

Chapter 2

Monetary Cooperation between Europe and America

1. The Model

1) Introduction. This chapter deals with cooperation between the European central bank and the American central bank. As a point of departure, take the output model. It can be represented by a system of three equations:

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

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

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

Here Y_1 denotes German output, Y_2 is French output, Y_3 is American output, M_{12} is European money supply, and M_3 is American money supply. The endogenous variables are German output, French output, and American output.

The output model can be compressed to a system of two equations:

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

$$Y_3 = A_3 + \alpha M_3 - \beta M_{12} \quad (5)$$

Here we have $Y_{12} = Y_1 + Y_2$ and $A_{12} = A_1 + A_2$. The endogenous variables are European output Y_{12} and American output Y_3 .

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 primary target of the European central bank is price stability in Europe. The secondary target of the European central bank is high employment in Germany and France. The specific target of the European central bank is that unemployment in Germany equals overemployment in France. In other words,

deflation in Germany equals inflation in France. So there is price stability in Europe. In a sense, the specific target of the European central bank is full employment in Europe. 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. So there are two targets and two instruments.

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

$$\bar{Y}_{12} = A_{12} + \alpha M_{12} - \beta M_3 \quad (6)$$

$$\bar{Y}_3 = A_3 + \alpha M_3 - \beta M_{12} \quad (7)$$

Here \bar{Y}_{12} denotes full-employment output in Europe, and \bar{Y}_3 denotes full-employment output in America. The endogenous variables are European money supply and American money supply.

To simplify notation, we introduce $B_{12} = \bar{Y}_{12} - A_{12}$ and $B_3 = \bar{Y}_3 - A_3$. Then we solve the model for the endogenous variables:

$$M_{12} = \frac{\alpha B_{12} + \beta B_3}{\alpha^2 - \beta^2} \quad (8)$$

$$M_3 = \frac{\alpha B_3 + \beta B_{12}}{\alpha^2 - \beta^2} \quad (9)$$

Equation (8) shows the required level of European money supply, and equation (9) shows the required level of American money supply. There is a solution if and only if $\alpha \neq \beta$. Due to the assumption $\alpha > \beta$, this condition is met. As a result, monetary cooperation can achieve full employment in Europe and America. And what is more, it can achieve price stability in Europe and America. However, monetary cooperation cannot achieve full employment in Germany and France. And what is more, it cannot achieve price stability in Germany and France. It is worth pointing out here that the solution to monetary cooperation is identical to the steady state of monetary competition.