

## Assignment no 4

*For seminar Tuesday March 11 2008*

### A) Floating exchange rates in a portfolio model with money

Enclosed you find an example of a portfolio model with markets for money, domestic currency bonds and foreign currency bonds.

1. Explain briefly why wealth and foreign interest rates do not enter the money demand function.
2. Suppose the country in question has a floating exchange rate. Which of the potential policy variables can then be set exogenously by the policy makers?
3. Suppose from now on that  $M$  and  $F_g$  are exogenous. What are the effects of an increase in the money supply  $M$  on a) The domestic interest rate, b) The exchange rate (Compute derivatives), c) The expected rate of depreciation. In each case: What does the degree of capital mobility mean for the size of the effect?
4. Suppose the expected future equilibrium exchange rate  $\bar{E}$  increases. What are the effects on a) The domestic interest rate, b) The exchange rate, c) The expected rate of depreciation. What does the degree of capital mobility mean for the size of the effects?

### B) Fixed exchange rates: Some consequences of capital mobility

Enclosed you find a Mundell-Fleming type model for an economy with a fixed exchange rate and imperfect capital mobility. Foreign exchange interventions are not sterilized.

1. Explain briefly what the term "sterilization" means.
2. Draw a diagram that shows how output and the interest rate are determined jointly by the equilibrium conditions for the goods market and the domestic bond market. Explain briefly what is behind the slopes of the curves.
3. Suppose government expenditure  $G$  increases. What will be the effects on a) Output, b) The domestic interest rate, c) The foreign exchange reserves, d) The supply of money. What does the degree of capital mobility mean for the size of these effects? A verbal analysis supported by graphs can be sufficient.
4. Suppose the expected future equilibrium exchange rate  $\bar{E}$  increases. What will be the effect on a) Output, b) The domestic interest rate, c) The foreign exchange reserves.

5. In the model it is assumed that  $F_*$  (the foreign sectors holdings of foreign bonds) is predetermined. How can this be justified?

## A Portfolio Model with Money

$$(M + B + EF_p)/P = (M_0 + B_0 + EF_{p0})/P = W_p \quad (1)$$

$$(-M - B + EF_g)/P = (-M_0 - B_0 + EF_{g0})/P = W_g \quad (2)$$

$$F_*/P_* = F_{*0}/P_* = W_* \quad (3)$$

$$r = i - i_* - e_e \quad (4)$$

$$e_e = \alpha \left( \frac{\bar{E}}{E} - 1 \right) \quad (5)$$

$$\frac{M}{P} = m(i, Y), \quad m_i < 0, \quad m_Y > 0 \quad (6)$$

$$\frac{B}{P} = W_p - f(r, W_p) - m(i, Y) \quad (7)$$

$$\frac{EF_p}{P} = f(r, W_p), \quad f_r < 0, \quad 0 < f_W < 1 \quad (8)$$

$$F_p + F_g + F_* = 0 \quad (9)$$

Five potential decision variables:  $i, E, M, B, F_g$

Endogenous:  $W_p, W_g, W_*, F_*, F_p, r, e_e$

Exogenous:  $i_*, Y, P, P_*$

Predetermined:  $M_0, B_0, F_{p0}, F_{g0}, F_{*0}$

For symbol definitions, see OEM Ch 3 or pages xii-xiii

## B Mundell-Fleming-type model

$$Y = C(Y_p, \rho, ) + I(\rho) + G + X(R, Y, Y_*) \quad (1)$$

$$Y_p = Y - \rho_* \frac{EF_*}{P} - T \quad (2)$$

$$W_p = \frac{M_0 + B_0 + EF_{p0}}{P} \quad (3)$$

$$\rho = i - p_e \quad (4)$$

$$R = \frac{EP_*}{P} \quad (5)$$

$$r = i - i_* - e_e \quad (6)$$

$$e_e = \alpha \frac{\bar{E} - E}{E} \quad (7)$$

$$\frac{M}{P} = m(i, Y) \quad (8)$$

$$\frac{B}{P} = W_p - f(r, W_p) - m(i, Y) \quad (9)$$

$$\frac{EF_p}{P} = f(r, W_p) \quad (10)$$

$$F_g + F_p = -F_* \quad (11)$$

Endogenous:  $F_g, i, M, Y, Y_d, R, r, \rho, , e_e, W_p, F_p$

Exogenous:  $E, B, G, T, P_*, i_*, Y_*, p_e$

Predetermined:  $P, F_*, M_0, B_0, F_{p0}$

For symbol definitions, see OEM Ch 3 or pages xii-xiii

$X$  Net exports

$Y_p$  Private disposable income (national income minus taxes)

The model is a somewhat simplified version of the one in OEM Ch 6.2 and 6.3. However, OEM Ch. 3.1 plus knowledge of standard Mundell-Fleming models should help in answering the questions.