Chapter 1
Fiscal Policy A

1. The Model

An increase in European government purchases lowers unemployment in Europe. On the other hand, it raises inflation there. And what is more, it raises the structural deficit.

The model of unemployment, inflation, and the structural deficit can be represented by a system of three equations:

\[ u = \frac{A - G}{Y} \]  (1)

\[ \pi = \frac{B + G}{Y} \]  (2)

\[ s = \frac{G - T}{Y} \]  (3)

Here \( u \) denotes the rate of unemployment in Europe, \( \pi \) is the rate of inflation in Europe, \( s \) is the structural deficit ratio in Europe, \( G \) is European government purchases, \( T \) is European tax revenue at full-employment output, \( G - T \) is the structural deficit in Europe, \( A \) is some other factors bearing on the rate of unemployment in Europe, \( B \) is some other factors bearing on the rate of inflation in Europe, and \( \bar{Y} \) is full-employment output in Europe. The endogenous variables are the rate of unemployment, the rate of inflation, and the structural deficit ratio.

According to equation (1), the rate of unemployment in Europe is a positive function of \( A \) and a negative function of European government purchases. According to equation (2), the rate of inflation in Europe is a positive function of \( B \) and a positive function of European government purchases. According to
equation (3), the structural deficit ratio in Europe is a positive function of European government purchases.

To simplify notation we assume that full-employment output in Europe is unity. On this assumption, the model can be written as follows:

\[ u = A - G \]  \hspace{1cm} (4)

\[ \pi = B + G \]  \hspace{1cm} (5)

\[ s = G - T \]  \hspace{1cm} (6)

A unit increase in government purchases lowers the rate of unemployment by 1 percentage point. On the other hand, it raises the rate of inflation by 1 percentage point. And what is more, it raises the structural deficit ratio by 1 percentage point. For instance, let initial unemployment be 2 percent, let initial inflation be 2 percent, and let the initial structural deficit be 2 percent as well. Now consider a unit increase in government purchases. Then unemployment goes from 2 to 1 percent. On the other hand, inflation goes from 2 to 3 percent. And what is more, the structural deficit goes from 2 to 3 percent as well.

As to policy targets there are two distinct cases. In case A the targets of the government are zero unemployment and a zero structural deficit. In case B the targets of the government are zero unemployment, zero inflation, and a zero structural deficit. This chapter deals with case A, and the next chapter deals with case B.

The targets of the European government are zero unemployment and a zero structural deficit 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:

\[ L_2 = u^2 + s^2 \]  \hspace{1cm} (7)

\(L_2\) is the loss to the European government caused by unemployment and the structural deficit. We assume equal weights in the loss function. The specific target of the European government is to minimize the loss, given the