to buy or sell).

   (a) Compute prices and quantities at the walrasian equilibrium (to be defined)

   (b) What happens if the real wage is rigidly set at a level greater than the walrasian one? Draw a picture of the labor market.

   (c) Assume that the price p is freezed. Prove that one can have unemployment with a real wage smaller that the walrasian one. Discuss this result.

2. The Equity Premium Puzzle:

   (a) State the puzzle as it was discovered by Mehra & Prescott

   (b) Show that the period-0 price of an asset that yields a stream of dividends $\{d_t\}_{t=0}^{\infty}$ is given by

   $$P_0 = \sum_{t=0}^{\infty} \beta^t \left[\frac{U'(c_t)}{U'(c_0)} \right] d_t$$

   Hint: use the first order condition of the intertemporal utility maximization of a consumer that can buy and sell the asset

   (c) Let R^s and R^b be the returns of a stock and a riskless bond. Assume that $u(c) = \frac{c^{1-\alpha}}{1-\alpha}$. Comment in economic terms the two following equations:

   $$E_t \left[\beta \left(\frac{c_{t+1}}{c_t} \right)^{-\alpha} (R^s_{t+1} - R^b_{t+1}) \right] = 0 \tag{1}$$

   $$\beta E_t \left[\left(\frac{c_{t+1}}{c_t} \right)^{-\alpha} R^b_{t+1} \right] = 1 \tag{2}$$

   (d) What are the solutions proposed in the literature to solve the equity premium puzzle?

3. Business Cycles: How do we define and measure business cycles? What are their main properties in developed market economies?