

Exercises for Lecture 5

Q1. What are the key elements of a New Keynesian DSGE model? Take a look at the lecture notes. You can also consult textbooks by Mike Woodford or Jordi Gali. Or, an easily accessible article is the one by Bob King (2000, Economic Quarterly, FRB Richmond).

Q2. What generates stochastic fluctuations in a DSGE model?

Q3. What are the key steps to solve a DSGE model with a log-linear approximation?

Q4. What is the difference between a linearization and a log-linearization? Why are DSGE models often log-linearized instead of linearized?

Q5. How does one compute the steady state of a DSGE model?

Q6. Consider the rational expectation difference equation

$$y_t = \frac{1}{\theta} \mathbb{E}_t[y_{t+1}] + \epsilon_t, \quad \epsilon_t \sim N(0, \sigma^2),$$

where $\theta \in [0, 2]$.

- (i) Why does the literature focus on non-explosive solutions of this difference equation?
 - (ii) What do we mean by *determinacy* and *indeterminacy*?
 - (iii) Characterize the non-explosive solutions of the above rational expectations equation. Distinguish between the case $\theta < 1$ and $\theta > 1$.
 - (iv) Take a look at King (2000). What mechanism can generate indeterminacy in New Keynesian DSGE models?
- Q8.** What is the state-space representation of a DSGE model?