

Assignment 2 (week 39): Dynamics of small open economies

1. Consider the infinite-horizon small open economy model with perfect foresight. Assume that $(1+r)\beta = 1$. Derive the fundamental equation for the current account (equation 18 on page 74 in Obstfeld&Rogoff (1996)). Use this equation to discuss when it is optimal for a country to run a current account surplus. Does the timing of taxes matter in this model?
2. Exercise 8 to chapter 2 of Obstfeld&Rogoff (1996): *The business cycle and the current account*
3. Consider the stochastic version of the infinite-horizon small open endowment economy. Assume that output follows the following process

$$Y_t - \bar{Y} = \rho(Y_{t-1} - \bar{Y}) + \varepsilon_t,$$

where $0 \leq \rho \leq 1$ and ε_t is a serially uncorrelated disturbance, $E_t[\varepsilon_{t+1}] = 0$. The period utility function is

$$u(C) = C - \frac{c_0}{2}C^2,$$

where $c_0 > 0$. The initial net foreign asset holding is zero and $(1+r)\beta = 1$. Assume that $r = 0.05$ and derive the dynamic responses up to 30 periods of output, consumption and the current account of a one-unit unexpected shock to output ($\varepsilon_t > 0$) for the following two cases: a) $\rho = 0.25$ and b) $\rho = 0.75$. What is the intuition behind your results?

4. What is the effect on consumption of increased uncertainty about future endowments in the model in exercise 3?