Support and Feedback Class 5 (week 7)
Uncertainty

Pre-Class Review Questions Solutions

A. Pre-class Review Questions These review questions are designed to help you reflect on the lecture material and check your understanding. You must complete them before the support and feedback class. At the start of the class, you will need to show your answers to your tutor, who will record both your attendance and preparation. If you have any doubts about the questions, you can ask your tutor at the beginning of the session. Please note that review questions will not be discussed in detail during the class; however, brief answers will be posted on Moodle before the test and exam.

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.

   Solution: The preference specification

   $$U\left(C_1, C_2\right) = \ln C_1 + EC_2$$

   implies the following marginal utilities of consumption:

   $$U_1\left(C_1, C_2\right) = \frac{1}{C_1}, \qquad U_2\left(C_1, C_2\right) = 1.$$

   Since the period 2 budget constraint is $C_2 = 2Q + \sigma - C_1$ in the good state of the world and $C_2 = 2Q - \sigma - C_1$ in the bad state of the world, expected lifetime utility is

   $$\ln C_1 + \frac{1}{2}\left(2Q + \sigma - C_1\right) + \frac{1}{2}\left(2Q - \sigma - C_1\right).$$

   We differentiate it with respect to C_1 and set the derivative equal to zero:

   $$\frac{1}{C_1} + \frac{1}{2}\left(-1\right) + \frac{1}{2}\left(-1\right) = 0.$$

   The level of period 1 consumption that satisfies this condition is

   $$C_1 = 1$$

   regardless of uncertainty (as it is not a function of σ). The associated trade balance, current account balance and net foreign assets are

   $$TB_1 = Q - 1,$$

$$CA_1 = r_0 B_0^* + TB_1 = Q - 1,$$

$$Q_1^* = (1 + r_1) B_0^* + TB_1 = Q - 1.$$

There is no precautionary saving in period 1. Because of risk aversion in period 1 and risk neutrality in period 2, all the uncertainty about the future endowment is loaded on future consumption, which equals

$$C_2 = 2Q + \sigma - 1$$

in the good state of the world and

$$C_2 = 2Q - \sigma - 1$$

in the bad one. The implied period 2 trade balances are equal across states of the world:

$$TB_2 = Q + \sigma - (2Q + \sigma - 1) = 1 - Q$$

$$TB_2 = Q - \sigma - (2Q - \sigma - 1) = 1 - Q.$$

As a consequence, the current account is constant across states too:

$$CA_2 = r_1 B_1^* + TB_2 = 1 - Q.$$

Since the household does not use the trade balance as a vehicle to self-insure against uncertainty, the CA balances are not affected by σ. With this preference specification, changes in the level of uncertainty of an economy (such as the Great Moderation) leave the current account unaffected, so we should not be observing any change in the volatility of the U.S. current account after 1984.

B. In-class Questions to be distributed in class by tutors.

C. Self-study Questions to be distributed in class by tutors.