

Chapter 2

Cooperation between European Central Bank, German Labour Union, and French Labour Union

1. The Model

1) Introduction. As a starting point, take the output model. It can be represented by a system of three equations:

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

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

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

Here Y_1 denotes German output, Y_2 is French output, Y_3 is American output, M_{12} is European 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.

At the beginning there is unemployment in Germany and France. More precisely, unemployment in Germany is high, and unemployment in France is low. By contrast there is full employment in America. The policy makers are the European central bank, the German labour union, and the French labour union. The targets of policy cooperation are full employment in Germany and full employment in France. The instruments of policy cooperation are European money supply, German nominal wages, and French nominal wages. There are two targets and three instruments, so there is one degree of freedom. As a result, there is an infinite number of solutions. In other words, cooperation between the European central bank, the German labour union, and the French labour union can achieve full employment in Germany and France.

2) The policy model. On this basis, the policy model can be characterized by a system of three equations:

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

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

$$\Delta Y_3 = -\beta\Delta M_{12} + \nu\Delta W_1 + \nu\Delta W_2 \quad (6)$$

Here ΔY_1 denotes the initial output gap in Germany, ΔY_2 is the initial output gap in France, ΔY_3 is the change in American output, ΔM_{12} is the required change in European money supply, ΔW_1 is the required change in German nominal wages, and ΔW_2 is the required change in French nominal wages. The endogenous variables are ΔM_{12} , ΔW_1 , ΔW_2 and ΔY_3 .

We now introduce a third target. We assume that the reduction in German nominal wages should be equal in size to the increase in French nominal wages $\Delta W_1 + \Delta W_2 = 0$. Put another way, we assume that the price level of European goods should be constant. Add up equations (4) and (5), taking account of $\Delta W_1 + \Delta W_2 = 0$, to find out:

$$\Delta M_{12} = \frac{\Delta Y_1 + \Delta Y_2}{\alpha} \quad (7)$$

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

$$\Delta W_1 = -\frac{\Delta Y_1 - \Delta Y_2}{2(\lambda - \mu)} \quad (8)$$

$$\Delta W_2 = \frac{\Delta Y_1 - \Delta Y_2}{2(\lambda - \mu)} \quad (9)$$

According to equation (7), the required change in European money supply depends on the initial output gap in Europe and the direct multiplier α . According to equation (8), the required change in German nominal wages depends on the initial output gap in Germany, the initial output gap in France, the