

Monetary and Fiscal Policy in the European Monetary Union

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The introductory phase of the European Monetary Union (EMU) ended with the introduction of the euro currency in 2002. We present a review of the experiences with the new monetary union. Using a Taylor rule, we analyze the conduct of monetary policy by the European Central Bank (ECB). The empirical results suggest that the ECB applies similar weights to inflation and the output gap as the Bundesbank in the past, but more than proportionate weight to economic developments in Germany and France. Next, we show that the link between monetary developments and inflation in the euro area is empirically very stable. ECB monetary policy was too loose in the first four years to keep inflation below the ECB's upper limit of 2 percent defining price stability. In the last section, we analyze the fiscal framework of EMU and show that it has not succeeded in safeguarding fiscal discipline, especially in the large member states.

Key words: European Monetary Union; Monetary policy; Fiscal policy; Stability Pact

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I. Introduction

The creation of a monetary union in Europe on January 1, 1999 was the capstone of the “Maastricht Process,” which shaped the monetary and fiscal policies of the countries striving for membership in European Monetary Union (EMU) over much of the 1990s.¹ EMU started with the conversion of the national currencies of the member states into euros and the beginning of the operations of the new Euro System, the new European Central Bank (ECB), and the national central banks of the participating states (NCBs).² Interbank and most non-cash payments have been denominated in euros since the start, and European financial markets quickly adopted the euro as the unit of account. The replacement of the national currency signs by euro cash at the start of 2002 completed the initial phase of EMU.

EMU has changed the framework for monetary and fiscal policy in Europe. All EMU member states now participate in a common monetary policy, which is under the control of the ECB. In addition, EMU sets up a framework for fiscal policy in Europe with rules for public-sector deficits and debts and processes guiding and monitoring the budgetary policies of the member states. This framework was created to assure fiscal discipline in EMU and to prevent the stability of the common currency from being undermined by mounting public-sector debts.

Now that the initial phase of EMU is over, this paper reviews the experience with monetary and fiscal policies in the first years of EMU. In Section II, we provide some institutional background. In Section III, we discuss the ECB’s monetary policy. In Section IV, we look at the evolution of monetary conditions in the euro economy and assess the central bank’s policy on that basis. Section V discusses fiscal policy in EMU, and Section VI concludes.

II. Institutional Background

The Treaty on European Union (the Maastricht Treaty of 1991 and the Amsterdam Treaty of 1997) provides the institutional framework for EMU and the ECB. It requires that the NCBs of all participating states be politically independent. The ECB is similarly independent from the governments of the member states and the political bodies of the European Union (EU). The ECB is owned by the NCBs. Its name, European Central Bank, is actually a euphemism, since the ECB is not a “bank,” as a look at its balance sheet reveals. Like the Federal Reserve Board of Governors in the United States, the ECB is the central decision-making institution within the Euro System, and like the Board of Governors, it relies on others to implement monetary policy actions. Unlike the Board of Governors, these “others” are all rather than one of the participating NCBs.

1. For a review of fiscal policies in the EMU member states during the 1990s, see Hughes Hallett *et al.* (2001).

2. In addition to the Euro system, there is also the European System of Central Banks (ESCB), which consists of the ECB and the NCBs of the EU member states.

The Maastricht Treaty delegates the common monetary policy to the Euro System and gives the ECB the task of executing it (Art. 3 and 5 of the Statutes of the ESCB). Monetary policy decisions are made by the Governing Council (Council, for short) whose members are the NCB presidents and the six members of the ECB Board.³ Formally, Council decisions are taken by majority vote, with each member having one vote and the ECB president a second one in the case of a tie. In practice, decisions commonly seem to be carried by consensus, i.e., a broad majority of the Council members.⁴

The Treaty mandates that the ECB regard price stability as the principal objective of monetary policy. The ECB defines price stability as an average rate of inflation below 2 percent in the medium run. The principal mandate is qualified (Art. 105(1)) by the call to support the general economic policies in the European Community as long as this does not compromise the goal of price stability. Issing *et al.* (2001) explain that the ECB does not interpret this as saying that output stabilization is a secondary goal for monetary policy.

Fiscal policy in the EU and EMU is subject to the strictures of the Excessive Deficit Procedure (EDP), which was part of the Maastricht Treaty, and the Stability and Growth Pact (SGP), which was partly introduced with the 1997 Amsterdam Treaty and is partly based on simple EU legislation.⁵ The Maastricht Treaty unconditionally obliges EMU member states to avoid excessive deficits. Whether or not a country has an excessive deficit is determined by the ECB Council based on an assessment procedure, which is triggered when the country has a public-sector deficit larger than 3 percent of GDP or a public debt larger than 60 percent of GDP. Under the EDP, countries with an excessive deficit can be admonished, secretly or openly, by the European Council and, if the deficit is not sufficiently corrected, they can be subject to financial fines. During the 1990s, the EDP carried another penalty for excessive deficits, *viz.* the threat of being denied entry to the monetary union, which was reserved for states without excessive deficits. Beyond that, the SGP obliges EMU member states to keep their public-sector budgets close to balance or in surplus. The member states have to present annual Stability Programs that spell out their fiscal targets for the coming years and explain how they intend to reach these targets. All member states are expected to have reached balanced budgets by the year 2004.

The essential goal of the fiscal strictures is to stabilize the public debt ratios of EMU member states and to reduce them where this is deemed necessary. Low and stable debt ratios are perceived as essential preconditions for the stability of the common currency. Economic reasoning and historical experience confirm this view. It is one way to express the governments' intertemporal budget constraint, which says that, ultimately, public-sector deficits must be backed by future surpluses. An obvious practical difficulty with this concept, however, is how to translate the intertemporal budget constraint, which is essentially a long-run constraint, into

3. The president of the European Council and a member of the European Commission have the right to participate in ECB Council meetings.

4. For a discussion of voting rules on the central bank council of monetary unions, see von Hagen and Süppel (1994), Dornbusch *et al.* (1998), and von Hagen (1999a), who discusses the role of consensus voting in that context.

5. For a detailed description of the EDP and the SGP, see Buti and Sapir (1998).

meaningful constraints on year-to-year fiscal policies (Perotti *et al.* [1998]). Focusing on the long run alone, the intertemporal budget constraint has no practical implications for the short run, as governments can always promise future surpluses to excuse current deficits. The role of the annual deficit constraint in the EDP and SGP is to create the necessary link between the long and the short run. As we will see below, however, focusing too much on the annual deficit may undermine the credibility of the procedures, because the resulting constraints may keep countries from adopting policies that would violate the deficit constraint initially but help reduce public debt in the medium and long run.

III. Monetary Policy in EMU

The ECB's monetary policy evolves within a "two-pillar" strategy.⁶ The focal point of the first pillar is a "reference value" for the annual growth rate of a broad monetary aggregate, M3. The reference value is derived from a simple quantity equation of money. The second pillar consists of an analysis of short-run price movements using a broad collection of data and a broad menu of alternative models. The ECB insists that the strategy is neither "monetary targeting" in a narrow sense of following a fixed money growth rule, nor "inflation targeting" in the sense of trying to achieve a given target rate of inflation over a specified time horizon. Instead, the two pillars serve to organize monetary policy debates. The role of the first pillar is to focus attention on the medium- and long-run consequences of monetary policy. In this regard, the ECB's strategy resembles the Bundesbank's earlier practice of monetary targeting (von Hagen [1999b]). Short of an explicit intermediate target of monetary policy, the ECB's policy is best judged on the basis of its main policy instrument, the interest rate on its main repo operations.

Many observers had expected the ECB to start its monetary policy by pushing up interest rates to prove that it was hard-nosed on inflation (e.g., Dornbusch *et al.* [1998]). The opposite happened. In a concerted step generally considered the Euro System's first policy action, all NCBs reduced their interest rates to 3 percent on December 3, 1998.⁷ On April 9, 1999, the ECB cut its interest rate to 2.5 percent. This was a surprising move, as most EMU economies were already recovering from the economic crisis in late 1998.⁸ The ECB reversed its course in November 1999. Its interest rate peaked at 4.75 percent in October 2000. On May 11, 2001, the ECB started to cut its interest rate. After September 11, it lowered its interest rate in two steps of 50 basis points each. Table 1 reports the ECB's interest rate policy since 1999. The table shows that the ECB now has almost completed one full interest rate cycle.

6. For a detailed discussion of the strategy, see von Hagen and Brückner (2002).

7. The Bank of Italy cut its rate to 3.5 percent and to 3.0 percent later that month. See Gaspar (2001) for a review of this action.

8. Gaspar (2001) explains that move as a protection against deflationary risks in the euro area, although signs of inflation creeping up already existed.

Table 1 ECB Interest Rate Policy

Date	Interest rate (percent)	Date	Interest rate (percent)
Jan. 1, 1999	3.00	Sep. 1, 2000	4.50
Apr. 9, 1999	2.50	Oct. 6, 2000	4.75
Nov. 5, 1999	3.00	May 11, 2001	4.50
Feb. 2, 2000	3.25	Aug. 31, 2001	4.25
Mar. 17, 2000	3.50	Sep. 18, 2001	3.75
Apr. 28, 2000	3.75	Nov. 9, 2001	3.25
June 9, 2000	4.25		

Source: European Central Bank, *Monthly Bulletin*, various issues.

Taylor rules have become a popular tool for describing and interpreting central bank interest rate policies under very diverse circumstances. The simple Taylor rule (Taylor [1993]) found empirical support for the euro area already before the introduction of the euro (see, e.g., Gerlach and Schnabel [2000]). In view of that, it has received considerable attention as a benchmark for the ECB's actual policy.⁹ Of course, we are fully aware of the fact that the ECB, like all central banks, has repeatedly affirmed that it does not follow a Taylor rule, and we do not want to suggest that it blindly applies a technical relationship. Nevertheless, Taylor rules are a useful device to summarize empirically observed patterns of central bank policy. Here, we follow the same approach. We base our exercise on the following specification:

$$i_t = 4.0 + 1.2(\pi_t - \pi^{ob}) + 0.2y_t, \quad (1)$$

where i_t , π_t , π^{ob} , and y_t denote the main repo rate, the inflation rate, the inflation objective, and the output gap, respectively. We set $\pi^{ob} = 1.5$ percent, the value implicitly used by the ECB for its calculation of the reference value for M3, and assume an equilibrium interest rate of 4.0 percent, the sum of the ECB's assumed long-run real GDP growth rate and the inflation objective. Since the measurement of the output gap is particularly uncertain for the euro area due to data problems, we use a simple average of the estimates provided by the Organisation for Economic Co-operation and Development (OECD [2002]), the International Monetary Fund (IMF [2002]), and the European Commission (EU [2001]) to obtain a robust measure.

The coefficients of the Taylor rule in equation (1) are chosen to resemble empirical estimates for the Bundesbank prior to EMU, a plausible benchmark for the ECB (e.g., Faust *et al.* [2001]). This parameterization was also used in our previous study (von Hagen and Brückner [2002]), allowing for a simple robustness check of earlier results. One advantage is that this parameterization yields a value of the Taylor rule for the euro area of 3 percent in December 1998, which corresponds to the actual value at the start of EMU. We prefer to impose such a plausible parameterization to estimating it, because the short time span does not allow obtaining of estimates that are robust against changes in the number of data points or changes in the series used

9. See Peersman and Smets (1999), Taylor (1998), Alesina *et al.* (2001), Faust *et al.* (2001), and von Hagen and Brückner (2002) as well as the financial press, e.g., *Financial Times Deutschland*.

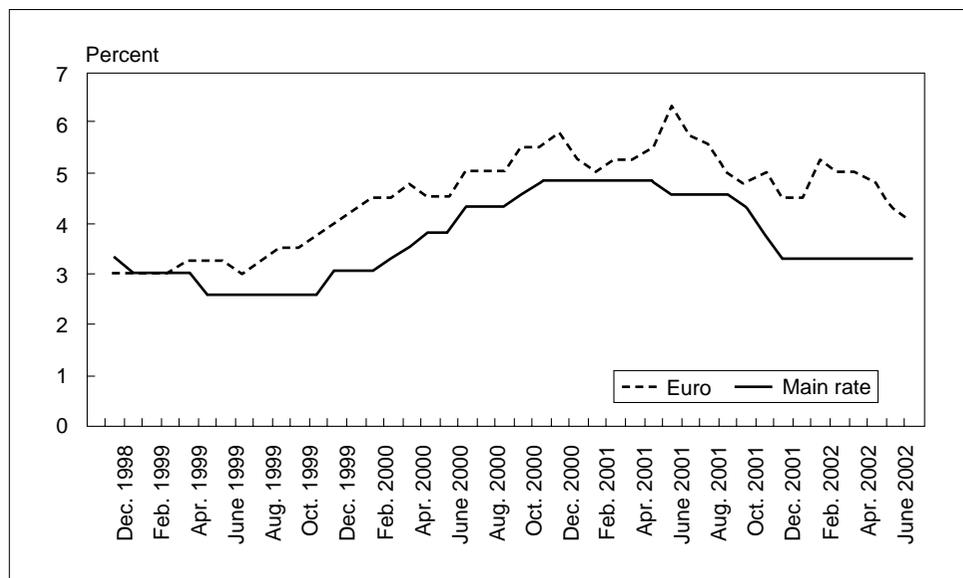
to obtain EMU-wide output gaps. In contrast to Faust *et al.* (2001), we concentrate on Taylor rules based on the current rather than on an expected future inflation rate. The main reason is that calculating expected inflation rates from the data would force us to shorten the sample. As we show below, this does not change the results significantly.¹⁰

In Figure 1, we plot the Taylor rule from equation (1), labeled “euro,” together with the ECB’s main policy instrument (“main rate”). The figure shows that the ECB kept its interest rate well below the benchmark from January 1999. If the benchmark reflects what the Bundesbank would have done under similar circumstances, the figure suggests that the ECB’s monetary policy was consistently less tight than Bundesbank policy would have been. Note that the difference between the actual rate and the benchmark is not well explained by interest rate smoothing. With interest rate smoothing, the actual rate would adjust to the rate implied by the Taylor rule gradually, i.e.,

$$i_t = \lambda i_{t-1} + (1 - \lambda)(4.0 + 1.2(\pi_t - \pi^{ob}) + 0.2y_t), \quad (2)$$

where $\lambda > 0$. Figure 1, however, shows that the actual rate and the rate calculated from our Taylor rule move in opposite directions in at least two instances.

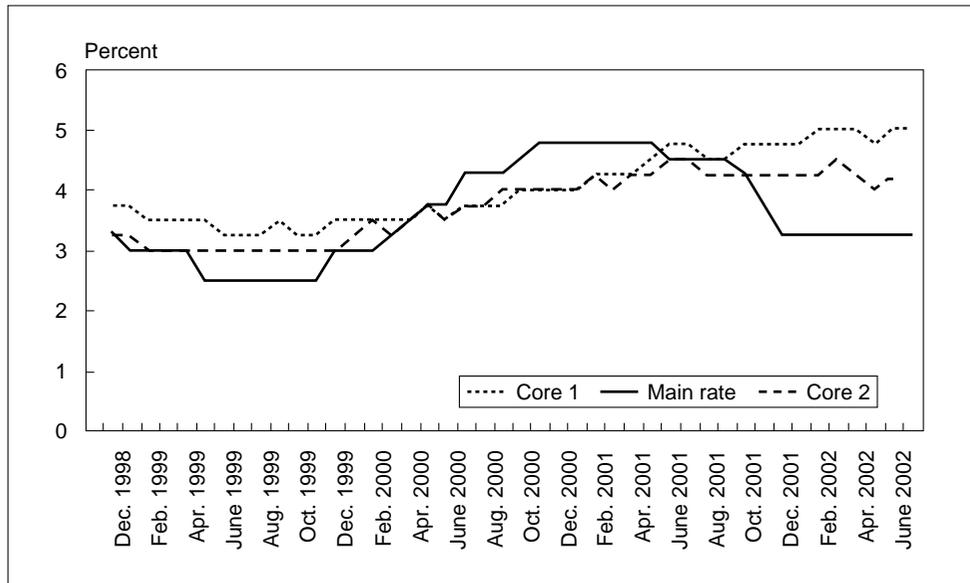
Figure 1 Taylor Rule and Interest Rates



10. The alternative way to proceed in the analysis would be to use EMU data for inflation and output gaps and the ECB’s interest rate and estimate the coefficients. Empirical studies doing this find a smaller coefficient on inflation and a larger coefficient on the output gap, suggesting that the ECB places more weight on output stabilization and less on combating inflation than the Bundesbank did in the past (e.g., Neumann [2002]). Our procedure thus implicitly assumes that the ECB resembles the Bundesbank more strongly in its relative weights on output and inflation.

How can the difference between the actual rate and the benchmark be explained? It is sometimes argued that the ECB cares about (or should care about) core inflation instead of headline inflation. In Figure 2, we show a Taylor rule with core inflation replacing headline inflation. Core inflation is measured by excluding food and energy prices from the consumer price index (CPI) (“core 1”). This rule does not describe the ECB’s policy better than the benchmark. Since core inflation rose slowly but steadily over most of the period under consideration, a Taylor rule based on core inflation captures neither the tightening of monetary policy in 2000 nor the easing in late 2001. A variant of this core inflation rule is to increase the weight on the output gap. This follows the conjecture by Faust *et al.* (2001), namely, that the ECB places more weight on output stabilization than the Bundesbank did. Assuming a weight of 0.8 for output yields the rate labeled “core 2” in Figure 2. It describes the ECB’s policy quite well until early 2000, even though it does not explain the low interest rates between April and October 1999. As the first Taylor rule based on core inflation, it does not capture the behavior of the interest rate from spring 2000 onward. We conclude that the ECB does not aim at stabilizing core inflation. This is consistent with recent results reported by Begg *et al.* (2002).¹¹

Figure 2 Taylor Rules Based on Core Inflation

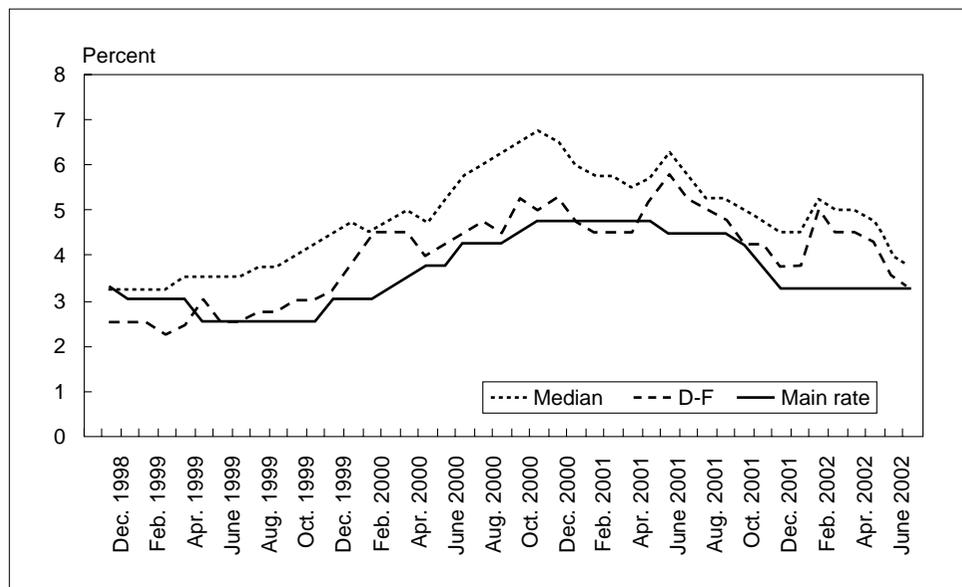


An alternative explanation is based on the decision-making structure in the ECB. If ECB Council decisions were taken by simple majority, the median NCB president would have considerable influence on them. This is important, because national inflation rates in the EMU exhibited quite a large degree of cross-country variation

11. In contrast, a former version of the CEPR Report, Alesina *et al.* (2001), claims that a core-inflation based Taylor rule performs well in describing ECB monetary policy.

during the period under consideration.¹² Under majority voting on the ECB Council, significant inflation differentials could move the ECB's interest rate away from the benchmark. To evaluate this possibility, we calculate Taylor rules based on equation (1) using individual country data, and compute the median Taylor rule for each period.¹³ In Figure 3, we plot this rate, labeled "median." The median rule would have implied a much faster and larger rise in interest rates in 1999 and especially 2000. Thus, Figure 3 suggests that the median NCB president does not play a large role in shaping interest rate decisions. This is consistent with the view, often given by the ECB president in his press statements, that council decisions are based on consensus.

Figure 3 Taylor Rules III



A third possible explanation for the difference between the benchmark and the actual ECB policy is that the ECB Council pays particular attention to the economic situation of the two largest economies, Germany and France. To explore this, we average the rates calculated from equation (1) for these two countries. The resulting rate, labeled "D-F," is shown in Figure 3. It does more to explain the actual interest rate than the original Taylor rule ("euro"). Interestingly, the ECB's first interest rate move in April 1999 pushed the actual rate closer to the "D-F" rate. The subsequent movements in the actual rate seem quite consistent with a smooth adjustment of the actual rate to that implied by "D-F." Thus, the evidence supports the idea that the ECB Council places more weight on the economic developments in Germany and France. Like all other benchmarks considered so far, the "D-F" rule would have

12. The largest inflation differential across countries started at 2.4 percent in January 1999. After falling to 2 percent at the end of 1999, it jumped to 4.1 percent in January 2000. Since then, it has remained above 3 percent most of the time.

13. Theoretically, it would be interesting to estimate country-specific coefficients of the Taylor rule. However, as the voting behavior of the Council members is not released, we cannot estimate such national preference parameters.

called for a tighter monetary policy in the beginning of 2002 due to the jump in the inflation rate. However, most recently actual interest rates and the “D-F” rule coincide again.

For a more formal test, we regress the actual interest rate on the rate predicted by the D-F rule (Table 2). All data are monthly. The sample period starts in November 1998. By including the lagged main rate, we allow for interest rate smoothing, which is significant empirically. The first regression has the actual rate depend on its own lag and the Taylor rule for Germany and France. The table shows that this model explains the actual rate very well. Adding one of our two “core” variables, or measures of the Taylor rule for the euro-area countries except Germany and France, leads to statistically insignificant coefficients. The estimates are very similar to, and not statistically different from, those obtained by von Hagen and Brückner (2002) for the period until June 2001. This indicates that the ECB’s pattern of setting interest rates is quite stable.

Table 2 Estimated Interest Rate Rules

	(1)	(2)
Constant	0.03 (0.22)	-0.31 (-1.65)
D-F	0.13 (2.58)	
D-F ₊₆		0.15 (3.48)
Lagged main rate	0.85 (14.33)	0.91 (21.75)
Standard deviation	0.19	0.19
ρ	0.24	0.1
R ²	0.94	0.95
Observations	43	37

Note: ρ is the first-order residual autocorrelation. Numbers in parentheses are *t*-ratios.

The second regression is based on a forward-looking Taylor rule. It uses expectations of inflation and output gaps six months ahead, proxied by their actual future observations. Thus, the regression runs from November 1998 to October 2001. Due to the short time span, we did not estimate this equation by GMM but by standard OLS. We see that the coefficients are similar and the total fit slightly better.

In sum, it appears that predominant influence of the economic situation in Germany and France on the ECB’s policy is a relatively robust finding. There are several possible explanations for this. It may reflect the acknowledgment of the other ECB Council members of the importance of these two countries for European integration. Alternatively, it may reflect a shared view of the ECB Council that these two economies, which together represent half of the euro economy, represent the medium-run developments of the euro area better than aggregate euro-area data used to compute the euro-area Taylor rule. Whether or not that is true is an empirical question that remains to be resolved. It could also be that the ECB uses German and French data as a proxy for EMU-wide aggregates, because data in these countries are released considerably earlier.¹⁴ Finally, note that Taylor rules computed individually for Germany and France evolved quite similarly during this period, as Germany had

14. We would like to thank Nigel Jenkinson for suggesting this possible explanation.

lower inflation rates but also a lower output gap than France. It remains an interesting question how ECB monetary policy might react when the German and the French economies call for interest rates moving in opposite directions.

IV. Monetary Relations in the Euro Area

In this section, we review the development of the relationship between money and prices in the euro area. First, we look at broad money and inflation since November 1998 onward. Next, we estimate a long-run money demand function and use it to develop a model for the long-run equilibrium price level. We then show that this model has considerable predictive power for price level movements in the euro area.

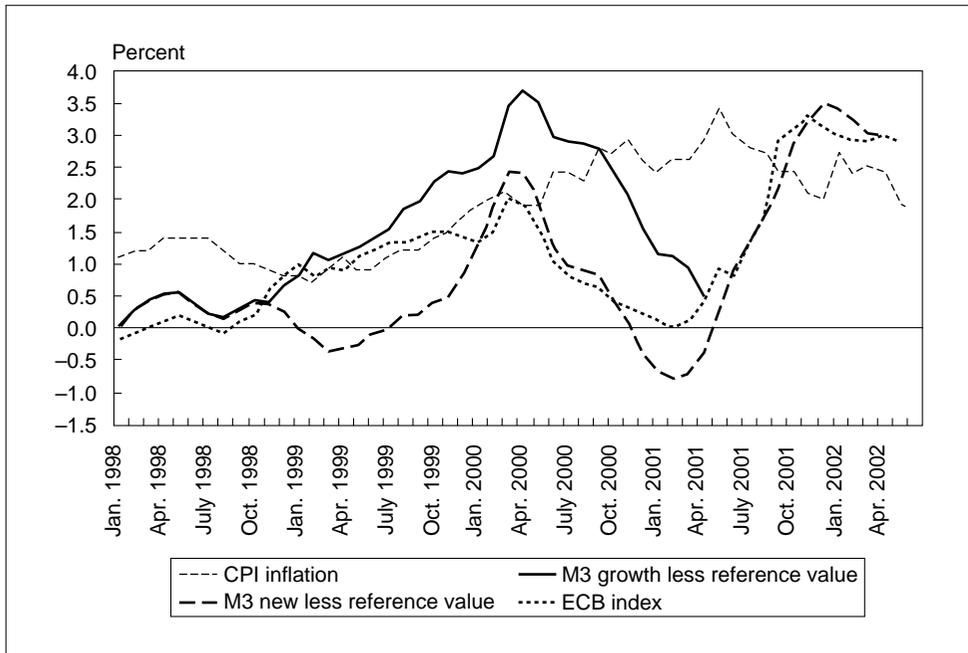
A. Monetary Developments and Inflation

Measuring money growth is a difficult issue in EMU. The ECB's key monetary aggregate, M3, consists of cash, overnight deposits, deposits with fixed maturities of up to two years, deposits with statutory maturity of up to three months, repurchase agreements of financial institutions, money market fund shares, money market paper, bank certificates of deposit, and short-term obligations of maturities up to two years. Some of these elements are denominated in non-euro currencies, and others are traded in secondary markets. These elements are subject to valuation changes as their market prices change. In calculating the monthly growth rate of M3, the ECB purges the monetary data from these valuation changes. The ECB's reasoning behind this is that changes in monetary assets caused by valuation changes rather than transactions do not cause portfolio adjustments and changes in private spending behavior (ECB [2001]), and therefore have no implications for inflation. The empirical strength of this conjecture, which is not in line with standard portfolio choice models, remains unclear.

A second issue is that the ECB's original aggregate contained liabilities of euro-area financial institutions against non-banks residing outside the euro area. Noting that these liabilities were growing relatively fast from January 2000 onward, and very much so in early 2001, the ECB decided to redefine its aggregate excluding all liabilities against non-euro area residents. This introduces a potential measurement bias, however, as the relevant liabilities are not statistically measured in all euro-area countries. Unfortunately, the ECB has suppressed the publication of the earlier series, so that an assessment of its claim that this is a more relevant measure of "money" is impossible.

In Figure 4, we plot three measures of annual M3 growth rates. All three are adjusted for the reference value of 4.5 percent. Following ECB practice, they are calculated as centered three-month moving averages. The line labeled "ECB index" is the ECB's official money growth statistic. It shows money growth being roughly in line with the reference value at the start of EMU. The official money growth rate rose continually from the start of EMU to peak at about 2 percentage points above the reference value in April 2000. This confirms our earlier impression of a monetary policy stance that was too easy during 1999 and 2000. The official growth rate fell

Figure 4 Money Growth and Inflation



back to reach the reference value in early 2001. With the renewed easing of monetary policy starting in May 2001, however, money growth accelerated again. Note that money growth accelerated faster in the period between May and September 2001 than afterward. This is in contrast with popular suggestions that money growth accelerated due to an increase in the precautionary demand for money following the terrorist attacks of September 11. Money growth as measured by the ECB stood at 7.4 percent in spring of 2002.

The measure of money growth labeled “M3 growth less reference value” is calculated from the end-of-period balance sheet data in the ECB’s monthly report. This series can be calculated only until May 2001 for lack of published data from then on. Between the start of EMU and early 2001, this growth rate is continually above the ECB’s official gauge of money growth. This is to be expected, since the euro tended to depreciate against the dollar during this period and the ECB’s adjustment of monetary figures for exchange rate changes biases the measurement of money growth downward under such circumstances. Judged on this basis, money growth peaked at 3.5 percent above the reference value and started to slow later than shown by the official measure. It reached the reference value in May 2001. One implication is that monetary policy was considerably more expansionary in 1999–2000 than the ECB conceded in its own measurement. A second implication is that the amount of monetary tightening—expressed in the decline of money growth rates—applied between April 2000 and May 2001 was considerably larger than the ECB’s own money growth figures revealed. Monetary policy may thus have contributed more to the slowdown of the EMU economy in 2001 than the official figures suggest.

The third measure of money growth, labeled “M3 new less reference value” in Figure 4, shows growth rates from monthly balance-sheet data after taking out liabilities against non-euro area residents. This series was close to the reference value until the ECB’s first interest rate cut in April 1999. It accelerated faster than the original M3 series between April 1999 and April 2000, when it peaked at 6.9 percent, half a percentage point above the ECB’s official money growth number, but 1 percentage point less than the original M3 series. This indicates that deposits held by foreigners did indeed contribute much to the growth of the original M3 series. The growth rate of the new M3 series came down faster than the previous one during 2000, indicating that claims against euro-area financial institutions held by non-euro area residents grew at a faster rate than those held by euro-area residents during that period, too. It fell below the reference value in the first few months of 2001. Like the previous measure, it indicates a stronger monetary tightening during 2000 than the ECB’s official money growth rate. Starting in the spring of 2001, the growth of the new M3 aggregate accelerated rapidly and it coincides with the growth rate of the ECB official index since the summer of 2001. The similarity with the ECB index is as expected, since this is a period in which the external value of the euro is flat. Money growth measured in this way accelerated in October and November 2001, which is consistent with portfolio shifts due to the increased political uncertainty. Overall, however, this particular factor did not contribute much to the strong monetary expansion since May 2001.

In Figure 4, we also plot the CPI inflation rate in the euro area. Eyeballing suggests a relationship between M3 growth and inflation over time. Inflation in the euro area picked up about six months after money growth started to accelerate in late 1998. Inflation slowed six to eight months after the peak of money growth in April 2000, and decelerated after money growth had come closer to the reference value. Note that the visual link between money growth and inflation seems considerably weaker for the ECB’s measure of money growth than for the two alternatives based on balance-sheet data. A renewed revival of inflation in the near future is suggested by the renewed acceleration of money growth. A first impression, therefore, is that there is a link between money growth and inflation in the euro area. In the next subsection, we pursue this issue in more detail.

B. Money Demand in the Euro Area

Several empirical studies in the 1990s investigated the existence of a stable long-run money demand function for broad monetary aggregates at the EMU level, e.g., Browne *et al.* (1997), Hayo (1999), Fagan and Henry (1999), Coenen and Vega (1999), and Brand and Cassola (2000). Generally, they concluded that the stability of money demand at the level of the monetary union was greater than the stability of national money demand functions. Broad money demand is found to have standard properties, i.e., long-run real income and price level elasticities of unity and a negative and significant elasticity with respect to the yield on alternative financial assets.

We estimate a long-run money demand function for M3 based on a cointegration framework. We use quarterly data from 1981–2001 as provided on the ECB’s website. Our VAR contains the growth rates of real M3 balances (M3R) and real

GDP (Y) and the yield on 10-year government bonds (i) in the euro area. Real M3 is calculated using the seasonally adjusted CPI for the euro area. We also include a dummy variable (D90), which is zero before the third quarter of 1990 and one thereafter and which accounts for the level effects of German unification on money and income. The VAR system has one lag for each variable, and the error correction term (ECT) from the cointegrating relationship. The cointegration rank test and the maximum eigenvalue test both indicate the existence of at most one cointegrating relationship in these data. A maximum likelihood test for the restriction implied by using real M3 balances does not reject the hypothesis. Estimation yields the system reported in Table 3. The ECT is estimated as

$$\text{ECT} = 3.9 + \ln(\text{M3R})_t - \ln Y_t + 0.037i_t. \tag{3}$$

Table 3 VAR Estimates

Dependent variable	Regressor						
	ΔM3R	ΔY	Δi	ECT	C	D90	R ²
ΔM3R	0.26 (0.10)	0.14 (0.11)	-0.0001 (0.002)	-0.03 (0.01)	0.006 (0.0013)	0.023 (0.005)	0.38
ΔY	0.14 (0.10)	-0.14 (0.12)	0.004 (0.002)	-0.04 (0.01)	0.008 (0.001)	0.005 (0.005)	0.19
Δi	2.50 (6.48)	9.10 (7.48)	0.48 (0.10)	-1.16 (0.79)	-0.14 (0.08)	0.18 (0.52)	0.33

Note: Numbers in parentheses are standard errors.

The standard error of the coefficient on the interest rate in the regression from which it is derived is 0.004. The hypothesis of a unit long-run income elasticity of real money demand is not rejected. The estimated relationship can be interpreted as a money demand function. The VAR estimates indicate that real money adjusts negatively to a gap between actual and long-run equilibrium balances. This supports the interpretation of the model as a long-run money demand function. The estimate is practically identical with that obtained by Hayo *et al.* (2000), who use data covering the period from 1981 to 1999. Our results thus confirm the impression that the long-run money demand function of the euro area is stable. Note also that the velocity of M3 implied by our long-run money demand function exhibits no exogenous trend, and including a trend in our model does not improve the estimate. This is in contrast with the ECB's claim that M3 velocity has a negative trend. That spurious trend is most likely a result of the decline in long-run interest rates over the sample period. Since the ECB adjusts its reference value for M3 growth for the supposed velocity trend, the reference value is biased toward too-high money growth.

For a systematic analysis of the relationship between money and inflation, we apply the concept of an equilibrium price level (von Hagen [1995]) or P^* -model (Hallman *et al.* [1991]) for the euro area. We solve the money demand function for the equilibrium price level, p^* , that would result approximately if all prices adjusted immediately to current output, money, and interest rates in each period.¹⁵

15. P^* is only a proxy, since the level of output might differ in the hypothetical equilibrium.

$$p_t^* = m_t - y_t^r + 0.037i_t. \quad (4)$$

The equilibrium price level approach holds that the actual price level adjusts gradually to P^* over time. Specifically, the rate of inflation follows the gap between the equilibrium price level and the actual price level with a lag. To test this hypothesis, we estimate a model explaining the annualized quarterly change in the CPI price index by its own lag, the change in oil prices, and the lagged gap between the equilibrium and the actual price level.

Column (1) of Table 4 shows the estimate of this model for the period from 1981 to 1998, just before the start of EMU. The model fits the data very well. The Durbin-Watson statistic indicates no residual autocorrelation. The estimates show that a 1 percent increase in the gap between the equilibrium and the actual price level results in an increase in the quarterly inflation rate of 0.11 percent in the following period. Since the lagged inflation rate is significantly positive in this regression, the model implies that the increase in the price gap feeds into inflation in the following periods, too. CPI inflation also adjusts gradually to changes in oil prices. Column (2) of Table 4 shows the estimate for the same model, but extending the sample period to the end of 2001. The parameters are very stable, suggesting that the relationship did not change with the beginning of EMU. Column (3) of Table 4 presents the same estimate including the output gap as an additional regressor. It shows that the output gap has no additional explanatory power over and above the price gap. In sum, the estimates confirm the visual link between money growth and inflation suggested by Figure 4.

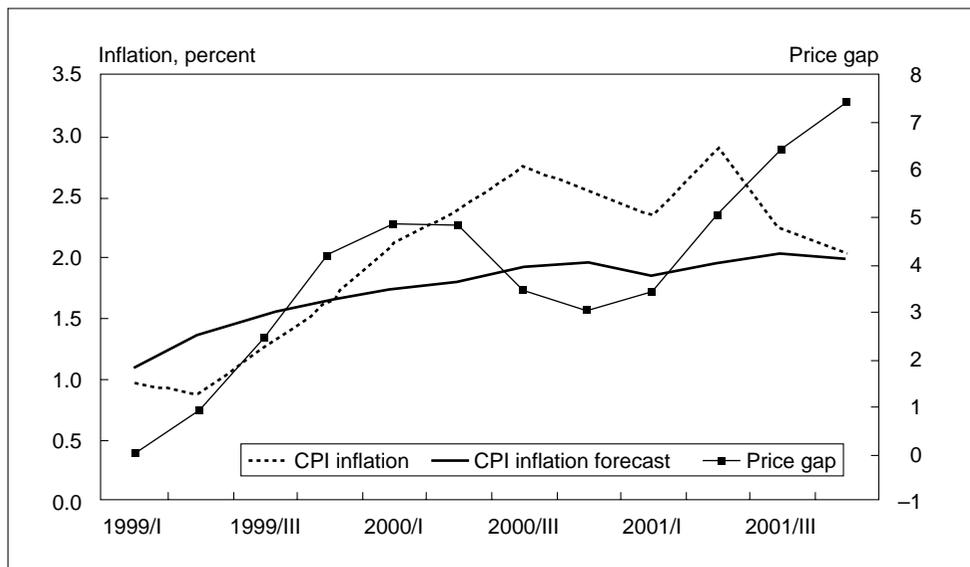
Table 4 A Model for the Euro-Area Inflation Rate

	(1)	(2)	(3)
Time period	1981/III–1998/IV	1981/III–2001/IV	1981/III–2001/IV
Constant	1.89 (0.48)	1.89 (0.44)	1.92 (0.45)
ΔP_{t-1}	0.61 (0.09)	0.60 (0.08)	0.60 (0.08)
$P_{t-1}^* - P_{t-1}$	0.11 (0.04)	0.09 (0.03)	0.09 (0.03)
$\Delta p_{oil,t}$	0.006 (0.002)	0.007 (0.002)	0.007 (0.002)
D90	-1.21 (0.39)	-1.03 (0.22)	-1.07 (0.32)
YGAP	—	—	0.14 (0.13)
Adj. R ²	0.85	0.81	0.82
DW	2.3	2.3	2.3
F-test (joint)	89.8	81.2	65.5

Note: Standard errors in parentheses.

Figure 5 shows that actual, annualized quarterly change in the CPI (“CPI inflation”) together with its one-step-ahead forecast (“CPI inflation forecast”) derived from this model for 1999–2001. In addition, the figure shows the estimated price gap. The series shown in this figure are centered three-quarter moving averages. The figure indicates that the price gap rose quickly from the first quarter of 1999 through the first quarter of 2000, reflecting the fact that monetary policy was overly expansionary in the first year of EMU. This confirms our earlier discussion. Reflecting the tightening of monetary policy, the price gap fell between mid-2000 and early 2001, and returned to a rapid increase thereafter. Actual and predicted inflation tracks these movements with a lag and considerable smoothing. The empirical analysis thus indicates that the rising inflation in the euro area in 1999–2000 can be attributed in part at least to the ECB’s monetary policy. The temporary increase in actual inflation above the prediction of the model is consistent with the ECB’s view that non-monetary factors such as the spike in food prices following the outbreak of hoof-and-mouth disease in Europe pushed prices upward during that period. The widening of the price gap since early 2001 signals that a further inflation potential has been building up in the euro area.¹⁶

Figure 5 Inflation and the Price Gap



16. Our model closely resembles the price-gap model proposed by Gerlach and Svensson (2001). An important difference, however, is that these authors include a measure of a moving trend inflation as an explanatory variable. This moving trend is calculated for each quarter as the slope of a Hodrick-Prescott filter for inflation. We find that, with our data, we can reproduce the Gerlach and Svensson estimates if we replace the D90 dummy by the inflation trend. Essentially, the moving trend reproduces the shift in the relationship after 1990. Implicitly, their model thus explains only the deviation of the inflation rate from trend on the basis of the equilibrium price level.

V. Fiscal Policy in EMU

In this section, we consider three issues. First, we review the fiscal consolidations of the EMU member states in the 1990s. We show that the consolidation experiences vary greatly for different member states. Second, we look at the fiscal performance since the start of EMU. We show that the fiscal strictures did not prevent the reemergence of fiscal laxity. Furthermore, fiscal policy has been procyclical in the first years of EMU and has been driven by electoral considerations after the start of EMU. Third, we show that there are very different patterns of fiscal adjustments. Countries that successfully reduced their debt ratios did so relying predominantly on creating sufficient growth. The data suggest that fiscal policy contributed to that by restructuring spending away from welfare spending and toward public investment. In contrast, countries that relied predominantly on reducing the growth of public debt did not achieve significant reductions in their debt burdens.

A. Fiscal Consolidations in the 1990s

In 1992, the EU's average debt ratio was almost 60 percent of GDP—hence the 60 percent limit foreseen in the Maastricht Treaty. This ratio climbed to almost 75 percent in 1997, the year whose fiscal data were the basis for the May 1998 decision on which countries could enter the monetary union. Since 1997, the average debt ratio has fallen to 62.8 percent. At first glance, these data suggest that the political process for fiscal consolidation started with the Maastricht Treaty was rather unsuccessful until the start of EMU.

Several qualifications apply. First, it is important to note that the increase in the average debt ratio was driven mainly by the large debt expansions in five states: Germany (from 44 percent to 61 percent), France (from 40 percent to 56 percent), Spain (from 48 percent to 70 percent), Italy (from 109 percent to 124 percent), and the United Kingdom (from 42 percent to 55 percent). While Belgium and Luxembourg almost stabilized their debt ratios, the Netherlands and Ireland enjoyed falling debt ratios during this period. The debt ratios of the other states were stabilized or fell after 1992.¹⁷

An institutional arrangement relying on enforcement by an external agent such as the European Council and the European Commission presupposes that the internal political processes of a country respond to external pressures. A country's size is probably a first indicator of the importance of an external enforcement body. Small countries typically pay more attention to international organizations than large countries do, and they do more so, the more they receive transfers from these organizations. This would suggest that the EDP works more powerfully in small EU states than in the large states. To assess this proposition, Table 5 reports the changes in the debt-GDP ratios for states whose GDP in 1997 was at least 7 percent of EU GDP (large states Germany, Spain, France, Italy, and the United Kingdom), intermediate states, whose GDP was between 2 and 7 percent (Belgium, the Netherlands, Austria, and Sweden) and those whose GDP was less than 2 percent of

17. Austria's and Finland's debt ratios increased after 1992, but these countries were not bound by the EDP at the time.

Table 5 Country Size and Government Debt in the 1990s

Change in debt ratio (percent)	All EU countries	Large states	Intermediate states	Small states
1992–97	15.8	18.8	4.1	3.3
1997–2001	-12.0	-5.3	-18.2	-19.8

Source: European Commission, *Statistical Appendix of European Economy* (Spring 2002).

EU GDP (small states Denmark, Greece, Ireland, Luxembourg, Portugal, and Finland). The combined GDP of the large states is 80 percent of EU GDP, that of the intermediate states 13 percent, and the small states have a combined GDP of 7.7 percent of EU GDP. The table shows that, between 1992 and 1997, the average debt ratio of the small states increased by just 3.3 percent, much less than that of the large states, which rose by almost 19 percent. Between 1997 and 2001, the small states achieved a reduction in their debt ratios of almost 20 percent, much more than the 5.3 percent of the large states. Intermediate states behaved much like small states during this period.

This evidence suggests that the fiscal framework of EMU is more effective in the small than in the large states. But this means that the framework is most effective where it matters the least. After all, a fiscal crisis in a small EMU member state would hardly pose a serious threat to the stability of the common currency. A fiscal crisis in a large state might do that, and the data suggest that the fiscal rules are much less effective in those member states. Recent anecdotal evidence confirms this impression. When the German government came under pressure in early 2002, an election year in Germany, for not complying with its fiscal targets, the German finance minister promised to balance the budget by 2004. This is widely regarded as a commitment that Germany cannot achieve given economic and public revenue projections. Thus, the incident suggests that Germany expects to get away with making promises that will not be fulfilled. Shortly afterward, the newly appointed French government announced that France plans to postpone balancing its budget until 2007, three years later than its commitments from the last two years had foreseen, and the Italian government stated a similar intention.

The second qualification is that the observation of fiscal consolidations in some EU states during the 1990s does not mean that these can be attributed to the institutional provisions of the European Treaty. In fact, since most European countries experienced sizeable fiscal expansions during the 1970s and 1980s, a period of consolidation could be expected in the 1990s in any case. In a study of European fiscal policy in the 1990s, Hughes Hallett *et al.* (2001) consider this argument in more detail. They estimate empirical models explaining the likelihood and duration of fiscal consolidations for all EU countries using data from the 1970s and 1980s. They then use the parameters estimated in this exercise to calculate the probability and the expected duration of fiscal consolidations using 1990s data. The results show that the empirical models predict almost all of the observed consolidations correctly. In other words, given the high debt ratios and the economic environment of the 1990s, the observed consolidations could be expected just by extrapolating the patterns of fiscal performance of EU states in the 1970s and 1980s. This lends little force to the claim that the Maastricht

process was important in making the EU countries embark on a process of fiscal consolidation.¹⁸ Hughes Hallett *et al.* (2001) find some weak evidence of a “Maastricht effect” increasing the likelihood of fiscal consolidations in the years between 1992 and 1995. However, this effect only increased the likelihood of revenue-based consolidations, which are less likely to last than expenditure-based consolidations. Thus, if the creation of the fiscal framework of the Maastricht Treaty had any positive effect on the governments’ willingness to undertake fiscal adjustments, the effect vanished early and its consequences were only short lived.

B. Fiscal Performance since the Start of EMU

After 1997, the EU countries enjoyed a decline in their debt ratios. With the exception of 2001, the same years, however, were also a period of relatively strong growth in Europe. Since the fiscal performance is measured in terms of debt and surplus ratios relative to GDP, it is not clear to what extent the observed reductions in government debt and deficit ratios can be attributed to government policy as opposed to windfall gains from strong economic growth. In this subsection, we assess the recent performance, trying to separate policy from the effects of growth.

Separating the two requires making some assumptions about the contribution of growth to the deficit ratio. To do this, we use a simple method of growth accounting. For each year, we estimate the change in the government surplus ratio due to economic growth and a “neutral” policy. Subtracting the two from the observed change in the surplus ratio gives us an estimate of the active policy stance.¹⁹ Let the primary surplus ratio, s_t , be

$$s_t = \frac{R_t - G_t}{Y_t} = (r_t - g_t), \quad (5)$$

where R denotes government revenues, G non-interest government spending, and Y GDP. The change in this ratio over time then is

$$\Delta s_t = \frac{\Delta R_t - \Delta G_t}{Y_{t-1}} - \frac{\Delta Y_t}{Y_{t-1}} (r_t - g_t), \quad (6)$$

where $r = R/Y$, and $g = G/Y$. We define a “neutral” fiscal policy as one that keeps the average tax rate, r , and the ratio of government spending to trend GDP constant. With this definition, the contribution of the neutral policy to the change in the surplus ratio is

$$\Delta s_t^N = \frac{\Delta Y_t}{Y_{t-1}} r_{t-1} - \left(\frac{\Delta Y}{Y} \right)^{trend} g_{t-t}. \quad (7)$$

18. An intriguing interpretation is that the governments wrote fiscal goals into the European Treaty that they were willing to try to achieve anyway.

19. Alternatively, one might use the OECD’s cyclically adjusted budget balance and the OECD’s estimates of changes in structural balances. These estimates, however, are based on elasticities derived from past data and policies. If the 1990s indeed brought a change in the fiscal policy regime in Europe, they could be quite misleading.

The contribution of the business cycle to the change in the surplus ratio is defined as

$$\Delta s_t^G = g_t \left[\frac{\Delta Y_t}{Y_{t-1}} - \left(\frac{\Delta Y}{Y} \right)^{trend} \right]. \quad (8)$$

This is the change that would occur in addition to the neutral change, if the government simply allowed economic growth above or below trend to change the expenditure ratio. We estimate the trend growth rate as the average real growth rate during the 1990s. We obtain the policy-induced change in the surplus ratio as

$$\Delta s_t^P = \Delta s_t - \Delta s_t^N - \Delta s_t^G. \quad (9)$$

This is our indicator of fiscal policy stance, since it measures the contribution of any discretionary policy actions to observed changes in the surplus ratio. Table 6 has our calculations for the years from 1998 to 2001. Columns labeled “observed” give the raw changes in surplus ratios, while columns labeled “policy” give the estimated policy stance from equation (9). Since the decision on EMU membership was taken in 1998 on the basis of fiscal data for 1997, 1998 was the first year after 1992 in which the governments of the EMU member states were no longer under the risk of not making it into the monetary union due to excessively lax fiscal policies. In the table, a negative number indicates a fiscal expansion, a positive number a fiscal contraction.²⁰

Table 6 Fiscal Policy Stance, 1998–2001

Country	1998		99		2000		01	
	Observed	Policy	Observed	Policy	Observed	Policy	Observed	Policy
Belgium	0.7	0.5	-0.3	-1.3	0.4	-1.5	-0.1	0.8
Germany	0.5	0.4	0.6	0.7	0.0	-1.1	-1.5	-0.4
Greece	1.1	0.2	0.9	-0.2	0.6	-1.1	0.1	-1.6
Spain	0.1	-1.2	0.8	-0.4	0.4	-0.9	0.2	0.0
France	0.2	-1.4	0.8	-0.3	0.2	-1.2	-0.1	-0.3
Ireland	0.4	-1.0	-1.0	-3.8	1.9	-1.4	-3.4	-3.5
Italy	-1.5	-1.8	-0.2	-0.3	-0.3	-1.5	0.2	0.0
Luxembourg	0.3	-0.5	0.6	-0.4	1.9	-0.4	-0.7	-1.0
Netherlands	0.0	-1.4	0.8	0.0	0.5	-0.2	-1.8	-0.4
Austria	-0.6	-1.9	-0.1	-0.6	0.7	-0.0	1.4	2.6
Portugal	-0.5	-1.9	-0.2	-0.7	0.4	-0.1	-1.0	-0.2
Finland	2.2	-1.3	0.1	-2.1	4.8	1.1	-2.2	-1.0
Denmark	0.4	0.0	1.3	1.2	-1.1	-2.0	0.4	1.7
Sweden	2.8	0.6	-1.4	-4.7	1.6	-0.6	0.3	0.8
United Kingdom	2.5	1.9	0.1	0.2	0.3	-0.3	-1.0	-1.0
EMU	0.0	-0.9	0.5	-0.1	0.0	-1.4	-0.4	-0.1

Source: European Commission, *Statistical Appendix of European Economy* (Spring 2002).

20. See Hughes Hallett *et al.* (2001) and Hallerberg *et al.* (2001) for similar calculations and results.

The table bears a number of interesting observations. The first is that the contribution of economic growth to the surplus ratios is large enough to hide the true policy stance in many cases. For example, France and Spain experienced rising observed surplus ratios in 1998, while their policy stance was actually expansionary. On average, the EMU surplus ratio remained unchanged in 1998 and 2000, while the weighted average policy stance was negative. In 2001, the observed change in the surplus ratio was negative in most countries and on average in the EMU, reflecting the weak economic growth in that year.

The second, interesting observation is that “consolidation fatigue”—the loss of political interest in pursuing further consolidations—emerged in many countries in the first year after the threat of not making it to EMU membership had disappeared. The (non-weighted) average fiscal impulse among the EMU member countries in 1998 was -1.0 percent of GDP, with a standard deviation of the mean of 0.25 . This compares to an average fiscal impulse in all other country-years of -0.5 percent of GDP with a standard deviation of 0.19 . The t -test rejects the null hypothesis of equal means, which indicates that the 1998 fiscal impulses were significantly more expansionary among the EMU member states. Thus, these countries used the first opportunity to relax fiscal policies, even though 1998 was a year of relatively strong economic growth. Interestingly, the countries that did not join EMU in 1999, Denmark, Greece, Sweden, and the United Kingdom all maintained tight or contractionary fiscal policies in 1998.

The third observation from this table is a tendency for fiscal policy to be procyclical in the EMU.²¹ While the trend growth rate over the 1990s was 2 percent for the EMU, the actual growth rates were 2.9 percent, 2.6 percent, 3.4 percent, and 1.6 percent during 1998–2001. Thus, the two years with the strongest economic expansions also saw the largest fiscal expansions, while the two years with less growth saw a more or less neutral policy. Furthermore, Belgium, Austria, Denmark, and Sweden all switched from a fiscal expansion in 2000 to a fiscal contraction in 2001, while Germany, Spain, France, Italy, and Portugal went from a fiscal expansion in 2000 to a more or less neutral policy in 2001. Only Greece, Ireland, Luxembourg, the Netherlands, and Finland managed to achieve a countercyclical fiscal impulse in the face of the incipient recession. The tendency to behave in a procyclical way may indeed be a result of a fiscal policy that relaxes in times of strong economic growth and tightens in times of recession for fear of hitting the limits set by the EDP and the SGP. This tendency could be caused by the fact that the fiscal criteria of the EDP and the SGP are related to raw surplus ratios unadjusted for cyclical effects.

A fourth observation emerges from considering the election dates in European countries in recent years. If governments use fiscal policies to improve their chances for reelection, one should expect fiscal expansions in the year preceding the election. Table 7 indicates which years were pre-election years in which EU country. Here we count both parliamentary and presidential elections where applicable.

21. Such a tendency was also noted by the European Commission (2000). Buti *et al.* (1998) show that procyclicality was already a property of EU fiscal policies in the 1980s.

Table 7 Pre-Election Years in EMU

Pre-election year	1998	99	2000	01
Country	Austria, Belgium, Finland, Portugal, Luxembourg	Spain, Finland, Greece	Denmark, Italy, Portugal, United Kingdom	Germany, France, Portugal, Sweden, Netherlands, Ireland

Source: www.electionworld.org.

Collecting the data from these country-cases, we find that the (unweighted) average fiscal impulse in pre-election years is -0.88 percent of GDP, with a standard deviation of the mean of 0.25 . The average fiscal impulse in all other country-year cases is -0.49 percent of GDP with a standard deviation of the mean of 0.2 . The t -test for the difference between the two averages is $t = -2.5$, which is significant at conventional levels. Thus, the data indicate that the fiscal strictures of the EDP and the SGP do not prevent governments from using fiscal policies to pursue electoral interests. Our estimates confirm similar results in Hallerberg *et al.* (2001), who use a somewhat different methodology.

C. Patterns of Fiscal Adjustment in EMU

A rapidly growing literature has recently shown that the success of fiscal consolidations depends critically on the form of the budgetary adjustments undertaken. In this literature, success typically refers to the longevity of the fiscal consolidation: consolidations are deemed successful if the reduction in the public-sector deficit ratio does not vanish soon.²² A key finding of this line of research is that consolidations are more likely to succeed if they rely primarily on spending cuts rather than raising additional revenues. Within the broad category of spending, cuts in transfers and public-sector wages make consolidations more likely to succeed, while cuts in investment spending reduce the likelihood of success. Such results, which have been confirmed for very different time periods and groups of countries, can be interpreted as saying that consolidations are more likely to succeed if the governments are willing to address sensitive political issues and choices.

A related issue on the European agenda is the call for an improvement of the “quality” of public finances first formulated by the European Council of Lisbon in 2000. Without defining precisely what the “quality” of public finances means, the council recognized that the structure of public spending and taxation has important consequences for economic growth and called upon the EU member states to aim at a more growth-friendly structure of public finances. Endogenous growth theory broadly suggests that a shift from taxing factor incomes to taxing consumption and a shift from public consumption and transfer spending to public investment has positive growth effects (Aghion and Howitt [1998]). Empirical results in this area are mixed, but they suggest that fiscal policies do affect growth.²³

22. E.g., Perotti *et al.* (1998), Strauch and von Hagen (2001), and von Hagen, Hughes Hallett, and Strauch (2002).

23. See Cashin (1995), Tanzi and Zee (1997), Fölster and Henrekson (1999), Kneller *et al.* (1999), Kneller (2000), and Gemmill and Kneller (2002).

Thus, the pattern of fiscal adjustment matters from a macroeconomic perspective. Subsequently, we characterize the fiscal policies of EMU member states to assess the strength of this conjecture. We do this with a series of cross-section regressions focusing on the period since 1997. All data are taken from the *Statistical Appendix of European Economy* (Spring 2002), published by the European Commission. While the cross-sections have obvious data limitations, the following bits of evidence add up to a picture that underscores the importance of the structure of fiscal adjustments more generally.²⁴

We start by noting that the fiscal rules of the EDP and SGP focus on a reference value for public debt relative to GDP. For countries with ratios exceeding the critical limit, there are two ways to reduce it, by slowing the growth of nominal debt or by speeding up the growth of GDP. Since inflation is no longer under the control of domestic monetary policy, the latter is equivalent to speeding up real GDP growth. A first question we look at considers the choice of the EMU governments between these two options.

Let $d = B/Y$ be the ratio of public debt, B , to GDP, Y . The relative contribution of growth in public debt and growth in real GDP to the change in this ratio in country i can be written as

$$C_i = 100 \left(\frac{1 + b_i}{1 + g_i} - 1 \right), \quad (10)$$

where b is the growth rate of nominal debt and g is the growth rate of real GDP. If $C_i > 0$, the growth of public debt contributed more to the change in the debt ratio than the growth of real GDP; otherwise, real GDP growth dominated.

Figure 6 plots C_i against the real growth rates of the EU countries for two time periods, 1992–97 and 1997–2001. Positive values on the x-axis indicate that the change in the debt ratio during the period considered was due to growth rates of public debt in excess of the growth rate of real GDP. This was true in almost all EU countries in the first period. In contrast, public debt grew less than real GDP in all countries since 1997. Significantly, the figure also shows a strong correlation between the average real GDP growth rate over the post-1997 period and the relative contribution of GDP growth to the change in the debt ratio. Such a relationship did not exist in the first half of the 1990s.

Figure 7 plots the relative contributions of debt and real GDP growth against the change in the debt ratio during the period under consideration. In the earlier period, when debt ratios increased, this was due to debt growing much faster than real GDP. In the later years, however, the pattern is reversed. Countries that achieved a large decline in the debt ratio were countries that achieved high real GDP growth rates relative to the growth rate of debt over this period. Countries that achieved little real growth relative to debt growth also did not manage to reduce their debt ratios

24. To facilitate reading the following figures, note that an R-square of 0.20 in the following regressions corresponds to the 10 percent critical value, and an R-square of 0.26 to the 5 percent critical value of the F-distribution of a test for statistical significance.

Figure 6 Fiscal Adjustment

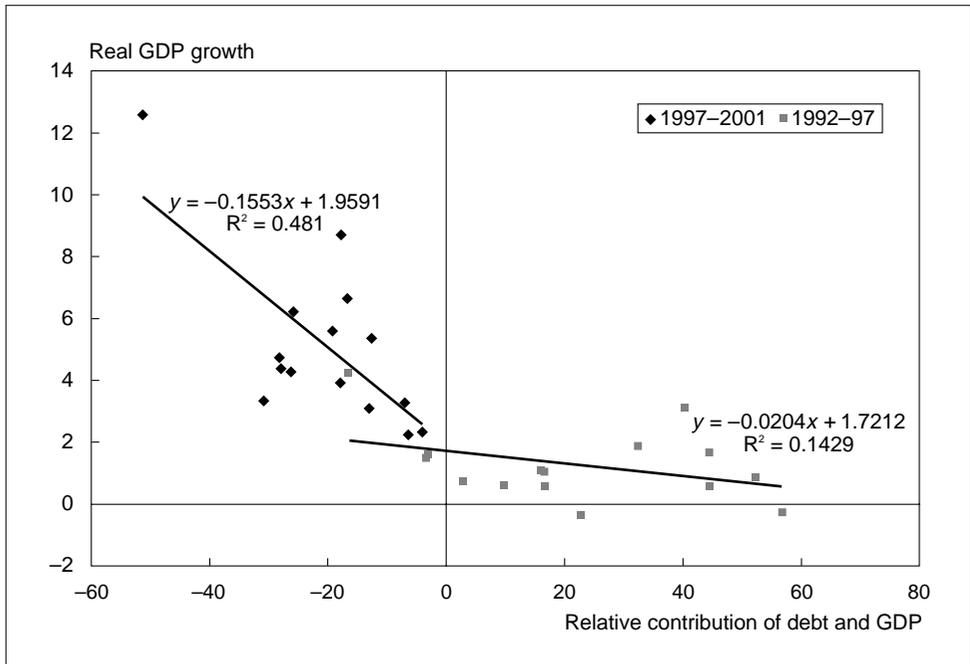
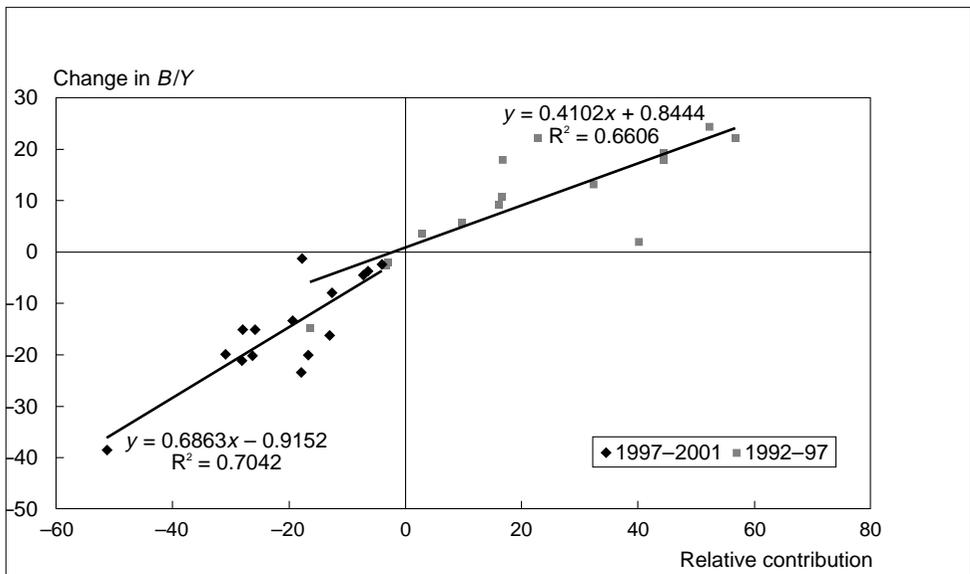


Figure 7 Change in Debt Ratio

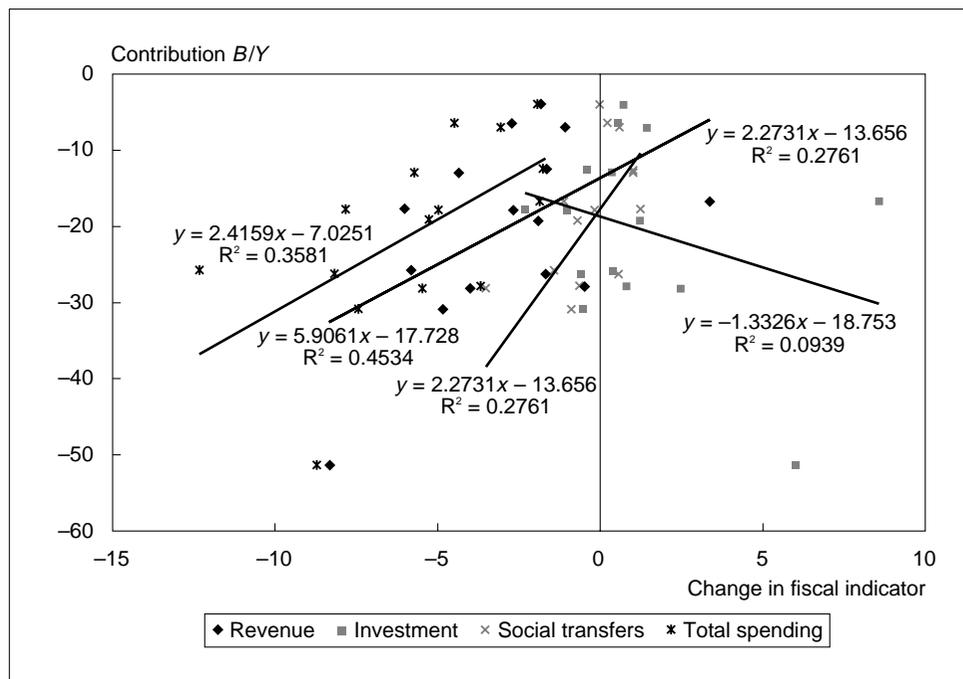


significantly. The figure thus suggests that a successful strategy to reduce the debt ratio is one that focuses on growing out of the debt burden rather than one that focuses on slowing the growth rate of debt while neglecting economic growth. Taking Figures 6 and 7 together, a clear message emerges. Without reviving economic

growth, a significant reduction in the debt burden is unlikely. Taking the two periods together, another message is that rising debt burdens come from a lack of control over public-sector debt. But to reduce an excessive debt burden, controlling debt is only a necessary condition. Without reviving economic growth, a significant decline in the debt burden seems unlikely. This suggests that the fiscal framework of EMU is ill conceived. The focus on deficits and debt growth alone would be justified if EMU had started in a period in which public debt burdens could be regarded as compatible with long-run equilibrium. Given that a reduction in the debt burden is necessary particularly in the large countries, the policy framework pays too little attention to the role of economic growth in achieving sustainable public finances.

Next, we turn to public-sector revenues and spending. In Figure 8, we look at the relative contributions of debt and real GDP growth to changes in the debt ratio together with the changes in a number of fiscal indicators. In this figure, “revenue” and “total spending” refer to the ratios of public-sector revenues and expenditures to GDP; “social transfers” and “investment” relate to the shares of transfers to households and total capital expenditures in total spending. The figure plots the changes in these indicators over the 1997–2001 period for the EU countries. The figure shows, first, that countries where expenditure and revenue ratios fell during this period were countries that achieved a larger contribution of economic growth to the change in the debt ratio, hence a larger reduction in the debt ratio. The R-squares indicate that these relations are statistically significant. Importantly, this suggests that a strategy of raising tax rates to increase revenues is unlikely to succeed in reducing an excessive

Figure 8 Fiscal Adjustments

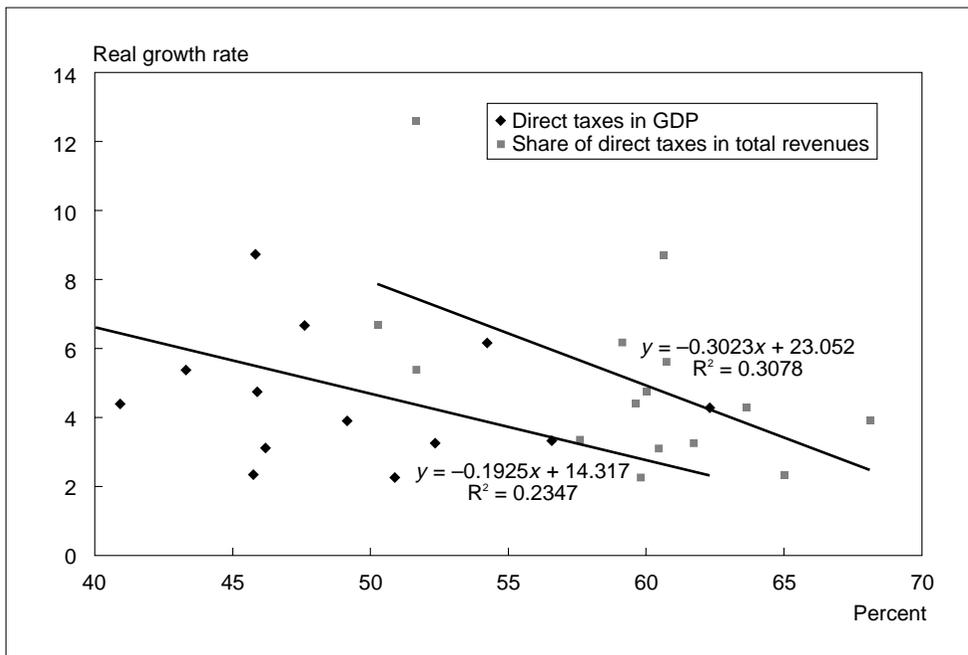


debt burden, because it slows economic growth. This is the German predicament of fiscal policy after 1994. Repeated increases in tax rates only resulted in ever smaller growth, with the result that Germany did not manage to approach budget balance nor reduce its debt burden sufficiently.²⁵

The same figure also points to a critical role of investment spending and spending on social transfers. Countries that increased the share of investment spending tended to achieve a stronger contribution of GDP growth to the reduction in the debt burden, while the opposite is true for countries that increased the share of social transfers in total spending. We look at this issue in more detail below.

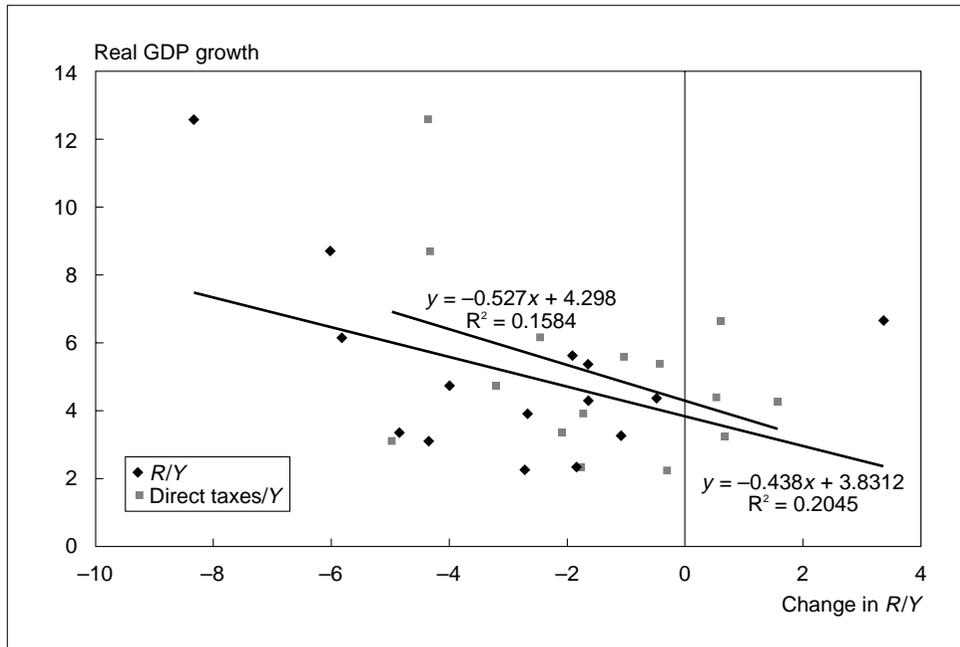
In Figure 9, we look at the tax burden and the composition of revenues. The figure plots the change in the tax burden and the change in the share of direct taxes in total revenues against the growth rate of real GDP. Direct taxes include social security charges on labor. We take direct taxes as rough proxies for the average tax rate on factor incomes. The figure shows that an increasing share of taxes on factor incomes coincides with a falling growth rate in this sample. Furthermore, a higher total tax burden in the economy coincides with a lower growth rate. Figure 10 supports this impression by plotting the change in the tax burden and the change in the share of direct taxes in total revenues against growth rate of real GDP over the 1997–2001 period. The statistical relation is weaker, but this may be due to a nonlinearity that is still compatible with a negative relationship between these two variables and economic growth. In sum, the evidence suggests that reducing tax burdens and shifting revenues from taxes on factor incomes to, say, consumption,

Figure 9 Revenue Structure



25. For a detailed account of German fiscal policy in the 1990s, see Strauch and von Hagen (1999).

Figure 10 Revenue Adjustment



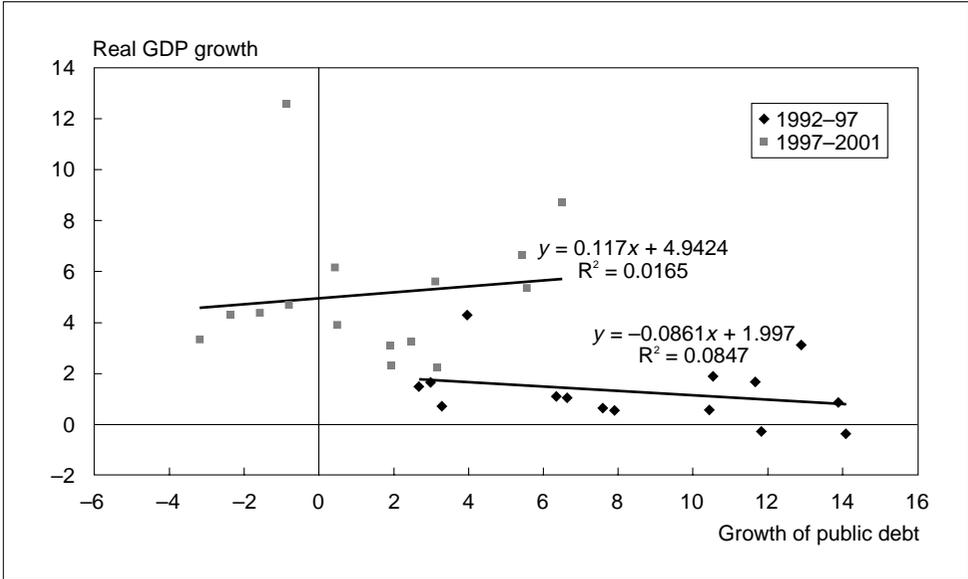
helps to achieve higher growth rates. While this is admittedly painted with a broad brush, it is also consistent with growth theory and the evidence from larger studies of tax policy and growth.

In Figure 11, we look at the composition of total government spending in connection with the average real GDP growth rate of the EU countries in 1997–2001. The figure shows a strong association of higher shares of public investment and real GDP growth. Clearly, this correlation must be regarded with some caution, as public investment is a notoriously vague concept in practice. Furthermore, the direction of causality might be that countries having exogenously low growth rates cut public investment first, as political opposition against cutting transfer spending is more powerful than political opposition against cutting spending on public infrastructure, etc. In fact, such political economy effects may be particularly large under the conditions of the EDP and the SGP, when governments are forced to cut public spending quickly to avoid violating the numerical constraints. Still, one would have to assume that public investment has no positive effect on growth at all to argue that this would not eventually lead to lower growth rates. The same figure also suggests that higher shares of transfer spending in total spending go together with lower rates of growth, although this relation is only marginally statistically significant.

Figure 12 supports the impression from the previous figure by showing the change in the shares of these two categories in total spending during the 1997–2001 period and the growth rate of real GDP. Here, we see that countries increasing the share of public investment enjoyed higher growth rates, while countries increasing the share of welfare spending realized weaker growth. Both relations are only marginally significant, however.

Finally, in Figure 13 we look at the correlation between fiscal consolidation and real GDP growth. We do this by plotting the growth rate of public debt together with the growth rate of real GDP for the two time periods, 1992–97 and 1997–2001. The figure and the two regressions indicate that there is no significant correlation between these two. High growth rates of public debt in the early period apparently did nothing to stimulate economic growth, and lower growth rates in the latter period did not reduce growth. Nor does the figure give much credence to the concept of “non-Keynesian” effects of fiscal consolidations, i.e., the notion that a reduction in public debt would have positive growth effects by stimulating private investment and consumption (Giavazzi and Pagano [1990]). Such effects would lead us to expect higher growth rates for those countries where public debt actually shrank in the period under consideration. Obviously, the present bivariate framework is not sufficient to achieve a strong conclusion on this matter. Nevertheless, it is in line with the results from a larger econometric model presented in Hughes Hallett *et al.* (2001), which do not indicate “non-Keynesian” effects of the fiscal consolidations in Europe in the past decade. In passing, we note that our evidence here points to a methodological problem of earlier studies of such effects. Specifically, most studies identify fiscal consolidations as periods of significant reductions in public debt or deficit ratios, and “non-Keynesian” effects as episodes where consolidations go along with vigorous economic growth. The European experience suggests that such episodes may have more to do with policies that succeeded in stimulating growth by restructuring public spending and taxation and reducing tax burdens than with a reduction in public debt or deficits.

Figure 13 Fiscal Adjustment and Growth



We can summarize the evidence from this section by pointing out the emergence of two alternative strategies of fiscal adjustment in EMU, represented most clearly by two groups of countries (Table 8). On the one hand, there is a low-growth group of countries consisting of Germany, France, Italy, and Austria. On the other hand, there is a high-growth group consisting of Ireland, Finland, Greece, and Spain. Low-growth countries have relied relatively largely on stabilizing the growth of public-sector debt to achieve the targets under the SGP, while high-growth countries have relied mainly on achieving strong economic growth. Clearly, the second group has been much more successful in moving toward sustainable public finances than the first group. The first group is also characterized by relatively small achievements in reducing tax burdens and by low and stable ratios of public investment. In contrast, the high-growth countries, with the exception of Greece, have reduced their tax burdens and shifted government spending from welfare to public investment. Among the remaining countries, the Netherlands achieved an average growth rate of 5.3 percent and reduced its debt burden by almost 21 percent, relying much more strongly on growth than the low-growth group. Belgium, with a real growth rate of 3.9 percent and a reduction in the debt ratio of 23.4 percent, follows a similar pattern. Portugal is more exceptional, as it achieved a relatively high growth rate of 5.3 percent, but reduced its debt ratio by no more than 8 percent.

Table 8 Patterns of Fiscal Adjustment, 1997–2001

	Average real growth	Change in B/Y	Relative contribution of debt and GDP growth	Change in share of transfers	Change in share of investment
Low growth	2.8	-6.8	-7.6	0.6	0.8
Germany	2.3	-2.5	-4.0	0.0	0.7
France	2.3	-3.9	-6.4	0.2	0.5
Italy	3.1	-16.2	-12.9	1.0	0.4
Austria	3.3	-4.7	-7.0	0.6	1.4
High growth	7.8	21.8	28.2	-1.5	4.0
Ireland	12.6	-38.5	-51.3	-2.8	6.0
Finland	6.2	-15.2	-25.5	-1.4	0.4
Greece	6.7	-20.0	-16.7	-1.1	8.4
Spain	5.6	-13.6	-19.3	-0.7	1.2
Non-EMU	4.0	-18.3	28.3	-0.3	-0.3
Denmark	3.4	-19.9	-30.3	-0.9	-0.5
Sweden	4.3	-19.9	-26.3	0.6	-0.6
United Kingdom	4.4	-15.1	-27.8	-0.6	0.8

Source: European Commission, *Statistical Appendix of European Economy* (Spring 2002).

Finally, it is interesting to observe that the non-EMU countries, Denmark, Sweden, and the United Kingdom, look much more like the high-growth group in EMU during this period of time. The two Scandinavian countries in this group, however, reduced the share of public investment in total spending.

Do these results matter for EMU? After all, one might argue that the stability of the common currency depends only on the stability of public-sector debt ratios. How this stability is achieved might be left to the choice of the individual member states.

The subsidiarity principle of the Treaty on European Union would then suggest that the EU should not interfere with these choices.

There are, however, at least two counterarguments to this. The first is that, if Europeans truly believe that public debt ratios must be low and sustainable, success in achieving this matters and is a valid concern for the EU. From this perspective, the current fiscal framework is incomplete, because it does not give EMU member states enough guidance for the choice of a successful fiscal strategy. Countries should be encouraged to adopt more growth-friendly policies by restructuring their tax and expenditure systems.

Second, it is necessary to recognize that EMU did not start under conditions of a long-run equilibrium as far as public finances are concerned. The low growth rates in Germany, France, and Italy in particular are the result of overregulated economies plagued by high tax burdens and welfare systems that discourage employment. The narrow focus of the EDP and the SGP on annual deficits, however, may keep governments from adopting reform policies that might result in larger deficits initially before the desired growth and employment effects kick in. If so, the current design of the fiscal strictures risks keeping these countries in a state of low growth with insufficient progress also as regards the reduction of debts and deficits. One may reasonably doubt that these large EMU states will continue to tolerate such a scenario, which is perceived as keeping them from adopting better economic policies for the sake of some fiscal targets imposed by the EU. The recent episodes involving France and Germany clearly indicate that they will not. But if the outcome were that these countries simply began to ignore the goals of the EDP and the SGP, other states would follow and the fiscal framework of EMU would fall apart. A redesign of this framework to account for the circumstances of the large states seems necessary to avoid such a development.

VI. Conclusions

In this paper, we have reviewed the monetary and fiscal policy experiences of the new monetary union in Europe in its first few years. On the monetary side, the experience is encouraging so far. Long-run monetary relations continue to be stable, and a focus of monetary policy on monetary developments is justified from the data. Still, 2002 will be the third year in which inflation in the euro area is above the ECB's 2 percent threshold above which price stability does not prevail. This suggests that the ECB's policy was not sufficiently tight particularly in its first year, and that it should pay more attention to the developments under the "first pillar" of its strategy. In line with the ECB's (and our) interpretation of its strategy, what we mean by this is not that the ECB should blindly pursue a numerical target for M3 growth. It should, however, increase the weight of the implications for future inflation in its current decisions and reduce the weight given to the short-run considerations arising from the "second pillar."

On the fiscal side, the picture is more mixed. The fiscal rules created by the EMU seem to be more effective where they matter less, namely in the small states. They did

not keep EMU states from relaxing fiscal discipline after the critical decision on EMU membership had been made, nor from using fiscal policies for electoral purposes. There is also a tendency for fiscal policy to be procyclical. Patterns of fiscal adjustment in recent years show that sustainable public finances need fiscal policies that stimulate and maintain sufficiently high long-run growth rates. The fiscal framework needs further improvements, taking this insight into account.

References

- Aghion, Philippe, and Peter Howitt, *Growth Theory*. Boston: The MIT Press, 1998.
- Alesina, Alberto, Olivier Blanchard, Jordi Galí, Francesco Giavazzi, and Harald Uhlig, *Defining a Macroeconomic Framework for the Euro Area*, Monitoring the European Central Bank 3, London: CEPR, 2001.
- Begg, David, Fabio Canova, Paul De Grauwe, Antonio Fatás, and Philip Lane, *Surviving the Slowdown*, Monitoring the European Central Bank 4, London: CEPR, 2002.
- Brand, Claus, and Nuno Cassola, "A Money Demand System for Euro Area M3," ECB Working Paper, 39, 2000.
- Browne, F. X., Gabriel Fagan, and Jerome Henry, "Money Demand in EU Countries: A Survey," EMI Staff Paper No. 7, Frankfurt, 1997.
- Buti, Marco, Daniele Franco, and Hedwig Ongena, "Fiscal Discipline and Flexibility in EMU: The Implementation of the Stability and Growth Pact," *Oxford Economic Review*, 14 (3), 1998, pp. 81–97.
- , and André Sapir, *Economic Policy in EMU*, Oxford: Oxford University Press, 1998.
- Cashin, Paul, "Government Spending, Taxes, and Economic Growth," IMF Staff Papers, 42, 1995, pp. 237–269.
- Coenen, Günter, and Juan-Luis Vega, "The Demand for M3 in the Euro Area," ECB Working Paper, 6, 1999.
- Dornbusch, Rudiger, Carlo Favero, and Francesco Giavazzi, "Immediate Challenges for the European Central Bank," *Economic Policy*, 26, 1998, pp. 17–64.
- European Central Bank, *The Monetary Policy of the ECB*, Frankfurt: European Central Bank, 2001.
- European Commission, *Public Finance in EMU*, Brussels, 2000.
- European Union, *European Economy*, Economic Trends (Supplement A) No. 3/4, 2001.
- Fagan, Gabriel, and Jerome Henry, "Long Run Money Demand in the EU: Evidence for Area-Wide Aggregates," in Helmut Lütkepohl and Jürgen Wolters, eds. *Money Demand in Europe*, Heidelberg: Physica-Verlag, 1999.
- Faust, Jon, John H. Rogers, and Jonathan H. Wright, "An Empirical Comparison of Bundesbank and ECB Monetary Policy Rules," International Finance Discussion Papers, 705, Washington, D.C.: Board of Governors of the Federal Reserve System, 2001.
- Fölster, Stefan, and Magnus Henrekson, "Growth and the Public Sector: A Critique of the Critics," *European Journal of Political Economy*, 15, 1999, pp. 337–358.
- Gaspar, Vítor, "Concluding Panel Discussion: The Role of Monetary Policy under Low Inflation," *Monetary and Economic Studies*, 19 (S-1), Bank of Japan, Institute for Monetary and Economic Studies, 2001, pp. 371–377.
- Gemmell, Norman, and Richard Kneller, "Fiscal Policy, Growth and Convergence in Europe," European Economy Group Working Papers, 14/2002, University of Madrid, 2002.
- Gerlach, Stefan, and Gert Schnabel, "The Taylor Rule and Interest Rates in the EMU Area," *Economics-Letters*, 67 (2), 2000, pp. 165–171.
- , and Lars E. O. Svensson, "Money and Inflation in the Euro Area: A Case for Monetary Indicators?" BIS Working Paper, 98, 2001.
- Giavazzi, Francesco, and Marco Pagano, "Can Severe Fiscal Contractions Be Expansionary?" *NBER Macroeconomics Annual*, 1990, pp. 75–116.

- Hallerberg, Mark, Rolf Strauch, and Jürgen von Hagen, "Forms of Governance and the Design of Fiscal Rules in the EU Countries 1998–2000," mimeo, Center for European Integration Studies, University of Bonn, 2001.
- Hallman, Jeffrey J., Richard D. Porter, and David H. Small, "Is the Price Level Tied to the M2 Monetary Aggregate in the Long Run?" *American Economic Review*, 81, 1991, pp. 841–858.
- Hayo, Bernd, "Estimating a European Demand for Money," *Scottish Journal of Political Economy*, 46 (3), 1999, pp. 221–244.
- , Manfred J. M. Neumann, and Jürgen von Hagen, "A Monetary Target for the ECB," EMU Monitor Background Paper, Press conference on December 17, 2000 (available at www.zei.de).
- Hughes Hallett, Andrew, Rolf Strauch, and Jürgen von Hagen, *Budgetary Consolidations in EMU*, European Commission Working Paper 148, Brussels, 2001.
- International Monetary Fund, *World Economic Outlook Database*, Washington, D.C., 2002.
- Issing, Otmar, Vítor Gaspar, Ignazio Angeloni, and Oreste Tristani, *Monetary Policy in the Euro Area: Strategy and Decision-Making at the European Central Bank*, Cambridge: Cambridge University Press, 2001.
- Kneller, Richard, "The Implications of the Comprehensive Spending Review for the Long-Run Growth Rate: A View from the Literature," *National Institute Economic Review*, 171, 2000, pp. 94–105.
- , Michael F. Bleaney, and Norman Gemmill, "Growth, Public Policy, and the Government Budget Constraint: Evidence from OECD Countries," *Journal of Public Economics*, 74, 1999, pp. 171–190.
- Neumann, Manfred J. M., "EMU Monitor: Outlook," 2002 (available at <http://www.zei.de>).
- Organisation for Economic Co-operation and Development, *Economic Outlook*, Paris, 2002.
- Peersman, Geert, and Frank Smets, "The Taylor Rule: A Useful Monetary Policy Benchmark for the Euro Area?" *International Finance*, 2 (1), 1999, pp. 85–116.
- Perotti, Roberto, Rolf Strauch, and Jürgen von Hagen, *Sustainable Public Finances*, London: CEPR, 1998.
- Strauch, Rolf, and Jürgen von Hagen, "Tumbling Giant: Germany's Experience with the Maastricht Criteria," in David Cobham and George Zis, eds. *From EMS to EMU: 1979 to 1999 and Beyond*, Houndmills and London: MacMillan Press, 1999.
- , and ———, "Fiscal Consolidations: Quality, Economic Conditions, and Success," *Public Choice*, 109, 2001, pp. 327–346.
- Tanzi, Vito, and Howell H. Zee, "Fiscal Policy and Long-Run Growth," IMF Staff Papers, 44, 1997, pp. 179–209.
- Taylor, John B., "Discretion versus Policy Rules in Practice," Carnegie-Rochester Conference Series on Public Policy, 39, 1993, pp. 195–214.
- , "The Robustness and Efficiency of Monetary Policy Rules as Guidelines for Interest Rate Setting by the European Central Bank," Sveriges Riksbank Working Paper, 58, 1998.
- von Hagen, Jürgen, "Monetary and Inflation Targeting in Germany," in Leonardo Leiderman and Lars E. O. Svensson, eds. *Inflation Targeting*, London: CEPR, 1995.
- , "La Unión Económica y Monetaria: Cuestiones y Desafíos de Economía Política," *Moneda y Crédito*, 208, Secunda Epoca, 1999a, pp. 25–58 (in Spanish).
- , "Money Growth Targeting by the Bundesbank," *Journal of Monetary Economics*, 43, 1999b, pp. 681–701.
- , and Matthias Brückner, "Monetary Policy in Unknown Territory: The ECB in the Early Years," in David E. Altig and Bruce D. Smith, eds. *Evolution and Procedures in Central Banking*, Cambridge: Cambridge University Press, 2002.
- , Andrew Hughes Hallett, and Rolf Strauch, "Quality and Success of Fiscal Consolidations," in Marco Buti, Jürgen von Hagen, and Carlos Martínez Mongay, eds. *The Behavior of Fiscal Authorities*, Houndsmill: Palgrave, 2002.
- , and Ralph Süssel, "Central Bank Constitutions for Federal Monetary Unions," *European Economic Review*, 38, 1994, pp. 774–782.

Comment

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Jürgen von Hagen and Matthias Brückner have produced a very interesting and comprehensive paper that surveys the experience of the European Monetary Union (EMU) in the first three and a half years of operation. The paper addresses well the key monetary and fiscal policy issues over this period.²⁶ Despite the limited data span, which inevitably affects all empirical analysis of EMU, the authors undertake a wide range of econometric testing to support their theories. As the authors acknowledge, some of the statistical analysis must inevitably be considered rather illustrative and tentative. Given that, there are risks that some of the results are not fully robust, particularly as analysis by other “EMU watchers,” such as the Centre for Economic Policy Research (CEPR) (Alesina *et al.* [2001] and Begg *et al.* [2002]) and the Centre for European Policy Studies (CEPS) (Gros *et al.* [2002]) is sometimes at odds with the authors’ findings. Nonetheless, the empirical analysis is very welcome, as it provides substance to the paper. It also challenges readers who may not necessarily share the authors’ views to come up with alternative explanations.

My comments will focus on four conclusions in the paper:

- European Central Bank (ECB) monetary policy was consistently less tight than Bundesbank policy would have been.
- Germany and France carry a disproportionate weight in ECB decisions.
- The ECB would do well to pay more attention to the first pillar of its monetary policy strategy.
- Sustainable public finances require fiscal policies that stimulate and maintain sufficiently high long-run growth rates. The fiscal framework needs further improvements.

I. The Tightness of Monetary Policy and the Weight of Germany and France

Based on a Taylor rule, which draws on estimates of a pre-EMU Bundesbank policy reaction function, von Hagen and Brückner argue that ECB policy was loose relative to Bundesbank experience, particularly in the early stages of the Monetary Union in 1999. While some other authors share this view on monetary policy in the period immediately following the launch of the single currency (e.g., Faust *et al.* [2001] and Alesina *et al.* [2001]), there is little agreement on the analytical reasons. For example, Faust *et al.* (2001) and Peersman and Smets (1999) suggest that the implicit weight on the output gap may be higher for the ECB than for the Bundesbank. Alternatively, Alesina *et al.* (2001) suggest that the ECB was focusing

26. I am very grateful for discussions with colleagues at the Bank of England on this paper, particularly Andrew Bailey, Gert Peersman, Vincent Labhard, Gabriel Sterne, Georgios Chortareas, and Karen Dury.

instead on core inflation and a measure of forecast inflation, while Begg *et al.* (2002) argue that monetary policy was set broadly in line with a “rule” which weights core inflation and actual GDP growth. Von Hagen and Brückner test a number of these alternative hypotheses and reject them in favor of the view that the ECB places disproportionate weight on developments in Germany and France, a suggestion considered and rejected by others (Alesina *et al.* [2001]).

To my mind, the various studies and their conflicting results are a salutary reminder of the limitations of Taylor rule analysis: such analysis provides a useful benchmark for assessing policy, but it is no more than a benchmark. There are many uncertain elements:

- the measurement of the output gap, where different authors adopt different techniques;
- the estimates of the response coefficients on the deviation of inflation from target and the output gap;
- the estimate of the equilibrium interest rate;
- whether central banks focus on core rather than actual inflation;
- whether the Taylor rule should be explicitly forward looking or not; and
- the paucity and shortcomings of the data.

And of course, no central bank admits to using a Taylor rule as a firm guide for setting policy. Given these limitations, which are recognized by the authors, the robustness testing in the paper is very welcome. But there is scope for rather more of it (e.g., the analysis of forward-looking behavior is applied only in the context of the estimated German/French rule, and a higher weight on the output gap is only considered in the context of core inflation).

The authors suggest that the predominant influence of the economic situation in Germany and France on the ECB’s policy is a relatively robust finding, and also note that the rules for Germany and France together provide similar “recommendations” on interest rates to those that would have applied if the ECB had focused on national developments in either country individually (given that Germany experienced lower inflation rates but also a lower output gap than in France). At the same time, they suggest that the Bundesbank would have set higher interest rates for the euro area than for Germany. So, relative to a position pre-EMU, when other countries closely followed the Bundesbank’s interest rate lead and the Bundesbank set rates to maintain domestic price stability, a corollary of the authors’ results is that Monetary Union may have led to little difference in area-wide monetary policy when perhaps it should have, given the shift in focus to the euro area.²⁷

As noted above, different authors have put forward alternative interpretations based on variants of the Taylor rule analysis. Given the uncertainties of the estimates, the limitations of the data, and that estimated rules should be viewed only as a benchmark, my view is that it is premature to draw strong conclusions.

Although I do not judge that the hypothesis that Germany and France have undue weight in ECB decisions is proven, one additional argument that might be

27. In practice, this suggestion should be qualified to the extent that there was not full interest rate convergence in the run-up to EMU.

considered further by the authors is that the data for Germany and France are among the most timely in the euro area. It is possible that given their importance and overall weight, these data might be viewed as an early proxy for the euro area as a whole. The implicit result in the paper is, however, that they have not been a particularly good proxy *ex post* over the past three years.

II. Weight on the Monetary Pillar

The authors also conclude that the weight on the ECB's first pillar (a detailed analysis of monetary developments) should be increased—a recommendation diametrically opposed to the recent publications by the Centre for Economic Policy Research (Begg *et al.* [2002]) and the Centre for European Policy Studies (Gros *et al.* [2002]), which suggest the pillar should be abandoned. Why is this, and is there any common ground?

All central bankers recognize that monetary developments matter for the inflation process and that the signals and information content of monetary and credit aggregates are important. There is a well-documented, strong empirical link between money and inflation in the medium and long term—for example, a recent study at the Bank of England (King [2002]) reported that the correlation coefficient between broad money growth and inflation over the past 30 years (1968–98) for 116 countries was 0.99, while that between broad money growth and output growth was -0.08 . But correlation is not the same as causation, and stable structural relationships between money growth, demand, output, and price movements can give rise to unstable short-run correlations between them. In practice, the relationship is highly complex. As the ECB's chief economist, Otmar Issing, notes:

Econometric evidence suggests that euro area M3 both has a stable relationship with the price level in the long run and possesses leading indicator properties for inflation over the medium term.

But

Monetary developments may be subject to a host of special influences and distortions which render the relationship between money and prices complex in the short run.²⁸

Because of this, M3 growth is viewed by the ECB as an important indicator of the possible trend of future medium-term inflation, but is not regarded as an invariable short-term guide to policy decisions (Issing [2001]). One challenge for the ECB is in communicating how this medium-term orientation feeds into the monthly policy process in practice, as that is where the main external criticism of the monetary pillar lies.

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28. See Issing (2001).

The approach taken in the paper of estimating a P^* or “money/price gap” model appears to conform to the ECB’s broad framework quite well—a medium- or long-run divergence between the price level and its estimated (monetary) equilibrium provides explanatory power in an inflation equation. Again, though, there are data and econometric challenges—the authors take issue with ECB on the measurement of money (in particular on the treatment of nonresident deposits) and also note that while the euro-area money demand function appears relatively stable to date they do not identify a trend in velocity (in contrast to the ECB’s assessment). They also estimate a P^* model without the long-run trend adopted by previous authors such as Gerlach and Svensson (2001), on the reasonable premise that they wish to explain trend inflation. But this approach may give rise to an econometric problem if there is an omitted trend that should be present in the equation, as the omission will affect the estimated coefficients on the other variables.

The authors put forward two conclusions based on the P^* analysis:

- Excess money growth in 1999 contributed to higher inflation.
- The inflationary spike of early 2001 was due to special factors.

It would be helpful to provide additional information on the robustness of these conclusions. Given the form of the preferred equation, it appears, by eye at least, from Figure 5 (p. 137) that the lagged impact of the pickup in actual inflation during 1999 and early 2000 might account for a considerable proportion of the rise in the consumer price index (CPI) inflation forecast, with the price gap term making a relatively small contribution. To allay this concern, some statistics on the contributions of the price gap term and the other terms to the within-sample fit over the past three years would be useful. Is the price gap term providing much of the explanatory power in practice over this period?

A major practical challenge with the authors’ recommendation is that it demands a lot of the ECB in terms of being able to identify and interpret shocks in real time. At the start of Monetary Union in 1999, how easy was it to separate a genuine monetary shock from the possibility of a shock from the change in policy regime? And how easy was it to quantify the importance of special factors affecting inflation in 2001? The authors are attaching high weight to relatively simple money demand models. There are risks of over-reliance on such an approach, which may help to explain the puzzle of why the study of the information content of money has fared relatively poorly against a backdrop of a strong consensus that inflation is a monetary phenomenon. More broadly, there are risks of asking too much of money demand models and condemning them when they fail to deliver, or—as in the current paper—having them deliver, but not in a fully convincing way.

I would be cautious in concluding from the evidence presented that more weight should be added to the monetary pillar. I would nonetheless share much common ground with the authors. A broad conclusion among most central bankers is that estimates of long-run money demand and corresponding estimates of the excess stock of money are useful information variables. In turn, they pose important questions and challenges on the sources of economic and financial shocks, which may provide valuable input to policy. But rarely can they act as a simple guide. I prefer to interpret the authors’ results in that spirit.

III. Fiscal Framework

The authors undertake a range of cross-section regressions pre- and post-EMU, drawing the following conclusions on the fiscal framework:

- EMU fiscal rules exert more discipline on small than on large countries.
- The euro-area fiscal stance has been procyclical.
- It is easier to reduce debt levels when growth is strong.
- Fiscal consolidation is more likely to succeed based on spending cuts rather than revenue increases.

These conclusions are broadly in line with the findings of other researchers. It is nevertheless the case that the conclusions must inevitably be regarded as rather broad brush, given the very small sample size for some of the regressions, as the authors recognize. One qualification to the conclusions is that the potential importance of the initial value of debt and the perceptions of fiscal sustainability may be exerting a substantial influence on the results in recent years as well as in the run-up to the start of EMU. It would be useful to extend the analysis in the paper which suggests that the observed fiscal consolidations in the 1990s could be expected just by extrapolating the experience of the 1970s and 1980s. Is that still true over the past three years? A further qualification is that some small countries (such as Ireland and Greece) have been growing very fast, reflecting a “catch-up” in living standards. And a final qualification is that there is no commonly agreed and reconciled method of undertaking cyclical adjustment to separate discretionary policy from the impact of the automatic stabilizers. All require some estimate of trend growth. In that vein, the authors suggest that the 1990s average of actual growth rates is preferable to alternative estimates produced, among others, by the Organisation for Economic Co-operation and Development (OECD).

To assess the importance of the cyclical adjustment method, the table below compares the authors’ estimate of the change in the euro-area structural primary balance with that published very recently by the OECD (2002).

Table Change in Structural Primary Balance/GDP Ratio in the Euro Area

Percentage points

	1998	99	2000	01	Cumulative
von Hagen and Brückner	-0.9	-0.1	-1.4	-0.1	-2.5
OECD	-0.2	+0.3	-0.3	-0.3	-0.5

Note: Negative numbers denote expansion.

Over the four years 1998–2001, the OECD indicates a structural loosening of 0.5 percent of GDP compared with the authors’ estimate of 2.5 percent of GDP. There is no clear right or wrong answer here in terms of the approach, but the difference in the estimates again highlights the considerable uncertainty. It would certainly be useful to compare the methods over a longer period. It would also be interesting to review some of the authors’ econometric results using the OECD cyclical adjustment technique in order to confirm that the adjustment is not conditioning the other conclusions.

Von Hagen and Brückner end their paper by noting that “consolidation fatigue” is setting in and that winning support for further fiscal consolidation in a low-growth environment is proving difficult. As they note, the real challenge is to raise underlying productivity growth in Europe through further structural reforms. The authors argue that the fiscal rules are getting in the way—for example, by eliminating the scope to pursue reform programs that necessitate higher initial deficits, albeit with lower medium-term ones. More work in this area would be very welcome, as some reforms, for example, to increase work incentives by changes in benefit systems, would not appear to run foul of this critique.

To conclude, I think the paper is very interesting and raises much food for thought and further analysis. Any analysis of European Economic and Monetary Union is inevitably hampered by the lack of data to date. Many conclusions remain open. The authors should be commended for attempting a rigorous study that sets out a useful route for further work as time progresses.

References

- Alesina, Alberto, Olivier Blanchard, Jordi Galí, Francesco Giavazzi, and Harald Uhlig, “Defining a Macroeconomic Framework for the Euro Area,” *Monitoring the European Central Bank*, 3, Centre for Economic Policy Research, 2001.
- Begg, David, Fabio Canova, Paul de Grauwe, Antonio Fatas, and Philip R. Lane, “Surviving the Slowdown,” *Monitoring the European Central Bank*, 4, Centre for Economic Policy Research, 2002.
- Faust, John, John H. Rogers, and Jonathan H. Wright, “An Empirical Comparison of Bundesbank and ECB Monetary Policy Rules,” International Finance Discussion Paper No. 705, Board of Governors of the Federal Reserve System, 2001.
- Gerlach, Stefan, and Lars E. O. Svensson, “Money and Inflation in the Euro Area: A Case for Monetary Indicators,” Working Paper No. 98, Bank for International Settlements, 2001.
- Gros, Daniel, Klaus Durrer, Juan Jimeno, Carlo Monticelli, and Roberto Perotti, “Fiscal and Monetary Policy for a Low-Speed Europe,” *Fourth Annual Report of the CEPS Macroeconomic Policy Group*, Centre for European Policy Studies, 2002.
- Issing, Otmar, “The Importance of Monetary Analysis,” in Hans-Joachim Klöckers and Caroline Willeke, eds. “Monetary Analysis: Tools and Applications,” European Central Bank, 2001, pp. 5–7.
- King, Mervyn, “No Money, No Inflation—The Role of Money in the Economy,” *Bank of England Quarterly Bulletin*, 42 (2), 2002, pp. 162–177.
- Organisation for Economic Co-operation and Development, *OECD Economic Outlook*, 71, 2002.
- Peersman, Gert, and Frank Smets, “The Taylor Rule: A Useful Monetary Benchmark for the Euro Area,” *International Finance*, 2 (1), 1999, pp. 85–116.

Comment

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Most of Jürgen von Hagen and Matthias Brückner’s findings are plausible and deserve support. This goes, in particular, for their conclusion that the experience

regarding monetary policy since the start of the European Monetary Union (EMU) has been more encouraging than with regard to fiscal policies. However, also in the area of monetary policy, the first three and a half years of EMU give rise to a number of concerns:

- (1) Due to the well-known time lags in the transmission process of monetary policy, the observed relatively low inflation rates in the euro area prevailing during the first 12 to 18 months after entry into EMU have to be attributed largely to the previous policy regime of the Bundesbank, which was *de facto* in charge of European monetary policy until the start of EMU. This means that since the point in time at which price developments in the euro area can be related to the policy measures taken by the European Central Bank (ECB), the actual inflation rate, measured in terms of the harmonized consumer price index (HCPI), has been persistently above 2 percent, the upper bound of the ECB's definition of price stability over the medium term. Also worrying has been the gradual rise in core inflation, which may be indicative of underlying pressures gaining momentum. Should the ECB continue to miss its self-imposed target, it could be faced with a credibility problem—irrespective of the fact that the actual inflation rate has been strongly influenced by a number of external shocks, notably the rise in oil prices. If such a sequence of “temporary” factors lasts long enough, it could become entrenched in Europe's underlying inflation rate and give rise to an increase in inflation expectations. Until now, however, this has not been the case, as inflation expectations implied by the pricing of inflation-indexed bonds and the recent rise of the euro against other major currencies appear to suggest.
- (2) Part of the explanation why consumer price index (CPI) inflation has been overshooting the ECB's target range is the fact that economic developments in the euro area have continued to show significant divergences. This applies, in particular, to the growth performance of euro-area member countries and to different cyclical patterns. Some of the inflationary pressures in the euro area appear to reflect the fact that slow-growing countries have been experiencing a relatively sticky inflation rate and, hence, have not generated sufficient disinflation to offset the rise in inflation in the fast-growing ones. Under these conditions, it has been difficult for the ECB to push average CPI inflation in the euro area below the upper limit of its target range. A number of ECB observers have suggested, therefore, that the target is too ambitious and should be revised upward to take account of these difficulties. In more general terms, it can be said that asymmetries and divergences in inflation developments among member countries raise additional problems for the conduct of the common monetary policy. Such problems can best be addressed by structural reforms aiming at raising the growth potential of countries that are lagging behind.
- (3) Another problem relates to the ECB's “two-pillar” strategy. The first pillar is defined as a “reference value” for the annual growth rate of the broad monetary aggregate, M3. Since entry into EMU, M3 has grown at a rate consistently higher than the reference value set by the ECB, except for a short period at the end of 2000/beginning of 2001. Given the medium-term link

between money growth and inflation in the euro area von Hagen and Brückner are referring to, their conclusion that the stance of monetary policy was too easy in 1999 and 2000 and that the resurgence of inflation in the euro area since the start of EMU must be attributed at least in part to the high money growth rates tolerated by the ECB appears *prima facie* correct. The ECB argues that a number of temporary factors have distorted M3 developments. Even if one follows this argument, the longer the ECB leaves interest rates unchanged while M3 growth exceeds its preset reference value, the more the ECB's two-pillar strategy will come under pressure, giving renewed stimulation to public discussion about the relative importance of the two pillars. While the two-pillar strategy offers a high degree of flexibility, it also entails a considerable amount of ambiguity and, hence, communication difficulties.

My conclusions arising from these considerations are similar to those drawn by von Hagen and Brückner: the ECB should be less concerned about short-term cyclical prospects and about the degree of capacity utilization in the euro area. Given that long-run monetary relations continue to be stable as observed by the authors, the ECB should give adequate weight to monetary developments in its decision-making process.

Von Hagen and Brückner's assessment that on the fiscal side the picture during the first years of EMU is more mixed deserves support. However, some of the arguments the authors put forward for substantiating this judgment need to be qualified. Moreover, other factors that also explain the less satisfactory experience with fiscal policies in EMU are not mentioned.

- (1) The authors' finding that small countries typically pay more attention to the strictures of the Stability and Growth Pact (SGP) appears to have been confirmed by recent events. A cause for concern is, above all, the expenditure drift in the three largest euro-area economies. If other member countries follow this behavior, the SGP could be rapidly undermined, with corresponding consequences for the functioning of EMU. The obvious conclusion for a reform of the budgetary procedures of the European Union (EU) is to shift the axis of power in economic policymaking by strengthening the role of the EU Commission and reducing the role of the national governments. Unfortunately, driven by member states' desire to "move from technocracy to democracy," the actual development goes rather in the opposite direction. Also, the authors' accurate observation that the fiscal rules introduced by EMU did not prevent member states from relaxing fiscal discipline after the decision on EMU membership had been taken is less the result of inappropriate rules than the consequence of inherent weaknesses in the institutional arrangements. In particular, the fact that "sinners sit in judgment of other sinners" has made enforcement of the rules difficult.
- (2) The authors' assertion that fiscal policy has been procyclical in the first years of EMU deserves some qualification. First, while automatic fiscal stabilizers can make some contribution to smoothing cyclical fluctuations, only EU member countries that had not already achieved a fiscal position in balance or in surplus were prevented from letting the automatic stabilizers operate fully. This effect,

however, was exactly what the fathers of the SGP had in mind when designing the pact: the objective of reaching as quickly as possible a balanced budget was considered more important than preserving fiscal room of maneuver for countries still running sizeable deficits. Second, it is often assumed that a loosening of fiscal policy has expansionary effects on the economy, at least in the short term. In practice and under the conditions prevailing in the EU, the influence of fiscal policy on macroeconomic activity is uncertain, state-dependent, and generally small, and should therefore not be overestimated. This applies especially to an active anti-cyclical strategy by means of a discretionary fiscal policy that has additional well-known drawbacks.

- (3) Von Hagen and Brückner also argue that the current fiscal framework is incomplete, because it does not give EMU member states enough guidance for the choice of a successful fiscal strategy. However, it should be stressed that the fiscal framework of the Maastricht Treaty was designed not to provide a framework for an optimal fiscal strategy under all circumstances but rather to provide safeguards against fiscal excesses to protect the common monetary policy. Insofar as the current fiscal framework respects the principles of the Maastricht Treaty, it leaves fiscal policy in the competence of individual member states and leaves the rights of national parliaments largely untouched.

In summing up, it should be stated that the fiscal rules created by EMU are not perfect but appropriate enough to allow for the proper functioning of EMU. The true risks derive from the inhibitions of national governments to fully implement the agreed rules. Several European governments have been calling for a “reinterpretation” of the SGP, ranging from applying the rules of the pact only to the EU as a whole (as opposed to individual member countries) to using cyclically adjusted figures instead of nominal figures, and/or to excluding certain expenditure categories from the calculation of the fiscal deficits. In the most recent instance, some governments have even made their commitment to further fiscal consolidation subject to achieving certain growth objectives. All these explicit and implicit calls for an “SGP Lite” amount to a weakening of the pact. This could undermine confidence and in the end also the proper functioning of EMU.

General Discussion

Responding to the comments of the discussants, Jürgen von Hagen stated that uncertainty has been taken into account in applying the Taylor rule by using various specifications to check the robustness of empirical results. He also emphasized the role of money supply in providing a guideline for medium- to long-term prices. On fiscal issues, von Hagen commented that his basic results would not be altered by the use of alternative data, and that he was not arguing for the implementation of procyclical fiscal policy during an economic downturn as would be required under strict fiscal discipline.

In the general discussion, Pierre van der Haegen argued that actual policy decisions were based on a wide range of relevant available information, including that related to money supply variables, and that the Taylor rule, which does not assign monetary aggregates any roles in policymaking, cannot be used as a benchmark to assess the past record of the European Central Bank (ECB). Angel Palerm raised doubts about the stability of the inflation-unemployment relationship in Europe and stressed that without a stable Phillips curve the Taylor rule may not provide an adequate basis for comparative evaluations of monetary policy before and after the introduction of the euro. Palerm and Gabriele Galati pointed out that changes have occurred in the transmission channel of monetary policies as a result of the launch of the European Monetary Union (EMU). In light of these structural changes, they urged caution in using the Taylor rule in comparative evaluations.

Palerm and Masahiro Kawai (Ministry of Finance, Japan) both pointed out that the impact of interest rates on aggregate demand and the degree of synchronization of a region's business cycles would differ according to the level of economic integration, and cast doubt on the justification of comparative evaluations based on the Taylor rule and the different evaluation results. Von Hagen responded to these points as follows. While it is too early to judge the degree of synchronicity of the region's business cycles, if major lags do in fact exist in these business cycles among member countries, then the results of the analysis should be on the mark because the analysis focuses on the major countries in terms of policy management, such as Germany and France. In this context, Palerm raised the question of whether the ECB's 2 percent inflation ceiling was too low in light of the incomplete integration of the goods markets and the continued inflation rate differentials among EMU countries.

Regarding the monetary policy of the ECB, van der Haegen welcomed some of the results offered by von Hagen because they emphasize the importance of money supply, a key component of the ECB's "two-pillar" strategy. Roberto Rinaldi (Banca d'Italia) addressed the policy action taken in early 2001, which has been interpreted as a measure toward monetary tightening by von Hagen, and asked how this could be consistent with the International Monetary Fund's (IMF's) interpretation that this action represented monetary easing. Von Hagen argued that, at least in terms of money supply, the policy action of early 2001 represented monetary tightening. Citing Germany's high real interest rates and the views of market participants, Rinaldi then questioned the assertion that the economic situation of Germany had been emphasized in the ECB's policy.

Regarding fiscal policy, van der Haegen agreed with von Hagen's statement that the credibility of fiscal policy commitments had an important bearing on confidence in the EMU. Rinaldi also expressed his agreement with von Hagen's analysis. On the other hand, Maurice Obstfeld argued that it was necessary to mention the empirical literature on the importance of the structure of fiscal revenues and expenditures. As a rationale for procyclical fiscal policies, Obstfeld argued that in addition to political factors, there were certain economic factors which arose from the mutual interaction of fiscal discipline. On the question of how to improve fiscal discipline, von Hagen argued that while the fiscal authorities of member countries should be given more

discretion, the European Commission should be given the right to comment on the fiscal status of member countries.

Han Ming Zhi asked what the implications of the experiences of European Union (EU) integration were for Asian countries, which were in a very different stage of economic development.

In closing the session, Chairperson Jorge A. Braga de Macedo mentioned the importance of structural reform in the EMU member countries and argued that the European experience presented other regions with the following two lessons: (1) the European experience shows that economic integration is time consuming, although the Americas and Asia might not need 50 years to achieve it; and (2) it is important for the institutions involved in economic policy management to engage in cooperation and coordination on the international and regional levels.

