

## Chapter 2

### Fiscal Policies in Germany and France

#### 1. The Model

1) Introduction. For ease of exposition we make the following assumptions. The monetary union consists of two countries, say Germany and France. The member countries are the same size and have the same behavioural functions. An increase in German government purchases raises producer inflation in Germany. Correspondingly, an increase in French government purchases raises producer inflation in France. For ease of exposition we assume that fiscal policy in one of the countries has no effect on producer inflation in the other country.

In the numerical example, a unit increase in German government purchases raises producer inflation in Germany by 1 percentage point. Similarly, a unit increase in French government purchases raises producer inflation in France by 1 percentage point. For instance, let initial inflation in Germany be 3 percent. Now consider a unit increase in German government purchases. Then producer inflation in Germany goes from 3 to 4 percent. These assumptions will be relaxed below.

The model of inflation can be represented by a system of three equations:

$$\pi_1 = A_1 + \beta G_1 \quad (1)$$

$$\pi_2 = A_2 + \beta G_2 \quad (2)$$

$$\pi = 0.5\pi_1 + 0.5\pi_2 \quad (3)$$

Of course this is a reduced form.  $\pi_1$  denotes producer inflation in Germany,  $\pi_2$  is producer inflation in France,  $\pi$  is producer inflation in Europe,  $G_1$  is German government purchases,  $G_2$  is French government purchases,  $\beta$  is the fiscal policy multiplier,  $A_1$  is some other factors bearing on producer inflation in Germany, and  $A_2$  is some other factors bearing on producer inflation in France.

The endogenous variables are producer inflation in Germany, producer inflation in France, and producer inflation in Europe.

According to equation (1), producer inflation in Germany is a positive function of German government purchases. According to equation (2), producer inflation in France is a positive function of French government purchases. According to equation (3), producer inflation in Europe is the average of producer inflation in Germany and France. A unit increase in German government purchases raises producer inflation in Germany by  $\beta$  percentage points. And a unit increase in French government purchases raises producer inflation in France by  $\beta$  percentage points.

The model of inflation can be compressed to a single equation:

$$\pi = A + 0.5\beta G \quad (4)$$

Here we have  $A = 0.5A_1 + 0.5A_2$  and  $G = G_1 + G_2$ . The letter  $\pi$  denotes producer inflation in Europe,  $G$  is European government purchases,  $0.5\beta$  is the fiscal policy multiplier in Europe, and  $A$  is some other factors bearing on producer inflation in Europe. According to equation (4), producer inflation in Europe is a positive function of European government purchases. A unit increase in European government purchases raises producer inflation in Europe by  $0.5\beta$  percentage points.

2) The policy model. To keep the model simple we make the following assumptions. At the beginning there is inflation in Germany and France. More precisely, inflation in Germany is high, and inflation in France is low. The target of the German government is price stability in Germany. To be more specific, the target of the German government is zero inflation in Germany. The instrument of the German government is German government purchases. The German government lowers German government purchases so as to reach zero inflation in Germany. The target of the French government is price stability in France. To be more specific, the target of the French government is zero inflation in France. The instrument of the French government is French government purchases. The French government lowers French government purchases so as to reach zero inflation in France.

The policy model can be characterized by a system of four equations:

$$\pi_1 = A_1 + \beta G_1 \quad (5)$$

$$\pi_2 = A_2 + \beta G_2 \quad (6)$$

$$\pi_1 = 0 \quad (7)$$

$$\pi_2 = 0 \quad (8)$$

Here  $\pi_1$  denotes target inflation in Germany,  $\pi_2$  is target inflation in France,  $G_1$  is the required level of German government purchases,  $G_2$  is the required level of French government purchases, and  $\beta$  is the fiscal policy multiplier. Equation (5) is the inflation function of Germany, and equation (6) is the inflation function of France. According to equations (7) and (8), target inflation in Germany and France is zero.

The solution to this problem is as follows:

$$G_1 = -\frac{A_1}{\beta} \quad (9)$$

$$G_2 = -\frac{A_2}{\beta} \quad (10)$$

Equation (9) shows the required level of German government purchases, and equation (10) shows the required level of French government purchases. As a result, fiscal policies in Germany and France can achieve zero inflation in Germany and France, respectively.

3) Another version of the policy model. As an alternative, the policy model can be stated in terms of initial inflation and the required cut in government purchases. The German government lowers German government purchases so as to reach zero inflation in Germany:

$$\Delta G_1 = -\frac{\pi_1}{\beta} \quad (11)$$

Here  $\Delta G_1$  denotes the required change in German government purchases,  $\pi_1$  is initial inflation in Germany, and  $\beta$  is the fiscal policy multiplier in Germany. According to equation (11), the required cut in German government purchases depends on initial inflation in Germany and the fiscal policy multiplier in Germany. The larger the initial inflation in Germany, the larger is the required cut in German government purchases.

Correspondingly, the French government lowers French government purchases so as to reach zero inflation in France:

$$\Delta G_2 = -\frac{\pi_2}{\beta} \quad (12)$$

Here  $\Delta G_2$  denotes the required change in French government purchases,  $\pi_2$  is initial inflation in France, and  $\beta$  is the fiscal policy multiplier in France. According to equation (12), the required cut in French government purchases depends on initial inflation in France and the fiscal policy multiplier in France.

## 2. A Numerical Example

To illustrate the policy model, have a look at a numerical example. For ease of exposition, without losing generality, assume  $\beta = 1$ . On this assumption, the model of inflation can be written as follows:

$$\pi_1 = A_1 + G_1 \quad (1)$$

$$\pi_2 = A_2 + G_2 \quad (2)$$

$$\pi = 0.5\pi_1 + 0.5\pi_2 \quad (3)$$

The endogenous variables are producer inflation in Germany, France and Europe. Obviously, a unit increase in German government purchases raises producer

inflation in Germany by 1 percentage point. Similarly, a unit increase in French government purchases raises producer inflation in France by 1 percentage point. The target of the German government is zero inflation in Germany. And the target of the French government is zero inflation in France.

Let initial inflation in Germany be 3 percent, and let initial inflation in France be 1 percent. Step 1 refers to the policy response. First consider Germany. Initial inflation in Germany is 3 percent. Target inflation in Germany is zero percent. So what is needed in Germany is a reduction in German government purchases of 3 units. Second consider France. Initial inflation in France is 1 percent. Target inflation in France is zero percent. So what is needed in France is a reduction in French government purchases of 1 unit.

Step 2 refers to the outside lag. Producer inflation in Germany goes from 3 to zero percent. Producer inflation in France goes from 1 to zero percent. And producer inflation in Europe goes from 2 to zero percent. In Germany and France there is now price stability. As a result, fiscal policies in Germany and France can achieve price stability in each of the countries. Table 1.6 gives an overview.

**Table 1.6**  
**Fiscal Policies in Germany and France**  
The Case of Inflation

	Germany	France	Europe
Initial Inflation	3	1	2
Change in Government Purchases	− 3	− 1	
Inflation	0	0	0

Finally compare fiscal policies with monetary policy. Monetary policy in Europe can achieve zero inflation in Europe as a whole. However, monetary policy in Europe cannot achieve zero inflation in each of the member countries.

By contrast, fiscal policies in Germany and France can indeed achieve zero inflation in each of the countries.



<http://www.springer.com/978-3-540-79300-7>

Inflation and Unemployment in a Monetary Union

Carlberg, M.

2008, XV, 243 p., Hardcover

ISBN: 978-3-540-79300-7