

**Support and Feedback Class 5 (week 7)**

**Uncertainty and the Current Account**

**A. Pre-Class Review Questions**

1. **Risk Neutrality** Redo the analysis from Section 6.4. in the book (the example we covered during lecture), assuming that households are risk neutral. Specifically, assume that their preferences are logarithmic in period 1 but linear in period 2 consumption,  $\ln C_1 + EC_2$ . Assume that  $Q=1$ .
  - (a) Assume that  $\sigma = 0$ . Find the equilibrium values of  $C_1$  and  $B_1$ .
  - (b) Now assume that  $\sigma > 0$ . Find the equilibrium value of  $B_1$ . What is the predicted effect of the Great Moderation on the current account? Explain.

**B. In-Class Questions**

Consider a two-period endowment economy populated by identical households with preferences defined over consumption in period 1,  $C_1$ , and consumption in period 2,  $C_2$ , and described by the utility function

$$\ln C_1 + E \ln C_2,$$

where  $C_1$  denotes consumption in period 1,  $C_2$  denotes consumption in period 2, and  $E$  denotes the expected value operator. Each period, households receive an endowment of 10 units of food. Households start period 1 carrying no assets or debts from the past ( $B_0 = 0$ ). Financial markets are incomplete. There is a single internationally traded bond that pays the interest rate  $r^* = 0$ .

- (a) Compute consumption, the trade balance, the current account, and national saving in period 1.
- (b) Assume now that the endowment in period 1 continues to be 10, but that the economy is prone to severe natural disasters in period 2. Suppose that these negative events are very rare, but have catastrophic effects on the country's output. Specifically, assume that with probability 0.01 the economy suffers an earthquake in period 2 that causes the endowment to drop by 90 percent with respect to period 1. With probability 0.99, the endowment in period 2 is 111/11. What is the expected endowment in period 2? How does it compare to that of period 1?
- (c) What percent of period 1 endowment will the country export? Compare this answer to what happens under certainty and provide intuition.
- (d) Suppose that the probability of the catastrophic event increases to 0.02, all other things equal. Compute the mean and standard deviation of the endowment in period 2. Is the change in probability mean preserving?
- (e) Calculate the equilibrium levels of consumption and the trade balance in period 1.

- (f) Compare your results with those pertaining to the case of 0.01 probability for the catastrophic event. Provide interpretation.

### C. Self-study Questions

- (a) **This question is from a past test** Consider the two-period small open economy with uncertainty as studied in the lectures.

Uncertainty is symmetric, so that  $Q_2 = Q + \sigma$  with  $p = 0.5$  and  $Q_2 = Q - \sigma$  with  $p = 0.5$ .

Which of the following statements is true.

- i. With a utility function that features risk aversion, the Current account increases with  $\sigma$ .
- ii. With a utility function that features risk aversion, the Current account is independent of  $\sigma$ .
- iii. With a utility function that features risk neutrality, the Current account decreases with  $\sigma$ .
- iv. With a utility function that features risk neutrality, the Current account increases with  $\sigma$ .
- v. With a utility function that features risk aversion, the Current account decreases with  $\sigma$ .

- (b) **This question is from a past test** Consider a two-period endowment economy. Initial asset position is equal to 0. the interest rate is 5%. Endowment is equal to 1 in both periods. The utility function of the agent is linear and equal to:  $U(C_1, C_2) = C_1 + C_2$ . What is the optimal consumption in period 1?

- i.  $C_1 = 0.95$
- ii.  $C_1 = 1$
- iii.  $C_1 = 0$
- iv.  $C_1 = 1.05$
- v.  $C_1 = 2$
- vi. None of the above.