

ECON4335: Questions for seminar 6. Week 19

May 3, 2010

Question 1: Traded and- non-traded goods

In this exercise you are asked to compare the current account effects of a temporary increase in government expenditure in three different models of small open economies. (Hint: Consider what happens to savings). Assume that the exchange rate is fixed.

1. Assume first the model with traded-and non-traded goods in Rodseth (2000) Ch. 7.1. Discuss the effect of a temporary increase in government consumption on the current account. Use graphs and verbal reasoning.
2. Compare your results in question 1 to the current account effects of a temporary increase in government expenditure in the kind of intertemporal equilibrium model of a small open economy you find in Obstfeld and Rogoff (1996) ch 2. When does the effect differ and what explains the differences?
3. Compare also to what happens in a Mundell-Fleming-Tobin model.

Question 2: Inflation targeting and exchange rate

Consider the following model of a small open economy with home and foreign goods:

$$y_t - \bar{y} = -\alpha_1(\rho_t - \bar{\rho}) + \alpha_2(r_t - \bar{r}) + u_{y,t} \quad (1)$$

$$\mathbf{E}_t r_{t+1} - \bar{r} = (r_t - \bar{r}) + (\rho_t - \bar{\rho}) - (\rho_{*,t} - \bar{\rho}) + u_{e,t} \quad (2)$$

$$\pi_{t+1} = \bar{\pi} + \beta(y_t - \bar{y}) + u_{\pi,t+1} \quad (3)$$

$$\rho_t = \bar{\rho} + \phi(\mathbf{E}_t \pi_{t+1} - \bar{\pi}) \quad (4)$$

Equation (1) is the aggregate demand curve for home goods, (2) is the real interest rate parity condition, (3) is the Phillips-curve and (4) describes the interest rate setting of the central bank (Taylor-rule). The variables are:

- π_{t+1} rate of inflation from period t to $t + 1$

- y_t output
- r_t real exchange rate
- ρ_t real interest rate from period t to $t + 1$
- $\rho_{*,t}$ foreign real interest rate

A bar over a symbol indicates that this is the stationary value of the corresponding variable. $\bar{\pi}$ is the inflation target.

The letter u is used for exogenous shocks:

- $u_{y,t}$ aggregate demand shock
- $u_{\pi,t}$ aggregate supply shock
- $u_{e,t}$ exchange rate shock
- $u_{\rho^*,t} = \rho_{*,t} - \bar{\rho}_*$ foreign interest rate shock

The shocks are independent over time.

1. Explain how the real interest rate parity condition (2) is related to the standard uncovered interest rate parity condition. What assumptions are needed for the real interest rate parity condition to hold? Explain why the stationary values of ρ and ρ_* must be the same.
2. The model gives rise to a difference equation for the real exchange rate:

$$\mathbf{E}_t r_{t+1} - \bar{r} = \epsilon(r_t - \bar{r}) - z_t \quad (5)$$

where

$$\epsilon = \frac{1 + \phi\beta(\alpha_1 + \alpha_2)}{1 + \phi\beta\alpha_1} > 1$$

and

$$z_t = -\frac{1}{1 + \phi\beta\alpha_1}(\phi\beta u_{y,t} + \phi\mathbf{E}_t u_{\pi,t+1}) + u_{\rho^*,t} - u_{e,t}$$

What does it mean for the difference equation that $\epsilon > 1$? Try to describe intuitively the economic mechanism that leads to ϵ being greater than one.

3. Since the nominal exchange rate is free to jump at any time, the initial value r_t is not given from past history. Explain briefly in words the usual method for selecting a unique solution in such cases. (No formal derivations are required).
4. Verify that

$$r_t - \bar{r} = \frac{1}{\epsilon} z_t \quad (6)$$

is a solution to equation (5). (Hint: Compute $\mathbf{E}_t r_{t+1}$ first).

5. Suppose there is a real demand shock in period t . What effect does this have on the real exchange rate in periods t and $t + 1$? What is the effect on the nominal exchange rate in period t ? Try to tell an intuitive, step by step story about what happens to the real exchange rate.