

Chapter 5

Monetary Cooperation between Europe and America, Wage Cooperation between Germany and France

1. The Model

1) The static model. As a point of reference, 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 targets of monetary cooperation are full employment in Europe and full employment in America. The instruments of monetary cooperation are European money supply and American money supply. Under monetary cooperation there are two targets and two instruments, so there is no degree of freedom. The targets of wage cooperation are full employment in Germany and full employment in France. The instruments of wage cooperation are German nominal wages and French nominal wages. Under wage cooperation there are two targets and two instruments, so there is no degree of freedom.

We assume that the central banks and the labour unions decide sequentially. First the central banks decide, then the labour unions decide. In step 1, the European central bank and the American central bank decide cooperatively. In step 2, the German labour union and the French labour union decide cooperatively. In step 3, the European central bank and the American central bank decide cooperatively. In step 4, the German labour union and the French labour union decide cooperatively. And so on.

Now have a closer look at step 1. It refers to monetary cooperation between Europe and America. Taking differences in equations (1), (2) and (3), the model of monetary cooperation can be written as follows:

$$\Delta Y_{12} = \alpha \Delta M_{12} - \beta \Delta M_3 \quad (4)$$

$$\Delta Y_3 = \alpha \Delta M_3 - \beta \Delta M_{12} \quad (5)$$

Here ΔY_{12} denotes the initial output gap in Europe, ΔY_3 is the initial output gap in America, ΔM_{12} is the required increase in European money supply, and ΔM_3 is the required increase in American money supply. The endogenous variables are ΔM_{12} and ΔM_3 . The solution to the system (4) and (5) is:

$$\Delta M_{12} = \frac{\alpha \Delta Y_{12} + \beta \Delta Y_3}{\alpha^2 - \beta^2} \quad (6)$$

$$\Delta M_3 = \frac{\alpha \Delta Y_3 + \beta \Delta Y_{12}}{\alpha^2 - \beta^2} \quad (7)$$

Step 2 refers to the output lag.

Next have a closer look at step 3. It refers to wage cooperation between Germany and France. Taking differences in equations (1) and (2), the model of wage cooperation can be written as follows:

$$\Delta Y_1 = -\lambda \Delta W_1 - \mu \Delta W_2 \quad (8)$$

$$\Delta Y_2 = -\lambda \Delta W_2 - \mu \Delta W_1 \quad (9)$$