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# Monetary and Fiscal Policies in the Euro Area

Michael Carlberg

# **Monetary and Fiscal Policies in the Euro Area**

**by Michael Carlberg**

## **Abstract**

This paper studies monetary and fiscal policies in the euro area. It discusses the process of policy competition and the structure of policy cooperation. As to policy competition, the focus is on competition between the European central bank, the German government, and the French government. As to policy cooperation, the focus is on the same institutions. These are higher-dimensional issues. The policy targets are price stability and full employment. Special features of this paper are numerical simulations of policy competition and numerical solutions to policy cooperation.

Keywords: European Monetary Union, International Policy Coordination, Monetary Policy, Fiscal Policy

JEL classification: E63, F33, F41, F42

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## 1. Introduction

This paper studies monetary and fiscal policies in the euro area. It discusses the process of policy competition and the structure of policy cooperation. With respect to policy competition, the focus is on competition between the European central bank, the German government, and the French government. With respect to policy cooperation, the focus is on cooperation between the European central bank, the German government, and the French government.

The targets of the European central bank are price stability and full employment in Europe. The target of the German government is full employment in Germany. And the target of the French government is full employment in France. The key questions are:

- Does the process of policy competition lead to full employment and price stability?
- Can policy cooperation achieve full employment and price stability?
- Is policy cooperation superior to policy competition?

The paper is organized as follows: Monetary policy in Europe – Fiscal policies in Germany and France – Monetary and fiscal competition – Monetary and fiscal cooperation – Summary – References – Tables.

Some recent books and papers on policy interactions in the euro area are R. Beetsma, X. Debrun (2004), M. Buti (2003), M. Buti, D. Franco (2005), X. Debrun (1999), A. Hughes Hallet, P. Mooslechner, M. Schuerz (2001), L. Lambertini, R. Rovelli (2004), L. Onorante (2004), M. Sidiropoulos, E. Spyromitros (2005), H. Uhlig (2003), B. van Aarle, H. Garretsen, F. Huart (2003), and J. von Hagen, S. Mundschenk (2002).

## 2. Monetary Policy in Europe

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 European money supply raises both German output and French output, to the same extent respectively. In the numerical example, an increase in European money supply of 100 causes an increase in German output of 100 and an increase in French output of equally 100.

The output model can be represented by a system of two equations:

$$Y_1 = A_1 + \alpha M \quad (1)$$

$$Y_2 = A_2 + \alpha M \quad (2)$$

Of course this is a reduced form.  $Y_1$  denotes German output,  $Y_2$  is French output,  $M$  is European money supply,  $\alpha$  is the monetary policy multiplier,  $A_1$  is some other factors bearing on German output, and  $A_2$  is some other factors bearing on French output. The endogenous variables are German output and French output.

The output model can be compressed to a single equation:

$$Y = A + 2\alpha M \quad (3)$$

Here we have  $Y = Y_1 + Y_2$  and  $A = A_1 + A_2$ .  $Y$  denotes European output,  $M$  is European money supply,  $2\alpha$  is the monetary policy multiplier in Europe, and  $A$  is some other factors bearing on European output. The endogenous variable is European output.

2) The policy model. At the beginning there is unemployment in Germany and France. 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 full employment in Europe. For ease of exposition we assume that unemployment causes deflation whereas overemployment causes inflation. The

specific target of the European central bank is that unemployment in Germany equals overemployment in France. Accordingly, the specific target of the European central bank is that deflation in Germany equals inflation in France. In other words, the specific target of the European central bank is full employment in Europe on average. Accordingly, the specific target of the European central bank is price stability in Europe on average. The instrument of the European central bank is European money supply. The European central bank raises European money supply so as to close the output gap in Europe.

Now have a closer look at the policy model. The specific target of the European central bank is full employment in Europe on average:

$$Y_1 + Y_2 = \bar{Y}_1 + \bar{Y}_2 \quad (4)$$

Here  $Y_1$  denotes target output in Germany,  $Y_2$  is target output in France,  $\bar{Y}_1$  is full-employment output in Germany, and  $\bar{Y}_2$  is full-employment output in France. According to equation (4), target output in Europe should be equal to full-employment output in Europe.

What is the required level of European money supply? To answer this question, eliminate  $Y_1$  and  $Y_2$  in equation (4) by means of equations (1) and (2) and solve for  $M$ :

$$M = \frac{\bar{Y}_1 + \bar{Y}_2 - A_1 - A_2}{2\alpha} \quad (5)$$

Obviously, the required level of European money supply depends on full-employment output in Europe, the monetary policy multiplier in Europe, and some other factors bearing on European output. Then substitute equation (5) into equations (1) and (2) and rearrange terms:

$$Y_1 = \frac{\bar{Y}_1 + \bar{Y}_2 + A_1 - A_2}{2} \quad (6)$$

$$Y_2 = \frac{\bar{Y}_1 + \bar{Y}_2 - A_1 + A_2}{2} \quad (7)$$

Equation (6) shows target output in Germany, and equation (7) shows target output in France.

3) Another version of the policy model. As an alternative, the policy model can be stated in terms of the initial output gap and the required increase in money supply. The European central bank raises European money supply so as to close the output gap in Europe:

$$\Delta M = \frac{\Delta Y_1 + \Delta Y_2}{2\alpha} \quad (8)$$

Here  $\Delta M$  denotes the required increase in European money supply,  $\Delta Y_1$  is the initial output gap in Germany,  $\Delta Y_2$  is the initial output gap in France,  $\Delta Y_1 + \Delta Y_2$  is the initial output gap in Europe, and  $2\alpha$  is the monetary policy multiplier in Europe.

Here a comment is in place. The output gap is defined as the difference between full-employment output and actual output. For instance, let full-employment output be 1000, and let actual output be 940. Then the output gap is 60. The other way round, the inflationary gap is defined as the difference between actual output and full-employment output. For instance, let actual output be 1030, and let full-employment output be 1000. Then the inflationary gap is 30.

4) A numerical example: the case of unemployment. Full-employment output in Germany is 1000, and full-employment output in France is the same. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and hence deflation. Step 1 refers to the policy response. The output gap in Europe is 90. The monetary policy multiplier in Europe is 2. So what is needed in Europe is an increase in European money supply of 45.

Step 2 refers to the output lag. The increase in European money supply of 45 causes an increase in German output of 45 and an increase in French output of

equally 45. As a consequence, German output goes from 940 to 985, and French output goes from 970 to 1015. Table 1 presents a synopsis. In Germany there is still some unemployment and deflation. In France there is now some overemployment and inflation. And in Europe there is now full employment and price stability. Unemployment in Germany equals overemployment in France. And deflation in Germany equals inflation in France.

As a result, monetary policy in Europe can achieve full employment in Europe on average. And what is more, it can achieve price stability in Europe on average. However, monetary policy in Europe cannot achieve full employment in Germany and France. And what is more, it cannot achieve price stability in Germany and France. There is an increase in German output, as there is in French output. There is an increase in German tax revenue, as there is in French tax revenue. And there is a decline in the German budget deficit, as there is in the French budget deficit.

5) A numerical example: the case of inflation. Let initial output in Germany be 1060, and let initial output in France be 1030. In each of the countries there is overemployment and hence inflation. Step 1 refers to the policy response. The inflationary gap in Europe is 90. The monetary policy multiplier in Europe is 2. So what is needed in Europe is a reduction in European money supply of 45.

Step 2 refers to the output lag. The reduction in European money supply of 45 causes a decline in German output of 45 and a decline in French output of equally 45. As a consequence, German output goes from 1060 to 1015, and French output goes from 1030 to 985. Table 2 gives an overview. In Germany there is still some overemployment and inflation. In France there is now some unemployment and deflation. And in Europe there is now full employment and price stability. Overemployment in Germany equals unemployment in France. And inflation in Germany equals deflation in France.



### 3. Fiscal Policies in Germany and France

1) Introduction. An increase in German government purchases raises German output. Correspondingly, an increase in French government purchases raises French output. For ease of exposition we assume that fiscal policy in one of the countries has no effect on output in the other country. In the numerical example, an increase in German government purchases of 100 causes an increase in German output of 100. Correspondingly, an increase in French government purchases of 100 causes an increase in French output of 100.

The output model can be represented by a system of two equations:

$$Y_1 = A_1 + \beta G_1 \quad (1)$$

$$Y_2 = A_2 + \beta G_2 \quad (2)$$

Of course this is a reduced form.  $Y_1$  denotes German output,  $Y_2$  is French output,  $G_1$  is German government purchases,  $G_2$  is French government purchases,  $\beta$  is the fiscal policy multiplier,  $A_1$  is some other factors bearing on German output, and  $A_2$  is some other factors bearing on French output. The endogenous variables are German output and French output.

2) The policy model. At the start there is unemployment in Germany and France. More precisely, unemployment in Germany is high, and unemployment in France is low. The target of the German government is full employment in Germany. The instrument of the German government is German government purchases. The German government raises German government purchases so as to close the output gap in Germany. The target of the French government is full employment in France. The instrument of the French government is French government purchases. The French government raises French government purchases so as to close the output gap in France.

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

$$\bar{Y}_1 = A_1 + \beta G_1 \quad (3)$$

$$\bar{Y}_2 = A_2 + \beta G_2 \quad (4)$$

Here  $\bar{Y}_1$  denotes full-employment output in Germany,  $\bar{Y}_2$  is full-employment output in France,  $G_1$  is the required level of German government purchases, and  $G_2$  is the required level of French government purchases. The endogenous variables are German government purchases and French government purchases. The solution to the policy model is:

$$G_1 = \frac{\bar{Y}_1 - A_1}{\beta} \quad (5)$$

$$G_2 = \frac{\bar{Y}_2 - A_2}{\beta} \quad (6)$$

3) Another version of the policy model. As an alternative, the policy model can be stated in terms of the initial output gap and the required increase in government purchases. The German government raises German government purchases so as to close the output gap in Germany:

$$\Delta G_1 = \frac{\Delta Y_1}{\beta} \quad (7)$$

Here  $\Delta G_1$  denotes the required increase in German government purchases,  $\Delta Y_1$  is the initial output gap in Germany, and  $\beta$  is the fiscal policy multiplier in Germany. Similarly, the French government raises French government purchases so as to close the output gap in France:

$$\Delta G_2 = \frac{\Delta Y_2}{\beta} \quad (8)$$

Here  $\Delta G_2$  denotes the required increase in French government purchases,  $\Delta Y_2$  is the initial output gap in France, and  $\beta$  is the fiscal policy multiplier in France.

4) A numerical example. Full-employment output in Germany is 1000, and full-employment output in France is the same. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is

unemployment and hence deflation. Step 1 refers to the policy response. The output gap in Germany is 60. The fiscal policy multiplier in Germany is 1. So what is needed in Germany is an increase in German government purchases of 60. The output gap in France is 30. The fiscal policy multiplier in France is 1. So what is needed in France is an increase in French government purchases of 30.

Step 2 refers to the output lag. The increase in German government purchases of 60 causes an increase in German output of 60. And the increase in French government purchases of 30 causes an increase in French output of 30. As a consequence, German output goes from 940 to 1000, and French output goes from 970 to 1000. In each of the countries there is now full employment and price stability.

As a result, fiscal policies in Germany and France can achieve full employment and price stability in each of the countries. There is an increase in European government purchases, an increase in European output, and an increase in the European budget deficit. There is an increase in the interest rate and a decline in European investment. There is an appreciation of the euro, a decline in European exports, and a decline in the European current account surplus. For a synopsis see Table 3.

5) Comparing fiscal policies with monetary policy. Monetary policy in Europe can achieve full employment and price stability in Europe as a whole. However, monetary policy in Europe cannot achieve full employment and price stability in each of the member countries. By contrast, fiscal policies in Germany and France can indeed achieve full employment and price stability in each of the member countries. However, as a severe side effect, fiscal policies in Germany and France cause an increase in the European budget deficit.

#### 4. Monetary and Fiscal Competition

1) The static model. This section deals with competition between the European central bank, the German government, and the French government. As a point of reference, consider the static model. It can be represented by a system of two equations:

$$Y_1 = A_1 + \alpha M + \beta G_1 \quad (1)$$

$$Y_2 = A_2 + \alpha M + \beta G_2 \quad (2)$$

Of course this is a reduced form.  $Y_1$  denotes German output,  $Y_2$  is French output,  $M$  is European money supply,  $G_1$  is German government purchases,  $G_2$  is French government purchases,  $A_1$  is some other factors bearing on German output,  $A_2$  is some other factors bearing on French output,  $\alpha$  is the monetary policy multiplier, and  $\beta$  is the fiscal policy multiplier. The endogenous variables are German output and French output.

2) The dynamic model. At the beginning there is unemployment in Germany and France. More precisely, unemployment in Germany is high, and unemployment in France is low. The target of the European central bank is full employment in Europe. The instrument of the European central bank is European money supply. The European central bank raises European money supply so as to close the output gap in Europe. The target of the German government is full employment in Germany. The instrument of the German government is German government purchases. The German government raises German government purchases so as to close the output gap in Germany. The target of the French government is full employment in France. The instrument of the French government is French government purchases. The French government raises French government purchases so as to close the output gap in France.

We assume that the central bank and the governments decide sequentially. First the central bank decides, then the governments decide. Step 1 refers to monetary policy in Europe. Step 2 refers to the output lag. Step 3 refers to fiscal policies in Germany and France. And step 4 refers to the output lag.

Now have a closer look at the dynamic model. Step 1 refers to monetary policy in Europe. The European central bank raises European money supply so as to close the output gap in Europe:

$$\Delta M = \frac{\Delta Y_1 + \Delta Y_2}{2\alpha} \quad (3)$$

Here  $\Delta M$  denotes the required increase in European money supply,  $\Delta Y_1$  is the initial output gap in Germany,  $\Delta Y_2$  is the initial output gap in France,  $\Delta Y_1 + \Delta Y_2$  is the initial output gap in Europe, and  $2\alpha$  is the monetary policy multiplier in Europe.

Step 3 refers to fiscal policies in Germany and France. The German government raises German government purchases so as to close the output gap in Germany:

$$\Delta G_1 = \frac{\Delta Y_1}{\beta} \quad (4)$$

Here  $\Delta G_1$  denotes the required increase in German government purchases,  $\Delta Y_1$  is the initial output gap in Germany, and  $\beta$  is the fiscal policy multiplier in Germany. Similarly, the French government raises French government purchases so as to close the output gap in France:

$$\Delta G_2 = \frac{\Delta Y_2}{\beta} \quad (5)$$

Here  $\Delta G_2$  denotes the required increase in French government purchases,  $\Delta Y_2$  is the initial output gap in France, and  $\beta$  is the fiscal policy multiplier in France.

3) A numerical example: the case of unemployment. An increase in European money supply of 100 causes an increase in German output of 100 and an increase in French output of equally 100. An increase in German government purchases of 100 causes an increase in German output of 100. Correspondingly, an increase in French government purchases of 100 causes an increase in French output of 100.

Full-employment output in Germany is 1000, and full-employment output in France is the same.

Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and deflation. Step 1 refers to monetary policy in Europe. The output gap in Europe is 90. The monetary policy multiplier in Europe is 2. So what is needed in Europe is an increase in European money supply of 45.

Step 2 refers to the output lag. The increase in European money supply of 45 causes an increase in German output of 45 and an increase in French output of equally 45. As a consequence, German output goes from 940 to 985, and French output goes from 970 to 1015. In Germany there is still some unemployment and deflation. In France there is now some overemployment and inflation. And in Europe there is now full employment and price stability.

Step 3 refers to fiscal policies in Germany and France. The output gap in Germany is 15. The fiscal policy multiplier in Germany is 1. So what is needed in Germany is an increase in German government purchases of 15. The inflationary gap in France is 15. The fiscal policy multiplier in France is 1. So what is needed in France is a reduction in French government purchases of 15.

Step 4 refers to the output lag. The increase in German government purchases of 15 causes an increase in German output of 15. And the reduction in French government purchases of 15 causes a decline in French output of 15. As a consequence, German output goes from 985 to 1000, and French output goes from 1015 to 1000. In each of the countries there is now full employment and price stability. For an overview see Table 4.

As a result, the process of monetary and fiscal competition leads to full employment and price stability in each of the countries. There is an increase in European money supply. There is an increase in German government purchases, a reduction in French government purchases, and no change in European government purchases. There is an increase in German output, as there is in French output. In steps 1 and 2 there is some overshooting in French output. There is an increase in European output, an increase in European tax revenue, and a decline in the European budget deficit. There is a decline in the interest rate

and an increase in European investment. There is a depreciation of the euro, an increase in European exports, and an increase in the European current account surplus.

4) Comparing monetary and fiscal competition with pure monetary policy. Pure monetary policy can achieve full employment and price stability in Europe as a whole. However, it cannot achieve full employment and price stability in each of the member countries. By contrast, monetary and fiscal competition can indeed achieve full employment and price stability in each of the member countries. Judging from this point of view, monetary and fiscal competition seems to be superior to pure monetary policy.

5) Comparing monetary and fiscal competition with pure fiscal policies. Pure fiscal policies can achieve full employment and price stability in each of the member countries. And the same holds for monetary and fiscal competition. Pure fiscal policies cause an increase in the European budget deficit. By contrast, monetary and fiscal competition causes a decline in the European budget deficit. Judging from this perspective, monetary and fiscal competition seems to be superior to pure fiscal policies.

6) A numerical example: the case of inflation. Let initial output in Germany be 1060, and let initial output in France be 1030. In each of the countries there is overemployment and inflation. Step 1 refers to monetary policy in Europe. The inflationary gap in Europe is 90. The monetary policy multiplier in Europe is 2. So what is needed in Europe is a reduction in European money supply of 45.

Step 2 refers to the output lag. The reduction in European money supply of 45 causes a decline in German output of 45 and a decline in French output of equally 45. As a consequence, German output goes from 1060 to 1015, and French output goes from 1030 to 985. In Germany there is still some overemployment and inflation. In France there is now some unemployment and deflation. And in Europe there is now full employment and price stability.

Step 3 refers to fiscal policies in Germany and France. The inflationary gap in Germany is 15. The fiscal policy multiplier in Germany is 1. So what is needed in Germany is a reduction in German government purchases of 15. The

output gap in France is 15. The fiscal policy multiplier in France is 1. So what is needed in France is an increase in French government purchases of 15.

Step 4 refers to the output lag. The reduction in German government purchases of 15 causes a decline in German output of 15. And the increase in French government purchases of 15 causes an increase in French output of 15. As a consequence, German output goes from 1015 to 1000, and French output goes from 985 to 1000. In each of the countries there is now full employment and price stability. Table 5 presents a synopsis.

7) First the governments decide, then the central bank decides. So far we have assumed that the central bank decides first. Now we assume that the governments decide first. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and deflation.

Step 1 refers to fiscal policies in Germany and France. The output gap in Germany is 60. The fiscal policy multiplier in Germany is 1. So what is needed in Germany is an increase in German government purchases of 60. The output gap in France is 30. The fiscal policy multiplier in France is 1. So what is needed in France is an increase in French government purchases of 30.

Step 2 refers to the output lag. The increase in German government purchases of 60 raises German output by 60. And the increase in French government purchases of 30 raises French output by 30. As a consequence, German output goes from 940 to 1000, and French output goes from 970 to 1000. In each of the countries there is now full employment and price stability.

Step 3 refers to monetary policy in Europe. The output gap in Europe is zero. So there is no reason for changing European money supply. Step 4 refers to the output lag. As a consequence, German output stays at 1000, as does French output. In each of the countries there is still full employment and price stability. As a result, the process of competition between the German government, the French government, and the European central bank leads to full employment and price stability in each of the countries.



### 8) Comparing

- first the central bank decides, then the governments decide
- first the governments decide, then the central bank decides.

Let initial output in Germany be 940, and let initial output in France be 970.

Case number 1: The central bank decides first. The increase in European money supply is 45, the increase in German government purchases is 15, the reduction in French government purchases is equally 15, and the change in European government purchases is zero.

Case number 2: The governments decide first. The increase in European money supply is zero, the increase in German government purchases is 60, the increase in French government purchases is 30, and the increase in European government purchases is 90.

As a result, if the central bank decides first, there will be a large increase in European money supply and a zero increase in European government purchases. The other way round, if the governments decide first, there will be a zero increase in European money supply and a large increase in European government purchases. Judging from this point of view, it seems that the central bank should decide first.

9) The central bank and the governments decide simultaneously and independently. As a result, the simultaneous process of monetary and fiscal competition does not lead to full employment and price stability in any of the countries. Instead, there are uniform oscillations in money supply, government purchases, and output. The German economy oscillates between unemployment and overemployment, as does the French economy. And what is more, the German economy oscillates between deflation and inflation, as does the French economy.

## 5. Monetary and Fiscal Cooperation

1) Introduction. This section deals with cooperation between the European central bank, the German government, and the French government. As a starting point, take the output model. It can be represented by a system of two equations:

$$Y_1 = A_1 + \alpha M + \beta G_1 \quad (1)$$

$$Y_2 = A_2 + \alpha M + \beta G_2 \quad (2)$$

Here  $Y_1$  denotes German output,  $Y_2$  is French output,  $M$  is European money supply,  $G_1$  is German government purchases,  $G_2$  is French government purchases,  $\alpha$  is the monetary policy multiplier, and  $\beta$  is the fiscal policy multiplier. The endogenous variables are German output and French output.

2) The policy model. At the beginning there is unemployment in Germany and France. More precisely, unemployment in Germany is high, and unemployment in France is low. The policy makers are the European central bank, the German government, and the French government. 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 government purchases, and French government purchases. 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 government, and the French government can achieve full employment in Germany and France.

Of course there are many more potential targets of policy cooperation:

- balancing the budget in Germany and France
- balancing the current account in Germany and France
- high investment in Germany and France
- preventing foreign exchange bubbles
- preventing stock market bubbles
- and so on.

To sum up, in a sense, policy instruments are abundant. And in another sense, policy instruments are scarce.

Taking differences in equations (1) and (2), the policy model can be written as follows:

$$\Delta Y_1 = \alpha \Delta M + \beta \Delta G_1 \quad (3)$$

$$\Delta Y_2 = \alpha \Delta M + \beta \Delta G_2 \quad (4)$$

Here  $\Delta Y_1$  denotes the initial output gap in Germany,  $\Delta Y_2$  is the initial output gap in France,  $\Delta M$  is the required increase in European money supply,  $\Delta G_1$  is the required increase in German government purchases, and  $\Delta G_2$  is the required increase in French government purchases. The endogenous variables are  $\Delta M$ ,  $\Delta G_1$  and  $\Delta G_2$ .

We now introduce a third target. We assume that the increase in German government purchases should be equal in size to the reduction in French government purchases  $\Delta G_1 + \Delta G_2 = 0$ . Put another way, we assume that the sum total of European government purchases should be constant. Add up equations (3) and (4), taking account of  $\Delta G_1 + \Delta G_2 = 0$ , to find out:

$$\Delta M = \frac{\Delta Y_1 + \Delta Y_2}{2\alpha} \quad (5)$$

Here  $\Delta Y_1 + \Delta Y_2$  is the initial output gap in Europe. Then subtract equation (4) from equation (3), taking account of  $\Delta G_1 + \Delta G_2 = 0$ , and solve for:

$$\Delta G_1 = \frac{\Delta Y_1 - \Delta Y_2}{2\beta} \quad (6)$$

$$\Delta G_2 = - \frac{\Delta Y_1 - \Delta Y_2}{2\beta} \quad (7)$$

According to equation (5), the required increase in European money supply depends on the initial output gap in Europe and on the monetary policy multiplier in Europe. According to equation (6), the required increase in German government purchases depends on the initial output gap in Germany, the initial output gap in France, and the fiscal policy multiplier. The larger the initial output gap in Germany, the larger is the required increase in German government

purchases. Moreover, the larger the initial output gap in France, the smaller is the required increase in German government purchases. At first glance this comes as a surprise. According to equation (7), the required increase in French government purchases depends on the initial output gap in France, the initial output gap in Germany, and the fiscal policy multiplier.

3) A numerical example: the case of unemployment. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and deflation. Step 1 refers to the policy response. The output gap in Germany is 60, the output gap in France is 30, and the output gap in Europe is 90. What is needed, then, is an increase in European money supply of 45, an increase in German government purchases of 15, and a reduction in French government purchases of equally 15.

Step 2 refers to the output lag. The increase in European money supply of 45 causes an increase in German output of 45 and an increase in French output of equally 45. The increase in German government purchases of 15 causes an increase in German output of 15. And the reduction in French government purchases of 15 causes a decline in French output of 15. The net effect is an increase in German output of 60 and an increase in French output of 30. As a consequence, German output goes from 940 to 1000, and French output goes from 970 to 1000. In each of the countries there is now full employment and price stability. Table 6 gives an overview.

As a result, monetary and fiscal cooperation can achieve full employment and price stability in each of the countries. There is an increase in European money supply. There is an increase in German government purchases, a reduction in French government purchases, and no change in European government purchases. There is an increase in German output, as there is in French output. There is an increase in European output, an increase in European tax revenue, and a decline in the European budget deficit. There is a decline in the interest rate and an increase in European investment. There is a depreciation of the euro, an increase in European exports, and an increase in the European current account surplus.

4) Comparing policy cooperation with policy competition. Policy competition can achieve full employment and price stability in each of the countries. And the

same applies to policy cooperation. Under policy competition, the increase in European money supply is 45, the increase in German government purchases is 15, and the reduction in French government purchases is equally 15 (assuming that the central bank decides first). Hence the solution to policy cooperation is identical with the solution to policy competition. Policy competition is a slow process consisting of four steps. By contrast, policy cooperation is a fast process consisting of only two steps. Policy competition causes some overshooting in output. By contrast, policy cooperation does not cause any overshooting in output. Judging from this point of view, policy cooperation seems to be superior to policy competition.

5) A numerical example: the case of inflation. Let initial output in Germany be 1060, and let initial output in France be 1030. In each of the countries there is overemployment and inflation. Step 1 refers to the policy response. The inflationary gap in Germany is 60, the inflationary gap in France is 30, and the inflationary gap in Europe is 90. What is needed, then, is a reduction in European money supply of 45, a reduction in German government purchases of 15, and an increase in French government purchases of equally 15.

Step 2 refers to the output lag. The reduction in European money supply of 45 causes a decline in German output of 45 and a decline in French output of equally 45. The reduction in German government purchases of 15 causes a decline in German output of 15. And the increase in French government purchases of 15 causes an increase in French output of 15. The net effect is a decline in German output of 60 and a decline in French output of 30. As a consequence, German output goes from 1060 to 1000, and French output goes from 1030 to 1000. In each of the countries there is now full employment and price stability. For a synopsis see Table 7.

6) Alternative targets of policy cooperation: no increase in national government purchases. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and deflation. Step 1 refers to the policy response. The output gap in Germany is 60, and the output gap in France is 30. What is needed, then, is an increase in European money supply of 60, an increase in German government purchases of zero, and a reduction in French government purchases of 30.

Step 2 refers to the output lag. The increase in European money supply of 60 raises German output and French output by 60 each. And the reduction in French government purchases of 30 lowers French output by 30. The net effect is an increase in German output of 60 and an increase in French output of 30. As a consequence, German output goes from 940 to 1000, and French output goes from 970 to 1000. In each of the countries there is now full employment and price stability.

As a result, monetary and fiscal cooperation can achieve full employment and price stability in each of the countries. There is a large increase in European money supply. There is no change in German government purchases, a reduction in French government purchases, and a reduction in European government purchases.

7) Alternative targets of policy cooperation: no reduction in national government purchases. Let initial output in Germany be 940, and let initial output in France be 970. In each of the countries there is unemployment and deflation. Step 1 refers to the policy response. The output gap in Germany is 60, and the output gap in France is 30. What is needed, then, is an increase in European money supply of 30, an increase in German government purchases of equally 30, and a reduction in French government purchases of zero.

Step 2 refers to the output lag. The increase in European money supply of 30 raises German output and French output by 30 each. And the increase in German government purchases of 30 raises German output by 30. The total effect is an increase in German output of 60 and an increase in French output of 30. As a consequence, German output goes from 940 to 1000, and French output goes from 970 to 1000.

As a result, monetary and fiscal cooperation can achieve full employment and price stability in each of the countries. There is a small increase in European money supply. There is an increase in German government purchases, no change in French government purchases, and an increase in European government purchases.

## 6. Summary

1) The basic model. For ease of exposition we assume that the monetary union consists of two countries, say Germany and France. For ease of exposition we assume that unemployment causes deflation whereas overemployment causes inflation. At the beginning let there be unemployment and hence deflation.

2) Monetary policy in Europe can achieve full employment in Europe on average. And what is more, it can achieve price stability in Europe on average. However, monetary policy in Europe cannot achieve full employment in Germany and France. And what is more, it cannot achieve price stability in Germany and France.

3) Fiscal policies in Germany and France can achieve full employment and price stability in each of the countries. However, this requires a sharp increase in the European budget deficit.

4) Competition between the European central bank, the German government, and the French government leads to full employment and price stability in each of the countries. And what is more, it causes a decline in the European budget deficit. So monetary and fiscal competition is superior to both pure monetary policy and pure fiscal policy.

5) Cooperation between the European central bank, the German government, and the French government can achieve full employment and price stability in each of the countries. Now compare policy cooperation with policy competition. Policy competition is a slow process consisting of four steps. By contrast, policy cooperation is a fast process consisting of only two steps. Policy competition causes some overshooting in output. By contrast, policy cooperation does not cause any overshooting in output. From this point of view, policy cooperation seems to be superior to policy competition.

## 7. References

- BEETSMA, R., DEBRUN, X., The Interaction between Monetary and Fiscal Policies in a Monetary Union: A Review of Recent Literature, in: R. Beetsma et al., eds., Monetary Policy, Cambridge 2004
- BUTI, M., ed., Monetary and Fiscal Policies in EMU: Interactions and Coordination, Cambridge 2003
- BUTI, M., FRANCO, D., Fiscal Policy in EMU, Cheltenham 2005
- CARLBERG, M., Monetary and Fiscal Policies in the Euro Area, Berlin New York 2006
- DEBRUN, X., Macroeconomic Policies in the European Monetary Union: Credibility, Coordination and Institutions, PhD Dissertation, University of Geneva 1999
- HUGHES HALLET, A., MOOSLECHNER, P., SCHUERZ, M., eds., Challenges for Economic Policy Coordination within European Monetary Union, Dordrecht 2001
- LAMBERTINI, L., ROVELLI, R., Independent or Coordinated? Monetary and Fiscal Policy in EMU, in: R. Beetsma et al., eds., Monetary Policy, Cambridge 2004
- LEVIN, J. H., A Model of Stabilization Policy in a Jointly Floating Currency Area, in: J. S. Bhandari, B. H. Putnam, eds., Economic Interdependence and Flexible Exchange Rates, Cambridge 1983
- ONORANTE, L., Interaction of Fiscal Policies in the Euro Area: How Much Pressure on the ECB?, in: R. Beetsma et al., eds., Monetary Policy, Cambridge 2004
- SIDIROPOULOS, M., SPYROMITROS, E., Fiscal Policy in a Monetary Union under Alternative Labor Market Regimes, Discussion Paper, Strasbourg 2005
- UHLIG, H., One Money, but Many Fiscal Policies in Europe, in: M. Buti, ed., Monetary and Fiscal Policies in EMU, Cambridge 2003
- VAN AARLE, B., GARRETSEN, H., HUART, F., Monetary and Fiscal Policy Rules in the EMU, Working Paper 2003
- VON HAGEN, J., MUNDSCHENK, S., The Functioning of Economic Policy Coordination, in: M. Buti, A. Sapir, eds., EMU and Economic Policy in Europe, Cheltenham 2002



**Table 1**  
**Monetary Policy in Europe**  
 The Case of Unemployment

	Germany	France
Initial Output	940	970
Change in Money Supply		45
Output	985	1015

**Table 2**  
**Monetary Policy in Europe**  
 The Case of Inflation

	Germany	France
Initial Output	1060	1030
Change in Money Supply		– 45
Output	1015	985

**Table 3**  
**Fiscal Policies in Germany and France**  
 The Case of Unemployment

	Germany	France
Initial Output	940	970
Change in Government Purchases	60	30
Output	1000	1000

**Table 4**  
**Monetary and Fiscal Competition**  
 The Case of Unemployment

	Germany	France
Initial Output	940	970
Change in Money Supply		45
Output	985	1015
Change in Government Purchases	15	– 15
Output	1000	1000

**Table 5**  
**Monetary and Fiscal Competition**  
 The Case of Inflation

	Germany	France
Initial Output	1060	1030
Change in Money Supply		– 45
Output	1015	985
Change in Government Purchases	– 15	15
Output	1000	1000

**Table 6**  
**Monetary and Fiscal Cooperation**  
 The Case of Unemployment

	Germany	France
Initial Output	940	970
Change in Money Supply		45
Change in Government Purchases	15	– 15
Output	1000	1000

**Table 7**  
**Monetary and Fiscal Cooperation**  
 The Case of Inflation

	Germany	France
Initial Output	1060	1030
Change in Money Supply		– 45
Change in Government Purchases	– 15	15
Output	1000	1000

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#### **Diskussionspapiere der Fächergruppe Volkswirtschaftslehre**

- Carlberg, Michael, Monetary and Fiscal Policies in the Euro Area, No. 61 (August 2007).
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- Dluhosch, Barbara & Klaus W. Zimmermann, Zur Anatomie der Staatsquote, Nr. 58 (Januar 2007).
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- Dluhosch, Barbara and Klaus W. Zimmermann, Some Second Thoughts on Wagner's Law, No. 54, (December 2006).
- Dewenter, Ralf, Das Konzept der zweiseitigen Märkte am Beispiel von Zeitungsmonopolen, Nr. 53 (November 2006), erscheint in: *MedienWirtschaft: Zeitschrift für Medienmanagement und Kommunikationsökonomie*.
- Napel, Stefan und Andrea Schneider, Intergenerational talent transmission, inequality, and social mobility, No. 52 (October 2006).
- Papenfuss, Ulf und Tobias Thomas, Eine Lanze für den Sachverständigenrat?, Nr. 51 (Oktober 2006).
- Kruse, Jörn, Das Monopol für demokratische Legitimation: Zur konstitutionellen Reform unserer staatlichen und politischen Strukturen, Nr. 50 (Juli 2006).
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- Carlberg, Michael, Interactions between Monetary and Fiscal Policies in the Euro Area, No. 48 (March 2006).
- Bayer, Stefan & Jacques Méry, Sustainability Gaps in Municipal Solid Waste Management: The Case of Landfills, No. 47 (February 2006).
- Schäfer, Wolf, Schattenwirtschaft, Äquivalenzprinzip und Wirtschaftspolitik, Nr. 46 (Januar 2006).
- Sepp, Jüri & Diana Eerma, Developments of the Estonian Competition Policy in the Framework of Accession to the European Union, No. 45 (January 2006).
- Kruse, Jörn, Zugang zu Premium Content, Nr. 44 (Dezember 2005).
- Dewenter, Ralf & Jörn Kruse, Calling Party Pays or Receiving Party Pays? The Diffusion of Mobile Telephony with Endogenous Regulation, No. 43 (November 2005).

- Schulze, Sven, An Index of Generosity for the German UI-System. No. 42 (October 2005).
- Bühler, Stefan, Ralf Dewenter & Justus Haucap, Mobile Number Portability in Europe, No. 41. (August 2005), erschienen in: *Telecommunications Policy* 30(7), 385-399.
- Meyer, Dirk, Manuskriptstaus behindern den Wissenschaftsbetrieb: Zur Möglichkeit von Einreichungsgebühren, Autorenhonoraren und Gutachterentgelten, Nr. 40 (Juni 2005).
- Carlberg, Michael, International Monetary Policy Coordination, No. 39 (March 2005).
- Zimmermann, Klaus W. & Reto Schemm-Gregory, Eine Welt voller Clubs, Nr. 38 (März 2005), erscheint in: *Zeitschrift für Wirtschaftspolitik*.
- Hackmann, Johannes, Die Bestimmung der optimalen Bevölkerungsgröße als (wirtschafts-) ethisches Problem, Nr. 37 (März 2005).
- Josten, Stefan Dietrich, Middle-Class Consensus, Social Capital and the Mechanics of Economic Development, No. 36 (January 2005).
- Dewenter, Ralf & Ulrich Kaiser, Anmerkungen zur ökonomischen Bewertung von Fusionen auf dem Printmedienmarkt, Nr. 35 (Januar 2005), erschienen unter dem Titel „Horizontale Fusionen auf zweiseitigen Märkten am Beispiel von Printmedien“ in *Perspektiven der Wirtschaftspolitik* 7(3), 335-353.
- Göbel, Markus & Tobias Thomas, Informal Institutions and the “Weaknesses” of Human Behavior, No. 34 (January 2005).
- Dewenter, Ralf & Justus Haucap, Estimating Demand Elasticities for Mobile Telecommunications in Austria, No. 33 (Dezember 2004).
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- Josten, Stefan Dietrich & Klaus W. Zimmermann, Unanimous Constitutional Consent and the Immigration Problem, No. 31 (Dezember 2004), erscheint in: *Public Choice*.
- Bleich, Torsten, Importzoll, Beschäftigung und Leistungsbilanz: ein mikrofundierter Ansatz, Nr. 30 (September 2004).
- Dewenter, Ralf, Justus Haucap, Ricardo Luther & Peter Rötzel, Hedonic Prices in the German Market for Mobile Phones, No. 29 (August 2004), erscheint in: *Telecommunications Policy*, 2007.
- Carlberg, Michael, Monetary and Fiscal Policy Interactions in the Euro Area, No. 28 (März 2004).
- Dewenter, Ralf & Justus Haucap, Die Liberalisierung der Telekommunikationsbranche in Deutschland, Nr. 27 (März 2004), erschienen in: *Zeitschrift für Wirtschaftspolitik* 53, 2004, 374-393.
- Kruse, Jörn, Ökonomische Konsequenzen des Spitzensports im öffentlich-rechtlichen und im privaten Fernsehen, Nr. 26 (Januar 2004).
- Haucap, Justus & Jörn Kruse, Ex-Ante-Regulierung oder Ex-Post-Aufsicht für netzgebundene Industrien?, Nr. 25 (November 2003), erschienen in *Wirtschaft und Wettbewerb* 54, 2004, 266-275.

- Haucap, Justus & Tobias Just, Der Preis ist heiß. Aber warum? Zum Einfluss des Ökonomie- studiums auf die Einschätzung der Fairness des Preissystems, Nr. 24 (November 2003), erschienen in *Wirtschaftswissenschaftliches Studium (WiSt)* 33 (9), 2004, 520-524.
- Dewenter, Ralf & Justus Haucap, Mobile Termination with Asymmetric Networks, No. 23 (October 2003), erschienen unter dem Titel “The Effects of Regulating Mobile Termination Rates for Asymmetric Networks” erschienen in: *European Journal of Law and Economics* 20, 2005, 185-197.
- Dewenter, Ralf, Raising the Scores? Empirical Evidence on the Introduction of the Three-Point Rule in Portugese Football, No. 22 (September 2003).
- Haucap, Justus & Christian Wey, Unionisation Structures and Innovation Incentives, No. 21 (September 2003), erschienen in: *The Economic Journal* 114, 2004, C145-C165.
- Quitzau, Jörn, Erfolgsfaktor Zufall im Profifußball: Quantifizierung mit Hilfe informations- effizienter Wettmärkte, Nr. 20 (September 2003).
- Reither, Franco, Grundzüge der Neuen Keynesianischen Makroökonomik, Nr. 19 (August 2003), erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 54, 2003, 131-143.
- Kruse, Jörn & Jörn Quitzau, Fußball-Fernsehrechte: Aspekte der Zentralvermarktung, Nr. 18 (August 2003).
- Bühler, Stefan & Justus Haucap, Mobile Number Portability, No. 17 (August 2003), erschienen in: *Journal of Industry, Competition and Trade* 4, 2004, 223-238.
- Zimmermann, Klaus W. & Tobias Just, On the Relative Efficiency of Democratic Institutions, No. 16 (July 2003).
- Bühler, Stefan & Justus Haucap, Strategic Outsourcing Revisited, No. 15 (July 2003), erschienen in *Journal of Economic Behavior and Organization* 61, 2006, 325-338.
- Meyer, Dirk, Die Energieeinsparverordnung (EnEV) - eine ordnungspolitische Analyse, Nr. 14 (Juli 2003).
- Zimmermann, Klaus W. & Tobias Thomas, Patek Philippe, or the Art to Tax Luxuries, No. 13 (June 2003).
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- Dewenter, Ralf, Media Markets with Habit Formation, No. 5 (June 2003).
- Haucap, Justus, The Economics of Mobile Telephone Regulation, No. 4 (June 2003).
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- Kruse, Jörn, Regulierung der Terminierungsentgelte der deutschen Mobilfunknetze?, Nr. 1 (Juni 2003).

### **Frühere Diskussionsbeiträge zur Wirtschaftspolitik**

- Bräuninger, Michael & Justus Haucap, Das Preis-Leistungs-Verhältnis ökonomischer Fachzeitschriften, Nr. 120 (2002), erschienen in: *Schmollers Jahrbuch* 123, 2003, S. 285-305.
- Kruse, Jörn, Competition in Mobile Communications and the Allocation of Scarce Resources: The Case of UMTS, Nr. 119 (2002), erschienen in: Pierre Buigues & Patrick Rey (Hg.), *The Economics of Antitrust and Regulation in Telecommunications*, Edward Elgar: Cheltenham 2004.
- Haucap, Justus & Jörn Kruse, Predatory Pricing in Liberalised Telecommunications Markets, Nr. 118 (2002), erschienen in: Christian von Hirschhausen, Thorsten Beckers & Kay Mitusch (Hrsg.), *Trends in Infrastructure Regulation and Financing*, Edward Elgar: Cheltenham 2004, S. 43-68.
- Kruse, Jörn, Pay-TV versus Free-TV: Ein Regulierungsproblem?, Nr. 117 (2002), erscheint in: Mike Friedrichsen (Hg.), *Kommerz - Kommunikation - Konsum. Zur Zukunft des Fernsehens in konvergierenden Märkten*, 2003.
- Kruse, Jörn, Regulierung der Verbindungsnetzbetreiberauswahl im Mobilfunk, Nr. 116 (2002), als Kurzform erschienen in: *Multimedia und Recht*, Januar 2003, S. 29-35.
- Haucap, Justus & Jörn Kruse, Verdrängungspreise auf liberalisierten Telekommunikationsmärkten, Nr. 115 (2002), erschienen in: *Perspektiven der Wirtschaftspolitik* 5, 2004, 337-361.
- Haucap, Justus & Helmmar Schmidt, Kennzeichnungspflicht für genetisch veränderte Lebensmittel: Eine ökonomische Analyse, Nr. 114 (2002), erschienen in: *Zeitschrift für Wirtschaftspolitik* 53, 2002, S. 287-316.
- Kruse, Jörn & Jörn Quitzau, Zentralvermarktung der Fernsehrechte an der Fußball-Bundesliga, Nr. 113 (2002), erschienen in: *Zeitschrift für Betriebswirtschaft, Ergänzungsheft zur Sportökonomie*, 2002, S. 63-82.
- Kruse, Jörn & Justus Haucap, Zuviel Wettbewerb in der Telekommunikation? Anmerkungen zum zweiten Sondergutachten der Monopolkommission, Nr. 112 (2002), erschienen in: *Wirtschaftsdienst* 82, 2002, S. 92-98.

- Bräuninger, Michael & Justus Haucap, What Economists Think of Their Journals and How They Use Them: Reputation and Relevance of Economics Journals, Nr. 111 (2002), erschienen in *Kyklos* 56, 2003, S. 175-197.
- Haucap, Justus, Telephone Number Allocation: A Property Rights Approach, Nr. 110 (2001), erschienen in: *European Journal of Law and Economics* 15, 2003, S. 91-109.
- Haucap, Justus & Roland Kirstein, Government Incentives when Pollution Permits are Durable Goods, Nr. 109 (2001), erschienen in: *Public Choice* 115, 2003, S. 163-183.
- Haucap, Justus, Konsum und soziale Beziehungen, Nr. 108 (2001), erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 52, 2001, S. 243-263.
- Bräuninger, Michael & Justus Haucap, Was Ökonomen lesen und schätzen: Ergebnisse einer Umfrage, Nr. 107 (2000), erschienen in: *Perspektiven der Wirtschaftspolitik* 2, 2001, S.185-210.
- Haucap, Justus, Uwe Pauly & Christian Wey, Collective Wage Setting When Wages Are Generally Binding: An Antitrust Perspective, Nr. 106 (2000), erschienen in: *International Review of Law and Economics* 21, 2001, S. 287-307.
- Haucap, Justus, Selective Price Cuts and Uniform Pricing Rules in Network Industries, Nr. 105 (2000), erschienen in: *Journal of Industry, Competition and Trade* 3, 2003, 269-291.
- Bräuninger, Michael, Unemployment Insurance, Wage Differentials and Unemployment, Nr. 104 (2000) erschienen in: *Finanzarchiv* 75, 2000, S. 485-501.
- Kruse, Jörn, Universaldienstlast etablierter Postunternehmen, Nr. 103 (2000) erschienen in: *Zeitschrift für Betriebswirtschaft*, Ergänzungsheft 3, 2002, S. 99-117.
- Kruse, Jörn, Sportveranstaltungen als Fernsehware, Nr. 102 (2000) erschienen in: Schellhaaß, Horst-Manfred (Hg.), *Sportveranstaltungen zwischen Liga- und Medien-Interessen*, Hofmann: Schorndorf 2000, S. 15-39.

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- Carlberg, Michael, Europäische Währungsunion: Der neue Policy Mix, Nr. 5/1999, erschienen in *Wirtschaftswissenschaftliches Studium (WiSt)* 29(1), 2000, S. 8-13.
- Carlberg, Michael, European Monetary Union: The New Macroeconomics, Nr. 4/1999, erschienen in: Gerhard Rübel (Hg.), *Real and Monetary Issues of International Economic Integration*, Duncker & Humblot: Berlin 2000, S. 155-175.
- Bräuninger, Michael & J.-P. Vidal, Private versus Financing of Education and Endogenous Growth, Nr. 3/1999, erschienen in: *Journal of Population Economics* 13, 2000, S. 387-401.
- Reither, Franco, A Monetary Policy Strategy for the European Central Bank, Nr. 2/1999 erschienen in: Rolf Caesar & Hans-Eckart Scharrer (Hg.), *European Economic and Monetary Union: Regional and Global Challenges*, Nomos Verlag: Baden-Baden 2001, S. 213-226.
- Bräuninger, Michael, Wage Bargaining, Unemployment and Growth, Nr. 1/1999 erschienen in: *Journal of Institutional and Theoretical Economics* 156, 2000, S. 646-660.

#### **Frühere Diskussionsbeiträge zur Finanzwissenschaft**

- Josten, Stefan, Crime, Inequality, and Economic Growth. A Classical Argument for Distributional Equality, 2002, erschienen in: *International Tax and Public Finance* 10, 2003, S. 435-452.
- Zimmermann, Klaus W. & Tobias Thomas, Öffentliche Güter, natürliche Monopole und die Grenze marktlicher Versorgung, 2002, erschienen in: *Wirtschaftswissenschaftliches Studium (WiSt)* 32, 2003, S. 340-344.
- Holm-Müller, Karin & Klaus W. Zimmermann, Einige Anmerkungen zur Internalisierungsstrategie mit dem produktorientierten Konzept der Pigousteuer, 2002, erschienen in: *Zeitschrift für Umweltpolitik und Umweltrecht* 25, 2002, S. 415-420.
- Josten, Stefan, Nationale Schuldenpolitik in der EWU, 2002, erschienen in: *Wirtschaftsdienst* 82, 2002, S. 219-225.
- Hackmann, Johannes, Der Sonderabgabenbezug nach dem Lebenspartnerschaftsergänzungsgesetz, 2002, erschienen in: *Wirtschaftsdienst*, 82, 2002, S. 241-248.
- Josten, Stefan, Das Theorem der Staatsschuldneutralität. Eine kritisch-systematische Rekonstruktion, 2001, erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 53, 2002, S. 180-209.

- Zimmermann, Klaus W., Komplikationen und Fallstricke in der Pigou-Analyse von Externalitäten, 2001, erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 53, 2002, S. 245-267
- Josten, Stefan, National Debt in an Endogenous Growth Model, 2001, erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 53, 2002, S. 107-123.
- Hackmann, Johannes, Vom Ehegattensplitting zum Partnerschaftssplitting?, 2001, erschienen in: Volker Arnold (Hg.), *Wirtschaftsethische Perspektiven VI*, Schriften des Vereins für Socialpolitik 228/VI, Duncker & Humblot: Berlin 2002, S. 189-222.
- Zimmermann, Klaus W. & Tobias Just, Politische Glaubwürdigkeit und der Euro: Eine verfassungsökonomische Perspektive, 2000, erschienen in: Fritz Söllner & Arno Wilfert (Hg.), *Die Zukunft des Steuer- und Sozialstaates*, Physica Verlag 2001, S. 373-397.
- Josten, Stefan, National Debt, Borrowing Constraints, and Human Capital Accumulation in an Endogenous Growth Model, 2000, erschienen in: *FinanzArchiv* 58, 2001, S. 317-338.
- Zimmermann, Klaus W. & Tobias Just, The Euro and Political Credibility in Germany, 2000, erschienen in: *Challenge* 44, 2001, S. 102-120
- Josten, Stefan, Public Debt Policy in an Endogenous Growth Model of Perpetual Youth, 1999, erschienen in *FinanzArchiv* 57, 2000, S. 197-215.
- Zimmermann, Klaus W., Internalisierung als Nirwana-Kriterium der Umweltpolitik, 1999, erschienen in: Kilian Bizer, Bodo Linscheidt & Achim Truger (Hg.), *Staatshandeln im Umweltschutz. Perspektiven einer institutionellen Umweltökonomik*, Duncker & Humblot: Berlin 2000.
- Hackmann, Johannes, Die unterlassene Besteuerung der Nutzungswerte selbstgenutzten Wohnungseigentums: Vergebene Reformpotentiale, 1999, erschienen in: R. Lüdeke, W. Scherf & W. Steden (Hg.), *Wirtschaftswissenschaft im Dienste der Verteilungs-, Geld- und Finanzpolitik*, Festschrift für A. Oberhauser, Berlin 2000, S. 387-412.
- Zimmermann, Klaus W. & Tobias Just, Interest Groups, Referenda, and the Political Process: On the Efficiency of Direct Democracy, 1999, erschienen in: *Constitutional Political Economy* 11, 2000, S. 147-163.
- Josten, Stefan, Staatsverschuldung und Wirtschaftswachstum in einem Diamond-OLG-Modell mit AK-Technologie, 1999, erschienen in: *Jahrbuch für Wirtschaftswissenschaften* 51, 2000, S. 237-254.