Chapter 4
Fiscal Policy B

1. The Model

The model of unemployment and inflation can be characterized by a system of two equations:

\[ u = A - \beta G \]  
\[ \pi = B + \beta \epsilon G \]  

The targets of the European government are zero unemployment and zero inflation in Europe. The instrument of the European government is European government purchases. There are two targets but only one instrument, so what is needed is a loss function. We assume that the European government has a quadratic loss function:

\[ L_2 = \pi^2 + u^2 \]  

\( L_2 \) is the loss to the European government caused by inflation and unemployment. For ease of exposition we assume equal weights in the loss function. The specific target of the European government is to minimize the loss, given the inflation function and the unemployment function. Taking account of equations (1) and (2), the loss function of the European government can be written as follows:

\[ L_2 = (B + \beta \epsilon G)^2 + (A - \beta G)^2 \]  

Then the first-order condition for a minimum loss is:

\[ G = \frac{A - \epsilon B}{\beta + \beta \epsilon^2} \]
Here $G$ is the optimum level of European government purchases. An increase in $A$ requires an increase in European government purchases. And an increase in $B$ requires a cut in European government purchases. From equations (1) and (5) follows the optimum rate of unemployment in Europe:

$$
\frac{\varepsilon^2 A + \varepsilon B}{1 + \varepsilon^2}
$$

(6)

And from equations (2) and (5) follows the optimum rate of inflation in Europe:

$$
\frac{\varepsilon A + B}{1 + \varepsilon^2}
$$

(7)

The comparison of equations (6) and (7) gives:

$$
u = \varepsilon \pi$$

(8)

Unemployment in Europe is not zero, nor is inflation there.