Chapter 3
The World of Two Monetary Regions

1. The Model

1) Introduction. In this chapter we consider a world of two monetary regions, let us say Europe and America. Take for example an increase in European money supply. Then what will be the effect on European output, and what on American output? Alternatively take an increase in European nominal wages. Again what will be the effect on European output, and what on American output?

The analysis is conducted within the following framework. There is perfect capital mobility between Europe and America. As a consequence, the European interest rate is equal to the American interest rate. It is worth pointing out here that the world interest rate is endogenous. The exchange rate between Europe and America is flexible. European goods and American goods are imperfect substitutes for one another. In addition we assume that the monetary regions are the same size and have the same behavioural functions. This model is in the tradition of the Mundell-Fleming model, see Carlberg (2000, 2001). The goods market equations are well consistent with microfoundations, see Carlberg (2002).

2) The market for European goods. The behavioural functions underlying the analysis are as follows:

$$C_1 = cY_1 \tag{1}$$

$$I_1 = b_1 r^{-\varepsilon} \tag{2}$$

$$X_1 = qeP_2Y_2 / P_1 \tag{3}$$

$$Q_1 = qY_1 \tag{4}$$

Equation (1) is the consumption function of Europe. Here C_1 denotes European consumption, as measured in European goods. Y_1 is European income, as measured in European goods. And c is the marginal consumption rate of Europe, with $0 < c < 1$. Equation (1) states that European consumption is a positive

function of European income. Equation (2) is the investment function of Europe. I_1 symbolizes European investment, as measured in European goods. r is the world interest rate. ε is the interest elasticity of European investment, with $\varepsilon > 0$. And b_1 is a shift parameter, with $b_1 > 0$. Equation (2) states that European investment is a negative function of the world interest rate. A 1 percent increase in the world interest rate causes an ε percent decline in European investment.

Equation (3) is the export function of Europe. X_1 stands for European exports to America, as measured in European goods. P_1 is the price of European goods, as measured in euros. P_2 is the price of American goods, as measured in dollars. e is the exchange rate between the dollar and the euro. More exactly, e is the price of the dollar, as measured in euros. Then eP_2 is the price of American goods, as measured in euros. Y_2 is American income, as measured in American goods. P_2Y_2 is American income, as measured in dollars. eP_2Y_2 is American income, as measured in euros. eP_2Y_2 / P_1 is American income, as measured in European goods. And q is the marginal import rate of America, with $q > 0$. Equation (3) states that European exports are a positive function of American income, a positive function of the exchange rate, a negative function of the price of European goods, and a positive function of the price of American goods. A 1 percent increase in American income causes a 1 percent increase in European exports. Further, a 1 percent depreciation of the euro causes a 1 percent increase in European exports. On the other hand, a 1 percent increase in the price of European goods causes a 1 percent decline in European exports. And a 1 percent increase in the price of American goods causes a 1 percent increase in European exports.

Equation (4) is the import function of Europe. Q_1 designates European imports from America, as measured in European goods. Y_1 is European income, as measured in European goods. And q is the marginal import rate of Europe, with $q > 0$. Equation (4) states that European imports are a positive function of European income. European output is determined by the demand for European goods $Y_1 = C_1 + I_1 + X_1 - Q_1$. Taking account of the behavioural functions (1) until (4), we arrive at the goods market equation of Europe:

$$Y_1 = cY_1 + b_1 r^{-\varepsilon} + qeP_2Y_2 / P_1 - qY_1 \qquad (5)$$