

# Chapter 6

## Policy Cooperation within Europe, Policy Competition between Europe and America

### 1. The Model

1) The static model. As a point of departure, consider the static model. It can be represented by a system of three equations:

$$Y_1 = A_1 + 0.5\alpha M_{12} - 0.5\beta M_3 - \lambda W_1 - \mu W_2 \quad (1)$$

$$Y_2 = A_2 + 0.5\alpha M_{12} - 0.5\beta M_3 - \lambda W_2 - \mu W_1 \quad (2)$$

$$Y_3 = A_3 + \alpha M_3 - \beta M_{12} + \nu W_1 + \nu W_2 \quad (3)$$

This is a reduced form of the basic model, see Part One.  $Y_1$  denotes German output,  $Y_2$  is French output,  $Y_3$  is American output,  $M_{12}$  is European money supply,  $M_3$  is American money supply,  $W_1$  is German nominal wages, and  $W_2$  is French nominal wages. The endogenous variables are German output, French output, and American output.

2) The dynamic model. At the beginning there is unemployment in Germany, France and America. More precisely, unemployment in Germany is high, and unemployment in France is low. The policy makers are the European central bank, the American central bank, the German labour union, and the French labour union. There is cooperation between the European central bank, the German labour union, and the French labour union. There is competition between the European coalition and the American central bank. Here the term European coalition refers to cooperation between the European central bank, the German labour union, and the French labour union.

The targets of policy cooperation within Europe are full employment in Germany and full employment in France. The third target is that the reduction in German nominal wages should be equal in size to the increase in French nominal wages. Put another way, the price level of European goods should be constant.

The instruments of policy cooperation within Europe are European money supply, German nominal wages, and French nominal wages. Under policy cooperation within Europe there are three targets and three instruments, so there is no degree of freedom. The target of the American central bank is full employment in America. And the instrument of the American central bank is American money supply.

We assume that the European coalition and the American central bank decide simultaneously and independently. In step 1, the European coalition and the American central bank decide simultaneously and independently. In step 2, again, the European coalition and the American central bank decide simultaneously and independently. And so on.

Now have a closer look at cooperation between the European central bank, the German labour union, and the French labour union. Taking differences in equations (1) and (2), the model of policy cooperation within Europe can be written as follows:

$$\Delta Y_1 = 0.5\alpha\Delta M_{12} - \lambda\Delta W_1 - \mu\Delta W_2 \quad (4)$$

$$\Delta Y_2 = 0.5\alpha\Delta M_{12} - \lambda\Delta W_2 - \mu\Delta W_1 \quad (5)$$

Here  $\Delta Y_1$  denotes the initial output gap in Germany,  $\Delta Y_2$  is the initial output gap in France,  $\Delta M_{12}$  is the required change in European money supply,  $\Delta W_1$  is the required change in German nominal wages, and  $\Delta W_2$  is the required change in French nominal wages. The endogenous variables are  $\Delta M_{12}$ ,  $\Delta W_1$  and  $\Delta W_2$ . Add up equations (4) and (5), taking account of  $\Delta W_1 + \Delta W_2 = 0$ , to find out:

$$\Delta M_{12} = \frac{\Delta Y_1 + \Delta Y_2}{\alpha} \quad (6)$$

Then subtract equation (5) from equation (4), taking account of  $\Delta W_1 + \Delta W_2 = 0$ , and solve for:

$$\Delta W_1 = -\frac{\Delta Y_1 - \Delta Y_2}{2(\lambda - \mu)} \quad (7)$$