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Economics W4505

International Monetary Theory and Policy

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Homework 5

Due February 25 in class

A Two-Country Economy

Consider a two-period, two-country, endowment economy. Let one of the countries be the United States and the other Europe. Households in the United States have preferences described by the utility function

$$\ln C_1^U + \ln C_2^U,$$

where C_1^U and C_2^U denote consumption of U.S. households in periods 1 and 2, respectively. Europeans have identical preferences, given by

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

where C_1^E and C_2^E denote consumption of European households in periods 1 and 2, respectively. Let Q_1^U and Q_2^U denote the U.S. endowments of goods in periods 1 and 2, respectively. Similarly, let Q_1^E and Q_2^E denote the European endowments of goods in periods 1 and 2, respectively. Assume further that the endowments are nonstorable, that the U.S. and Europe are of equal size, and that there is free capital mobility between the two economies. The United States starts period 1 with a zero net foreign asset position carried over from period 0.

1. **Symmetric Equilibrium** Suppose that $Q_1^U = Q_2^U = Q_1^E = Q_2^E = 10$. Calculate the equilibrium world interest rate, and the current accounts in the United States and Europe in period 1.

2. **US-Originated Contraction # 1** Suppose that a contraction originates in the United States. Specifically, assume that Q_1^U drops from 10 to 8. All other endowments (Q_2^U, Q_1^E, and Q_2^E) remain unchanged at 10. This contraction in output has two characteristics: First, it originates in the United States (the European endowments are unchanged.) Second, it is temporary (the U.S. endowment is expected to return to its normal value of 10 after one period). Calculate the equilibrium interest rate and the two current accounts in period 1. Provide intuition.

3. **US-Originated Contraction # 2** Suppose now a second type of contraction in which the U.S. endowment falls from 10 to 8 in the first period but is expected to continue falling to 6 in the second period ($Q_1^U = 8$ and $Q_2^U = 6$). The endowments in Europe remain unchanged at 10 each period ($Q_1^E = Q_2^E = 10$). Like the one described in the previous item, this contraction originates in the United States. However, it differs from the one described in the previous paragraph in the fact that it displays a more protracted string of negative output growth rates. Calculate again the equilibrium interest rate and the two current accounts in period 1. Point out differences in the effects of the two types of contraction and provide intuition.

4. At the beginning of the great contraction of 2008, interest rates fell sharply around the world. What does the model above say about people's expectations around 2008 about the future path of real activity.