

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. Rational expectations and economic policy. To illustrate your point, solve the following Aggregate Demand - Aggregate Supply model under static and rational expectations:

$$\begin{aligned} y_t &= \lambda y_{t-1} + \alpha(p_t - p_t^e) & (AS) \\ y_t &= -\beta p_t + \gamma m_t & (AD) \end{aligned}$$

where y is output, p is the price level, p^e the price expectation, that can be static ($p_t^e = p_{t-1}$) or rational ($p_t^e = E_{t-1}p_t$), m is the money supply. m_t is observed in period t .

2. The Equity Premium Puzzle.

- (a) State the puzzle as it was discovered by Mehra & Prescott
- (b) Explain why the period-0 price of an asset that yields a stream of dividends $\{d_t\}_{t=0}^{\infty}$ is given by

$$P_0 = E_0 \sum_{t=0}^{\infty} \beta^t \left[\frac{U'(c_t)}{U'(c_0)} \right] d_t$$

- (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:

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

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

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