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Strong exports and low interest rates drive Euroland's economy

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Strong Exports and Low Interest Rates Drive Euroland's Economy

by Klaus-Jürgen Gern, Carsten-Patrick Meier,
Joachim Scheide and Markus Schlie

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- In the fall of 1999, the recovery in Euroland is back on track. The turnaround was caused by the improvement in the world economy. While exports had been depressed in the past winter due to the weak demand in the crisis countries particularly in Asia, the impulses from abroad have picked up again. As a consequence, the profit and sales expectations of firms have brightened considerably. Furthermore, monetary policy has been expansionary, especially after the reduction of key interest rates in April this year. The recovery in Euroland is now picking up speed. Next year, real GDP will increase by 2.7 percent. The driving force will be exports, which are stimulated by the strong recovery abroad and by the low value of the euro. But also domestic demand will continue to expand rapidly, stimulated by monetary policy. Consumer price inflation will accelerate to 1.7 percent as import prices will rise faster and internal prices will firm in the wake of the strong upturn.
- Monetary conditions in the euro area have remained favorable. Since the ECB's rate cut in April this year, short-term interest rates have been around 2.5%, i.e., half a percentage point lower than at the beginning of the currency union. The expansion of the money stock indicates that the policy is stimulative; M3 has increased by more than 5 percent. When reducing interest rates in April this year, the ECB mainly reacted to the deterioration of the economic outlook. Also in the near future, the cyclical development in the euro area will be an important factor for the ECB in its decisions. While a rate hike cannot be excluded for this year, we nevertheless expect a first interest rate increase by the ECB only for the beginning of next year.
- The question whether monetary policy in the euro area is expansionary can be assessed by using rules for monetary policy. The Taylor Rule determines a money market rate which is compatible with the target for inflation. Currently, the money market rate is about 1 percentage point below the level which can be derived from the Taylor Rule. According to the McCallum Rule, which determines the growth rate of M3 compatible with the inflation target of the ECB, there is currently only some excess liquidity. However, even according to this rule there will be reason for the ECB to act in the near future. It can be expected that money demand will increase in the course of the upswing. In the concept of monetary targeting, this requires an increase of interest rates. Therefore, the ECB should pursue a policy which assures that the reference value for M3 is not exceeded over a prolonged period of time. For this end, it may be necessary to raise interest rates by more than 1 percentage point by the end of the year 2000.
- There have been considerable differences in growth rates between the member countries of the monetary union. In 1999, the smallest rate of increase will be in Italy with 1.2 percent; Ireland will show the highest rate amounting to 8 percent. One of the goals mentioned in the Treaty of Maastricht is a convergence of the income levels of member countries. Measuring convergence in terms of the standard deviation of the per capita income levels, there appears to be a decline in the 1990s; however, this is almost exclusively due to the catching-up of Ireland.
- The ECB has to assure the stability of the price level in the euro area. However, there may be deviations of national inflation rates from the average. The main reason for this is that prices for nontradable goods behave differently in the individual countries. If relative prices of nontradable goods in the individual countries were to change with the same rates as in the 1990s, the national inflation rates would deviate by a maximum of 0.7 percentage points in the long run. For example, with an average inflation in the euro area of 1.5 percent, the inflation rate would be 1.1 percent in Portugal and 1.8 percent in Finland. Differences of this magnitude can hardly cause fears of inflation or deflation in the individual countries. Even if the differences were higher in a particular year — for example because of special cyclical effects —, there would be no reason for the ECB to act. Real exchange rates, just as any other relative price, cannot be controlled by monetary policy.

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Strong Exports and Low Interest Rates Drive Euroland's Economy

In the fall of 1999, the recovery in Euroland is back on track. The turnaround was caused by the improvement in the world economy. After exports had been depressed in the past winter due to the weak demand in the crisis countries particularly in Asia, the impulses from abroad have picked up again. Furthermore, monetary policy has been expansionary, especially after the reduction of key interest rates in April this year. All in all, the upswing will gain momentum and will continue in the year 2000.

In this paper, rules for monetary policy which are being discussed in the literature are used to gauge the stance of monetary policy. The conclusion is that interest rates will have to be raised if the reference path for money shall not be exceeded and if the target for inflation shall be achieved. Furthermore, the differences in growth rates of output across Euroland's economies are analyzed; it is found that there has been no significant convergence of income levels during the past decade. Finally, it is analyzed why inflation rates have differed in recent years. The main reason appears to be that the prices for nontradables in the various countries show different rates of change over time. Since such differences can also be expected for the future, inflation rates will not be equal, i.e., there will also be changes in real exchange rates in the monetary union. However, there is no reason for monetary policy to be concerned about this.

1. Cyclical Turnaround

In the second half of 1998, economic activity in Euroland cooled down considerably. The collapse of demand from Asia, Latin America and Russia led to a sharp deceleration of exports; industrial production in the euro area even declined for a while. In the first half of this year, output stabilized, and the trough has now been overcome. One indication is that industrial production has increased since the spring of this year. The turnaround set in when the crises in the world economy lost their impact; especially in Asia production is recovering rapidly. The improvement in the outlook for exports led to a considerable pickup of sales and profit expectations of firms. For example, the business sentiment in manufacturing has improved since its trough in March 1999 and has reached a level which is only slightly below the long-term average. Also, the sales managers index in Euroland for August signals that economic activity is accelerating. At the same time, the inventory adjustment has probably ended, since most firms do not judge inventories as being too high anymore. Finally, in those countries which were especially hit by the various crises — namely Germany and Italy — there are now signs for a recovery: In Germany, foreign orders have increased substantially since the spring, and exports to Japan and China rose at double-digit rates in the course of this year; in Italy, expectations in the manufacturing sector have improved markedly since June.

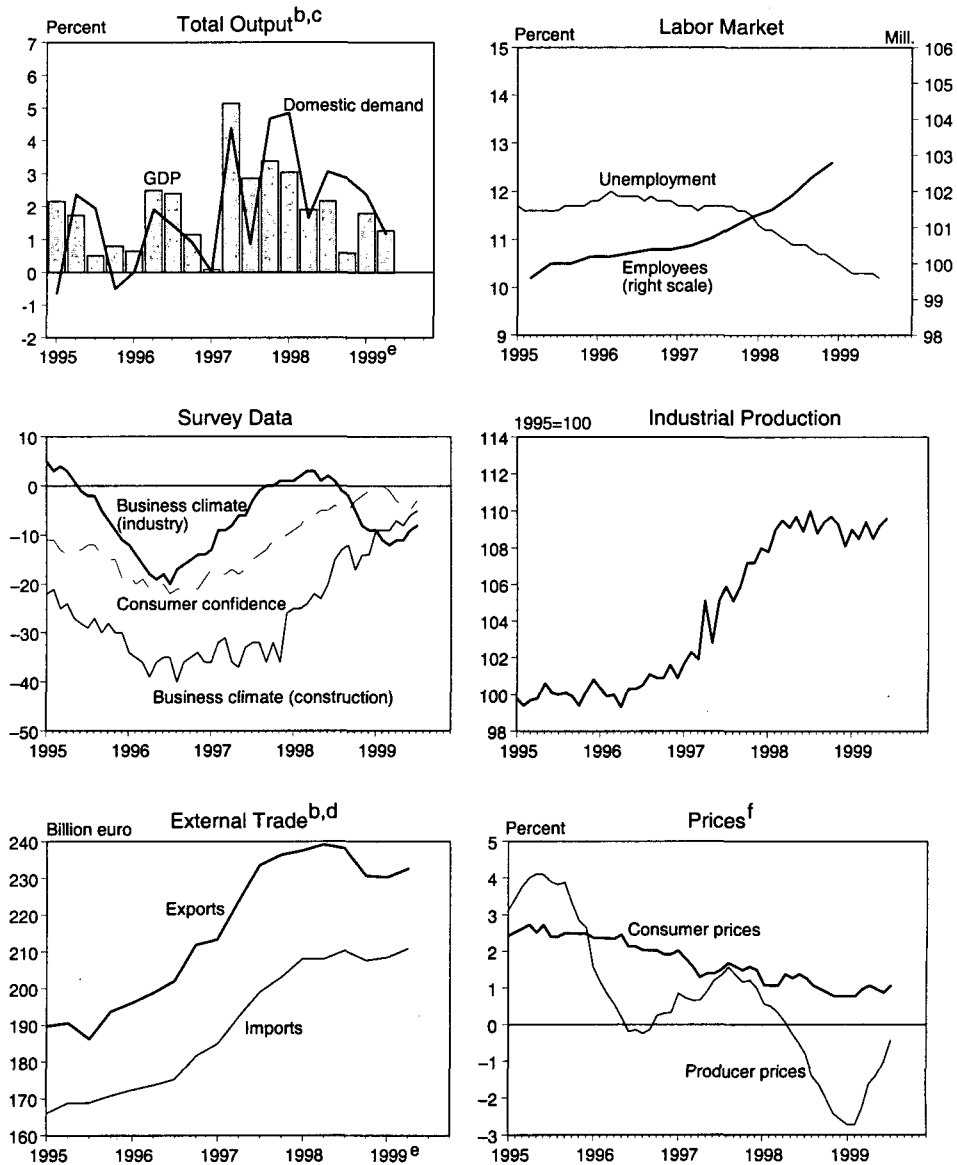
In the first half of 1999, real GDP in the euro area expanded at an annual rate of a little more than 1.5 percent (Figure 1). Domestic demand increased more rapidly stimulated by monetary policy. Private consumption was strong; real disposable income rose substantially, since the gains in employment slowed down only marginally. Investment growth accelerated somewhat in the course of this year due to low interest rates and the improvement of sales and profit expectations.

Since the spring of 1999, exports have increased again with demand from Southeast Asian countries and from Japan and China growing particularly strongly; at the same time, growth rates of exports to the United States have accelerated further from already high levels. The export sector has been stimu-

lated by the improvement of price competitiveness: in the second quarter of 1999, the real effective exchange rate of the euro was more than 7 percent below its level in the fourth quarter of last year; the weakness was mainly due to the devaluation against the U.S. dollar.

The labor market was affected by the economic slowdown with the usual lag. Employment that had increased markedly until the first quarter of this year has more or less stagnated since spring. There have been divergent movements here, too: While employment in the service sector has continued to increase due to the strong performance of internal demand, employment has declined in the manufacturing sector in response to the slowdown of production. In the course of this year, the reduction of unemployment has practically come to a halt; in recent months, the unemployment rate has remained at a

Figure 1: Business Cycle Indicators for Euroland^a



^aIndicators seasonally adjusted. — ^bAt constant prices. — ^cPercentage change over previous quarter (annual rate). — ^dEstimates based on the national accounts excluding intra-Euroland trade. — ^ePartly estimated. — ^fPercentage change over previous year.

level somewhat higher than 10 percent with considerable divergencies between countries: While unemployment in France, Spain, Finland and Ireland has continued to decline, it has even increased somewhat in Germany.

The phase of stable consumer prices, which had lasted from May 1998 until January 1999, has come to an end. Since February this year, the price level has risen again. The driving force has been the substantial rise of prices for energy, a consequence of the surge of prices for crude oil, which have nearly doubled since the beginning of this year. The core rate of inflation, however, has remained more or less constant amounting to somewhat more than 1 percent; price increases for services have even declined slightly to 1.5 percent year over year, which is at least in part due to the deregulation of specific sectors such as telecommunications. Producer prices have not continued to decrease; since the spring, especially prices for industrial products have picked up markedly.

2. Monetary Policy Continues Its Expansionary Course

Monetary conditions in the euro area have remained favorable. By lowering key interest rates in April this year, the ECB has strengthened its expansionary course. Since then short-term interest rates have been around 2.5 %, i.e., half a percentage point lower than at the beginning of the currency union (Figure 2); in real terms, they amount to only less than 1.5 % and are thus well below the long-term average in each of the EMU member countries.¹ Also, the expansion of monetary aggregates signals a loose policy. In the course of this year, the aggregate M3 has increased by more than 5 percent (annual rate), i.e., somewhat faster than planned, and M1 growth has even been stronger.

The development of the exchange rate points at easy monetary conditions, too. The value of the euro declined substantially until the summer, when the real effective exchange rate was about 8 percent lower than at the end of 1998. Only in recent weeks, the European currency regained some ground. Nevertheless, we expect significantly positive impulses from the devaluation on exports of the euro area.

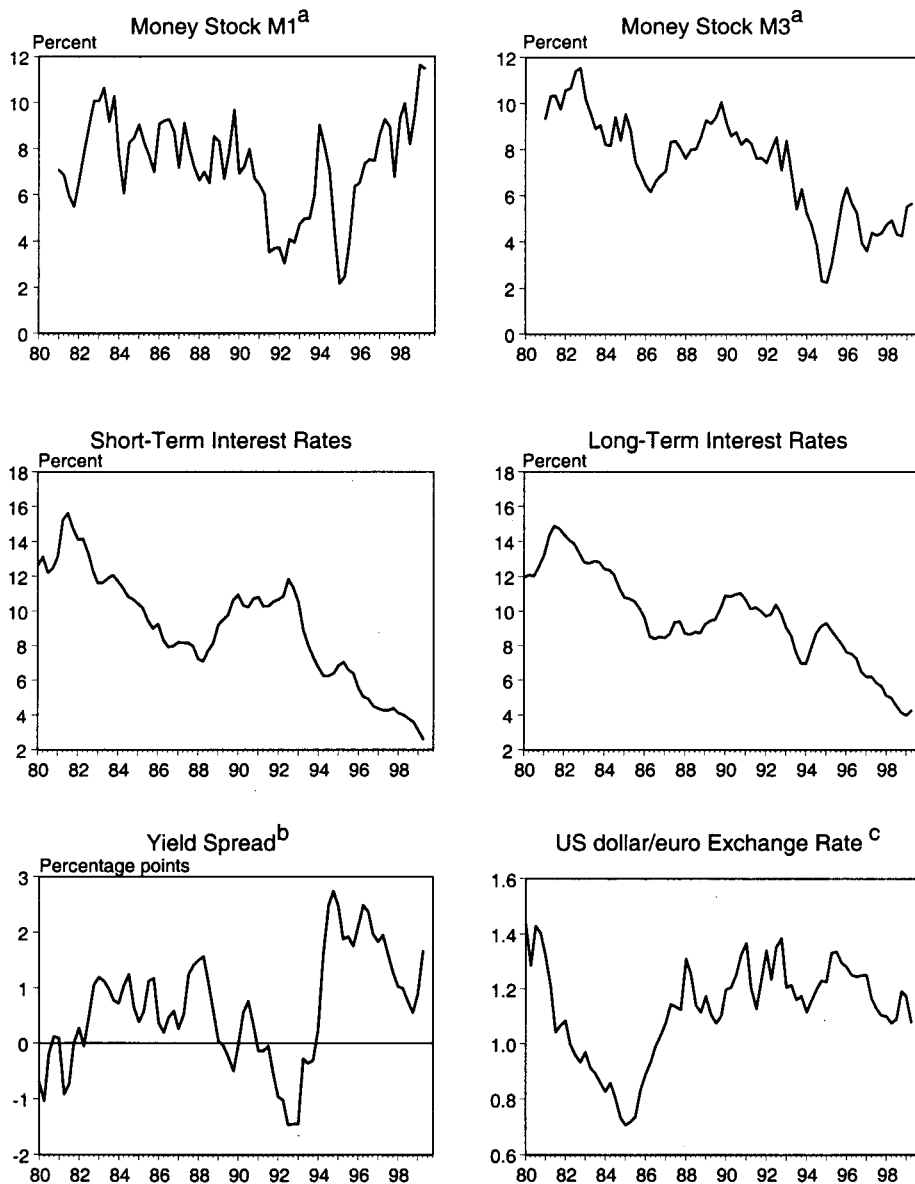
The development of bond markets, however, has become less favorable in 1999. After having reached the trough at the beginning of this year, bond yields have increased by about 1 percentage point; recently, the yield for 10-year bonds has amounted to about 5 %. The European markets have more or less followed the world-wide tendency to higher interest rates, an increase of similar magnitude could be observed in North America and the United Kingdom. The turnaround of interest rates coincided with the improvement of the conditions for the world economy, thus reflecting a higher profitability of capital; in other words, the real interest rate has probably increased. Furthermore, inflationary expectations have not continued to decline.

For the monetary union, it cannot be expected that key interest rates will be lowered again. When reducing interest rates in April this year, the ECB mainly reacted to the deterioration of cyclical conditions; for example, the downward revision of forecasts by the European Commission was given as one reason for the move. Neither the development of the money stock — the available data showed a slight overshooting of the reference value for M3 — nor the weakness of the euro prevented the strong reduction of interest rates. We therefore expect that also in the near future the cyclical development in the euro area will be an important factor for the ECB in its decision on interest rates. Financial markets obviously expect that key interest rates will be raised very soon, given the improved indicators for the cyclical development. The fact that the six-month money market rate is currently almost half a percentage point higher than the one-month rate indicates the expectation of even a strong increase in

¹ The stimulus is especially large for those countries which showed higher than average real interest rates because, for example, there was a special risk for their currencies to devalue (Boss et al. 1999). Germany had a comparatively low rate on average of around 3 %.

rates. While a rate hike cannot be ruled out for this year, especially given the fact that also the US Fed has tightened its policy somewhat, we nevertheless do not expect a first interest rate increase by the ECB before the beginning of next year. The central bank will probably wait until cyclical conditions in the euro area have strengthened sufficiently so that it will be clear that the weakness has definitely been overcome. In addition, an early increase of interest rates might suggest that the ECB reacts in a hectic fashion when new indicators on the business cycle situation become available. By the end of next year, the refinancing rate is expected to be about three quarters of a percentage point above the current level.

Figure 2: Indicators of Monetary Policy in Euroland



^aPercentage change over previous year. — ^bLong-term interest rate minus short-term interest rate.
— ^cBefore 1999: US dollar/ecu exchange rate.

3. Interest Rates Will Have to Be Raised

The question whether monetary policy in the euro area is expansionary can be assessed by using rules for monetary policy (Box). These rules define a course for the central banks which is compatible with the targets. For example, according to the Taylor Rule there is a money market rate and according to the McCallum Rule there is a growth rate for money which are compatible with the target for inflation. When calculating respective values, we assume that the ECB's target for the increase of the Harmonized Index of Consumer Prices (HICP) is 1.5 percent; this rate is implied in the reference value that the ECB has derived for M3.

Box 1: Rules for Gauging the Stance of Monetary Policy

In the literature, there is a number of proposals for monetary policy rules which should allow central banks to achieve their targets at low costs. Such rules are derived from particular models, which imply a different philosophy concerning the functioning of the economy on the one hand and the possibilities to influence economic activity on the other hand. While some rules focus on a particular rate of inflation (or the price level), others suggest that monetary policy can contribute to stabilizing the business cycle. The rules used here further vary according to the instrument applied: There is either an interest rate (Taylor 1993) or a monetary aggregate (McCallum 1987). One can use the rules to analyze the course of monetary policy, that is, to assess whether the current policy is too expansionary or too restrictive with respect to the inflation target.

To determine the interest rate i according to the Taylor Rule, the parameters of reaction have to be determined, i.e., the amount of the change in the interest rate in reaction to a deviation of inflation from its target ($\pi - \pi^*$) or the output gap ($y^* - y$). Commonly, the value of these parameters equals 0.5. Furthermore, one needs an estimate of the equilibrium real interest rate r , which is by no means trivial (Scheide 1998: 10–11), as well as an estimate of potential output y^* , for which there are several methods leading to often quite different results.

The Taylor Rule usually has the following form:

$$[1] \quad i = \pi + r + 0.5 (\pi - \pi^*) - 0.5 (y^* - y).$$

According to this equation, there is an excessively expansionary course of monetary policy if the actual interest rate is lower than the rate given by the Taylor Rule, i.e., if the central bank lowers interest rates more than "necessary" in order to stimulate the economy. In this case, there is — given the underlying theory — the risk of overshooting the inflation target. The Taylor Rule has often been tested. For example, the policy of the Deutsche Bundesbank can be described very well by using this "reaction function." Therefore, it is reasonable to use the Taylor Rule also for the ECB, especially since the central bank obviously reacts to business cycle conditions.¹

In the McCallum Rule, the monetary aggregate m is used as an instrument where the precise definition of money is left open.² According to this rule (monetary targeting) the money growth rate Δm^* in the quarter t compatible with the inflation target π^* is as follows:³

$$[2] \quad \Delta m_t^* = \pi^* - \frac{1}{16} (v_{t-1} - v_{t-17}) + \frac{1}{16} (y_{t-1} - y_{t-17}).$$

This rule, too, can be used as a gauge for the course of monetary policy: For example, if the actual growth rate of money is higher than the rate according to the rule, monetary policy is too expansionary and would lead to higher inflation in the medium term.

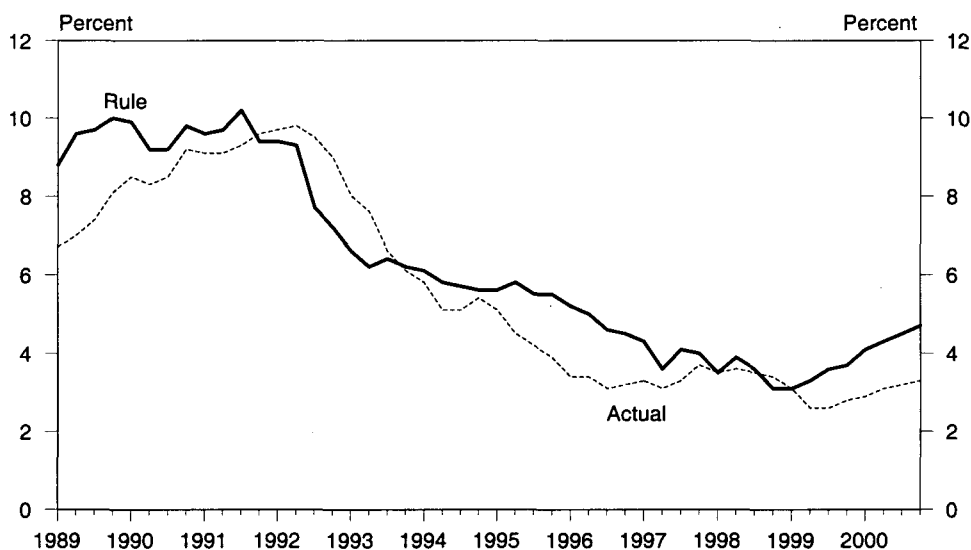
This rule is derived from the quantity theory of money according to which monetary expansion leads to more inflation if it exceeds y , the trend growth of real GDP, corrected for v , the trend change of velocity. This theory is supported by ample empirical evidence (Lucas 1996). Complicated or problematic estimations as in the case of the Taylor Rule are not necessary. In fact, the trend changes are calculated by a simple averaging so that short-term cyclical movements are eliminated; McCallum uses an estimation period of four years. This rule was suggested after an instability of money demand showed up in a number of countries which disturbed the more or less steady development of velocity. Various simulations with such a rule show that it would have been successful in achieving the inflation target. This rule is nothing but a modification of the Friedman Rule which assumes a steady development of velocity and implies a constant growth rate for the money stock. Also, the rule comes close to the concept of a potential-orientated policy which is propagated by the Deutsche Bundesbank and which is also the basis of the strategy of the European Central Bank.

¹Solveen (1998) shows that the overall capacity utilization influences the interest rate policy of practically all central banks. — ²An important requirement is that the monetary aggregate can be controlled with sufficient precision. For the purpose at hand, it is important that the aggregate has a close relationship with the target variable. — ³All variables are in logs.

On the basis of the Taylor Rule, the money market rate is determined which is compatible in the long term with the desired inflation rate. In the steady state, the rate is equal to the sum of the equilibrium real interest rate and the inflation rate (Fisher condition). In the short term, the interest rate should vary if there is a deviation of actual inflation from its target value. Also, the interest rate is lowered (raised) if there is an increase (decrease) of the output gap; this means that the central bank should also aim at stabilizing the economy and thus — according to the philosophy of proponents of this rule (Taylor 1996) — raise welfare. The appeal of this rule is that it is defined in terms of the instrument that more or less all central banks use or influence directly by targeting the refinancing rate in their open market operations.

The calculations of the Taylor Rule are made under the assumption of an equilibrium real interest rate of 3 percent²; furthermore, the estimates of the OECD for potential output are used to estimate the output gap. For the beginning of the 1990s, there is a very high interest rate according to the rule, which is due to the fact that inflation at that time was substantially above 1.5 percent (Figure 3); furthermore, capacity utilization was very high as a consequence of the boom in the wake of German unification. Afterwards, the interest rate declined continuously.³ Currently, the money market rate is about 1 percentage point below the level which can be derived from the Taylor Rule. This means that the ECB has reacted too strongly to the cyclical downturn and the decline of inflation until the spring when cutting interest rates. Against this background, a substantial increase of key interest rates in the near future would not mean a restrictive policy if — as we expect — the economic expansion in Euro-land will gain momentum and the inflation rate will increase. There is, of course, some uncertainty about the “correct” level of the money market rate according to the Taylor Rule, because the “true” equilibrium real interest rate and the “true” level of capacity utilization are not known and estimates may be imprecise. Nevertheless, the rule indicates that the interest rate should increase considerably in the near future, namely by about one percentage point until the end of 2000. Using the Taylor rate as a

Figure 3: Short-Term Interest Rates in Euroland: Actual Values and Values According to the Taylor Rule^a



^a3-month money market rate. Forecast starting in the third quarter of 1999.

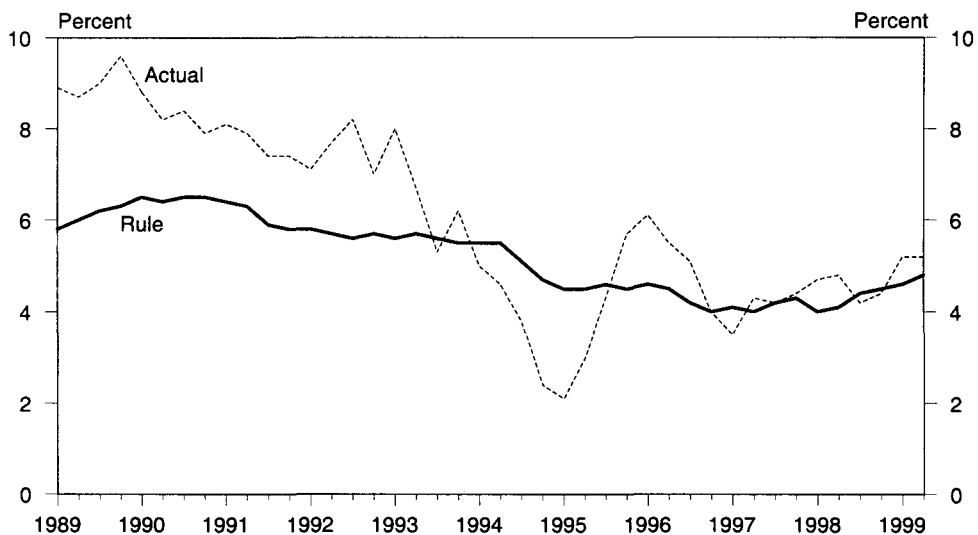
- 2 This value is somewhat below the average for Germany in the period 1986–1998. Most other EMU countries had a much higher interest rate in the past. Here, the interest rate for Germany is used for the period before 1999.
- 3 The comparison between the actual interest rate and the Taylor rate is somewhat misleading for that period because in the calculations of the interest rate according to the Taylor Rule data for Euroland were used; however, for the above-mentioned reasons the actual money market rate for Germany was used.

reference, monetary policy will continue to be expansionary in the forecasting period. Considering that the Taylor Rule is somewhat imprecise, there is the risk that the predicted increase — we expect a level of 3.3 % at the end of next year — will not be sufficient so that economic activity will be stimulated too much.

The strategy of the ECB also includes a reference path for the money stock M3. The McCallum Rule defines the expansion of a monetary aggregate which is compatible with the inflation target. The reaction to cyclical conditions as in the Taylor Rule is not postulated. An overshooting of the inflation target can be expected according to this rule if monetary expansion is higher than necessary to compensate for a trend increase of real GDP and the trend change of velocity, given an inflation rate of 1.5 percent. In recent years, M3 in the euro area has increased at a rate compatible with the target inflation (Figure 4). This explains the success of stabilization in the countries participating in the monetary union, where the inflation rate has come down from its level of around 5 percent at the beginning of the 1990s until recently. This decline was not affected by the huge swings in monetary expansion in the years 1994 to 1996 because M3 moved around the target path.⁴

On the basis of the McCallum Rule of monetary targeting, there is a somewhat different assessment of the current course of monetary policy than on the basis of the Taylor Rule. According to the rule for M3, there is currently only little excess liquidity. However, there is most likely a need to change interest rates in the near future according to the McCallum Rule as well. It can be expected that money demand will increase in the course of the upswing. In the framework of the concept of monetary targeting, this requires an increase of interest rates, otherwise monetary expansion would accelerate; then, there would be an excess liquidity which would sooner or later lead to an acceleration of inflation. To conclude: The McCallum Rule suggests that the ECB should avoid an increase of monetary expansion and pursue a policy which assures that the reference value for M3 is not exceeded. In order to achieve this target, it may be necessary to raise interest rates by more than one percentage point; this possibility was also discussed in connection with the Taylor Rule.

Figure 4: Expansion of M3 in Euroland: Actual Values and Values According to the McCallum Rule^a



^aYear-over-year increase of M3.

⁴ These swings are mainly due to the development in Germany which can largely be explained by special factors and does not reflect an unstable monetary policy.

4. Fiscal Policy: Consolidation Efforts Are Insufficient

In 1999, the budget deficit in relation to GDP will amount to about 2 percent and will thus be only slightly lower than in the previous year (Table 1). Thus, the consolidation of public finances in Euro-land has lost momentum. In fact, the structural deficit in Euro-land even increased slightly in 1998; however, this overstates the true development somewhat because the deficit in the year 1997 had been reduced by one-off measures. A considerable reduction of the structural deficit is not likely in 1999 and 2000; only in a few countries, for example, in Germany, the intention is to reduce the deficit somewhat faster than was planned half a year ago. All in all, the more or less neutral stance of fiscal policy will continue.

Because of the lack of consolidation, the difference between actual deficits and the 3 percent level agreed upon in the Treaty of Maastricht is very small. In order to raise this difference in the medium term, the governments of the member countries have prepared Stability and Growth Programs, which imply a reduction of the deficits. The achievement of the deficit targets is less likely if the recovery is weaker than expected by the governments in their optimistic forecasts. Another risk is that deficits may be higher because of rising interest rates; for example, the long-term interest rate (10-year bonds) has increased in the course of this year by about 1 percentage point and amounted to about 5 % recently. In the years 1997 and 1998, there has been a reduction in interest payments because of the fall of short-term and long-term interest rates in Euro-land amounting to 0.4 percentage points of the budget deficits; in the previous high-interest-rate countries, like Italy, Spain and Portugal, interest payments in relation to GDP fell drastically. Since the adjustment of public debt to a reduction in interest rates takes a while, it can be expected that interest payments will also decline in the near future; according to the Stability and Growth Programs, they are supposed to fall by 0.3 and 0.2 percentage points, respectively. However, the assumed decrease of interest payments in the coming year seems doubtful if long-term interest rates will increase to nearly 6 % by the end of the year 2000 as we expect.⁵

In order to keep a sufficient difference between the actual deficit and the level of 3 percent even at times of a weak economy or higher interest rates, it is necessary that most countries strengthen their efforts to consolidate their budgets by a reduction of primary expenditures (expenditures excluding interest

Table 1: Indicators of Fiscal Positions in Euro-land, 1997–2000

	Gross public sector debt ^a				General government balance ^a			
	1997	1998	1999 ^b	2000 ^b	1997	1998	1999 ^b	2000 ^b
Germany	60.8	60.7	61.1	60.5	-2.6	-1.7	-1.7	-1.4
France	58.1	58.5	59.0	59.5	-3.0	-2.9	-2.5	-2.1
Italy	122.4	118.7	117.5	115.5	-2.7	-2.7	-2.2	-1.8
Spain	67.5	65.6	67.0	65.0	-2.6	-1.8	-1.7	-1.3
Netherlands	71.2	67.7	66.5	66.0	-0.9	-0.9	-1.2	-1.2
Belgium	123.4	117.3	113.0	110.0	-1.9	-1.3	-1.0	-1.0
Austria	64.3	63.1	63.5	63.0	-1.9	-2.1	-2.0	-2.0
Finland	54.9	49.6	46.5	44.5	-1.2	1.0	2.5	2.5
Portugal	61.7	57.8	57.0	56.0	-2.5	-2.3	-2.0	-2.0
Ireland	61.3	52.1	46.0	40.0	1.1	2.3	2.5	2.0
Luxembourg	6.4	6.7	6.5	6.5	2.9	2.1	2.0	2.0
Euro-land	74.9	73.3	73.1	72.2	-2.5	-2.0	-1.8	-1.5

^aIn percent of nominal GDP; Maastricht definition. — ^bForecast.

Source: ECB (1999c); own calculations and estimates.

⁵ Calculations show that an increase in interest rates would lead to a substantial increase in interest payments even in the short run.

payments). A reduction of budget deficits by an increase of revenues is not desirable because this would lead to a deterioration of supply conditions and thus lower the growth prospects for Euroland. This view, by the way, coincides with the proposal of the European Council in the "Broad guidelines of the economic policies of the Member States and the Community" where member countries are urged "...to improve their budgetary positions through expenditure restraint rather than through tax increases" (quoted in ECB 1999b: 35). When reducing primary expenditures, it is important that the consolidation is sustainable especially if it enhances the growth prospects, that is, if the transfers to private households and subsidies to firms are reduced, and not public investment as was the case prior to the currency union in most countries.

The consolidation of budgets is not only necessary to meet the conditions of the Treaty of Maastricht and the Stability and Growth Pact. At the same time, such measures would help to solve the problem of the increase in expenditures related to the pension system and the health system. Calculations show that starting from the second half of the coming decade, these expenditures will rise in the following 25 years by about 7 percentage points in relation to GDP (ECB 1999a: 60) if there is no fundamental change in the systems of social security. Apart from a reform of the public pension and health systems (Siebert 1996, 1998), the accumulation of surpluses in the coming years would help to finance expenditures in countries with an unfavorable age structure; this is especially true for large countries of the currency union with a pay-as-you-go system. The current controversies in Germany and Italy about a reform of the pension system show that there is considerable resistance in the societies against reductions. This makes the course of fiscal consolidation even more difficult.

5. Outlook: Recovery Gains Momentum

Because of the improvement in the world economy and the favorable monetary conditions, we expect that real GDP in Euroland will expand at a healthy pace somewhat above the potential rate in the coming

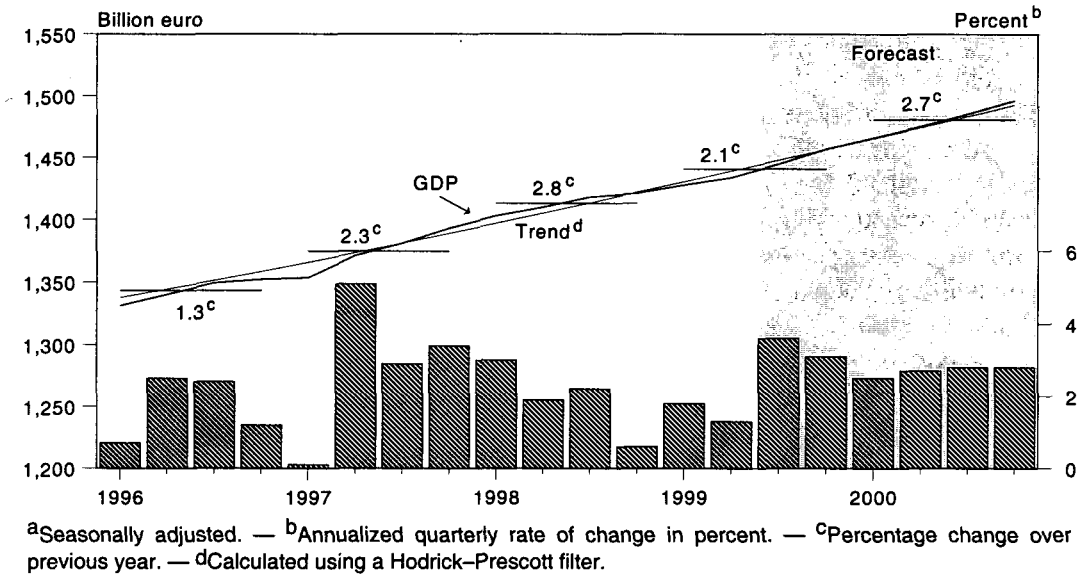
Table 2: Quarterly Data on the Economic Development in Euroland, 1998–2000

	1998				1999				2000			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3 ^a	Q4 ^a	Q1 ^a	Q2 ^a	Q3 ^a	Q4 ^a
Gross domestic product ^b	3.0	1.9	2.2	0.6	1.8	1.3	3.6	3.1	2.5	2.7	2.8	2.8
Domestic demand ^c	4.8	1.7	3.1	2.9	2.4	1.2	3.0	3.2	2.4	2.5	2.7	2.8
Private consumption ^c	3.8	2.6	2.9	1.8	3.0	0.6	3.1	3.3	2.2	2.4	2.3	2.5
Public consumption ^c	4.6	0.2	0.2	-0.9	5.4	1.3	0.9	0.9	2.5	1.8	0.8	0.9
Fixed investment ^b	6.7	-3.5	9.7	0.6	10.6	0.6	4.0	4.5	4.5	4.6	4.8	4.8
Change in stocks ^c	0.3	0.8	-0.6	1.8	-2.5	0.5	0.2	0.1	-0.3	-0.2	0.2	0.1
Net exports ^c	-1.6	0.3	-0.8	-2.2	-0.5	0.1	0.6	0.0	0.2	0.2	0.1	0.1
Exports ^{b,d}	1.8	2.8	-1.6	-12.0	-0.6	4.0	6.0	7.0	6.0	5.5	5.0	5.0
Imports ^{b,d}	10.3	-0.3	4.5	-5.0	1.7	4.6	6.7	7.1	6.0	7.0	6.5	6.5
Unemployment rate ^e	11.2	11.0	10.9	10.7	10.4	10.3	10.3	10.1	9.9	9.8	9.7	9.5
Consumer prices (HICP) ^f	1.1	1.3	1.1	0.8	0.8	1.0	1.1	1.3	1.4	1.5	1.7	1.8
Money stock M1 ^f	8.8	10.4	8.6	9.0	12.4	11.3	10.5	9.5	9.0	9.0	8.0	8.0
Money stock M3 ^f	4.4	4.7	4.4	4.9	5.4	5.4	5.5	5.0	5.0	5.0	5.5	5.5
3-month money market rate in %	4.0	3.9	3.8	3.4	3.1	2.6	2.6	2.7	2.9	3.1	3.2	3.3
Long-term interest rate in %	5.1	5.0	4.6	4.1	4.0	4.3	4.9	5.3	5.5	5.6	5.7	5.8
Exchange rate vis-à-vis US dollar ^g	1.09	1.10	1.12	1.18	1.12	1.06	1.05	1.05	1.05	1.05	1.05	1.05
Real effective exchange rate	89.7	91.1	93.4	94.2	90.8	87.3	86.2	86.0	85.8	85.6	85.4	85.2

^aForecast. — ^bAnnualized quarterly rate of change in percent. — ^cContribution to change in GDP. — ^dExcluding intra-Euroland trade. — ^eIn percent of the labor force, harmonized according to the ILO concept. — ^fChange over previous year in percent. — ^gUS dollar /euro; before 1999 US dollar/euro.

Source: Eurostat (1999); ECB (1999c); OECD (1999b); own calculations and estimates.

Figure 5: Real GDP^a in Euroland

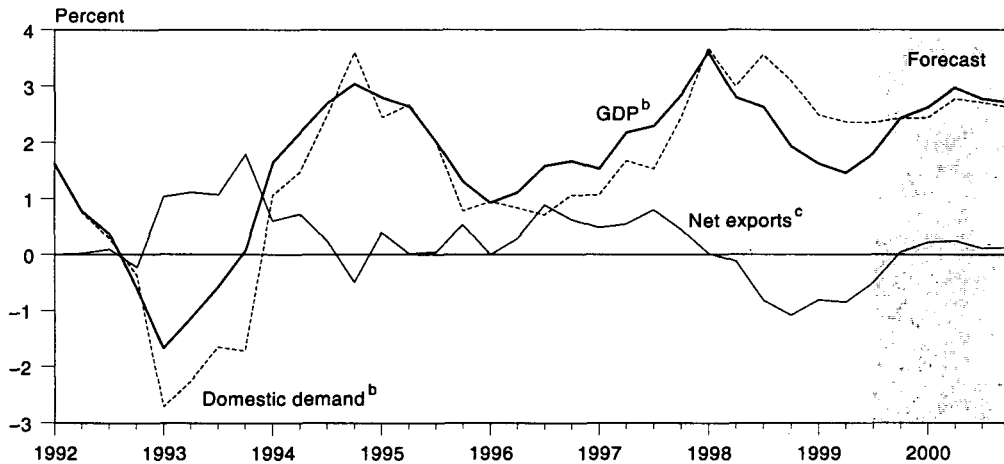


months and throughout next year (Table 2). For 1999 as a whole, the growth rate of real GDP will amount to only 2.1 percent because of the weak start into the year; in 2000, the rate will accelerate to 2.7 percent and capacity utilization will increase considerably (Figure 5).

Exports will contribute considerably to the recovery, supported by the low real external value of the euro, especially since the economies in Southeast Asia will recover quickly and the situation in Japan will stabilize. Also, the upswing in the United Kingdom will stimulate exports of the euro area; in contrast, some dampening can be expected from the cooling off in the United States.

Domestic demand will continue to grow briskly (Figure 6), stimulated by monetary policy which will remain expansionary in the forecasting period. Fiscal policy will be more or less neutral. The driving force of domestic demand will be investment, in particular in machinery and equipment, which will expand substantially because of the increase in capacity utilization and the favorable sales and profit expectations. Private consumption, too, will rise at a considerable pace in the light of high consumer confidence and the increase in employment.

Figure 6: GDP, Domestic Demand and Net Exports in Euroland^a



^aAt constant prices. — ^bPercentage change over previous year. — ^cChange of net exports over previous year in percent of GDP in the same quarter of previous year.

Consumer prices will rise by 1.1 percent this year and thus at a similar rate as in 1998 (Table 3); next year, they will increase by 1.7 percent. This acceleration is in part due to higher import prices but also to the acceleration of the internal rate of inflation as a consequence of the upswing.

6. No Convergence of Income Levels in Euroland

There are marked differences across EMU member countries with respect to growth rates of real GDP. In 1999, growth will vary between 1.2 percent in Italy and 8 percent in Ireland. Against this background, it is of interest whether the differences in output growth observed in recent years have led to economic convergence within Euroland, also because this is one of the policy goals stated in the Maastricht Treaty. A necessary condition for convergence is that growth rates of relatively poor countries are higher than those of relatively rich countries.

Convergence of the real economies is usually analyzed in terms of real GDP per capita. In order to eliminate the effects of exchange rate movements on the values of GDP per capita in a common currency, in our calculations we use the numbers for real GDP at purchasing power parities given in World Bank (1998).⁶ Average annual growth rates of income per capita as defined above differed considerably across EMU member countries during the 1990s (Table 4).⁷

As a consequence, the per capita income in individual countries relative to the average of EMU countries⁸ has changed over the 1991–1999 period. In some cases movements have been remarkable. Particularly Ireland has developed from a country with an income level considerably below average in 1991 to a country with an income clearly above average due to an exceptionally high growth rate. On the other hand, the income positions of some countries which had been relatively wealthy in 1991 have declined markedly. This was the case in Italy, Belgium, France and Austria. In other countries, the

Table 3: Real GDP, Consumer Prices and Unemployment Rate in Euroland 1997–2000

	Weights in total ^a	Real GDP ^b				Consumer prices ^{b,c}				Unemployment rate ^d in percent			
		1997	1998	1999 ^e	2000 ^e	1997	1998	1999 ^e	2000 ^e	1997	1998	1999 ^e	2000 ^e
Germany	33.0	1.8	2.3	1.5	2.5	1.8	1.0	0.7	1.6	9.9	9.4	9.1	8.5
France	22.2	2.3	3.2	2.4	2.8	1.2	0.8	0.5	1.2	12.3	11.7	11.5	11.0
Italy	18.1	1.5	1.3	1.2	2.5	1.8	1.7	1.6	1.9	12.1	12.3	12.0	11.5
Spain	8.6	3.5	3.8	3.5	3.5	2.0	1.8	2.2	2.3	20.8	18.8	16.5	15.0
Netherlands	5.8	3.6	3.8	2.9	2.6	2.2	2.0	2.1	2.2	5.2	4.0	3.5	3.5
Belgium	3.9	3.0	2.9	2.0	2.5	1.6	0.9	1.0	1.5	9.4	9.5	9.0	8.5
Austria	3.3	2.5	3.3	2.0	2.5	1.3	0.9	1.0	1.5	4.5	4.7	4.5	4.5
Finland	1.9	5.5	4.7	3.5	4.0	1.2	1.4	0.5	2.0	12.7	11.4	10.5	9.5
Portugal	1.6	3.7	3.9	3.0	3.0	2.3	2.7	2.5	2.5	6.8	5.1	4.5	4.5
Ireland	1.3	9.8	10.4	8.0	6.5	1.4	2.4	2.0	3.0	9.9	7.8	7.0	6.5
Luxembourg	0.3	4.7	5.7	3.0	3.5	1.4	0.9	1.0	1.5	2.8	2.8	3.0	3.0
Euroland	100.0	2.4	2.8	2.1	2.7	1.6 ^f	1.1 ^f	1.1 ^f	1.7 ^f	11.5 ^g	10.9 ^g	10.3 ^g	9.7 ^g

^aBased on GDP in current prices and exchange rates of 1998. — ^bPercentage change over previous year. — ^cNational consumer price index. — ^dStandardized unemployment rates according to the ILO concept. — ^eForecast. — ^fHarmonized Index of Consumer Prices (HICP). — ^gBased on the data on the labor force in 1997.

Source: ECB (1999c); OECD (1999c); own calculations and estimates.

⁶ The relevant data are available only up to 1996. Values for the following years up to 1999 are estimated on the basis of growth rates for real GDP which is judged to be acceptable because since 1996 there have not been major movements in the exchange rates between EMU member countries. Output growth for 1999 is assumed according to the forecast presented in this paper.

⁷ Note that exclusion of Ireland from the sample results in a marked reduction of the standard deviation.

⁸ Excluding Luxembourg.

Table 4: Real GDP per Capita in Euroland in the 1990s

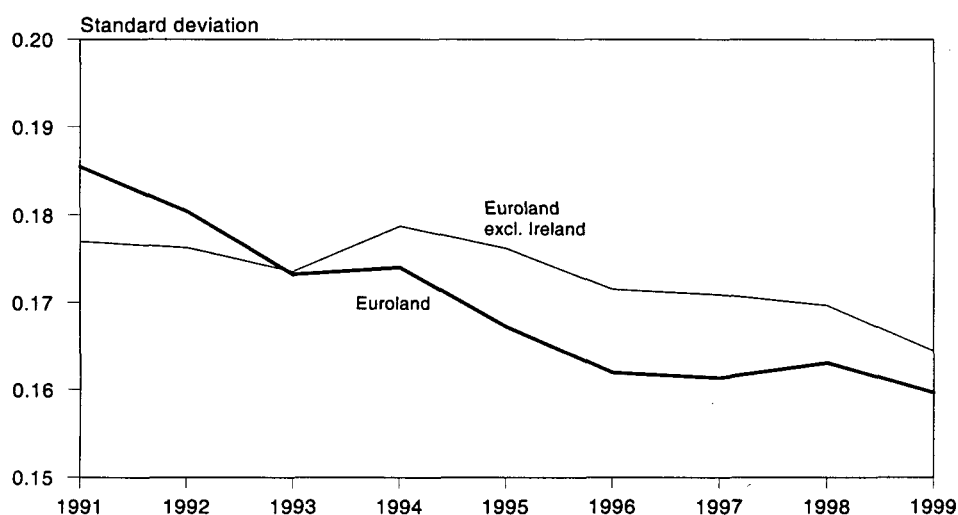
	Increase ^a 1991–1999	Level ^b	
		1991	1999
Germany	2.0	108.5	107.9
France	1.5	115.5	110.7
Italy	0.8	107.3	97.0
Spain	1.9	81.4	80.5
Netherlands	2.0	105.2	104.7
Belgium	1.3	118.0	111.1
Austria	1.6	116.1	111.7
Finland	1.7	99.5	96.4
Portugal	2.0	70.2	69.7
Ireland	6.5	78.3	110.3
Standard deviation	1.6	17.25	14.47
Standard deviation excluding Ireland	0.5	16.41	14.86

^aAverage annual rate of increase in percent; based on purchasing power parities. — ^bIn percent of the average for Euroland.

Source: World Bank (1998); OECD (1999a); own estimates and calculations.

income relative to the average remained roughly constant, some of those countries being relatively rich (Germany, Netherlands) and some others relatively poor (Spain, Portugal). There is no clear pattern discernible from these observations.

One measure for convergence often used is the behavior of the standard deviation of the logs of per capita income, the so-called σ -convergence (Barro and Sala-i-Martin 1995: 382 ff.). According to this concept, convergence is found when the standard deviation declines over time. As shown in Figure 7, the standard deviation is clearly on a downtrend during the 1990s for Euroland as a whole indicating convergence; however, this result is almost exclusively due to the rapid catching-up process of Ireland. The standard deviation for EMU countries excluding Ireland has not changed significantly. Considering the fact that in the method used the results are systematically biased toward convergence (Quah 1993; Bode 1998: 93 ff.), the evidence for convergence of real incomes in the run-up to EMU is rather weak.

Figure 7: σ -Convergence in Euroland^a

^aStandard deviation of logs of real GDP per capita in US dollars at purchasing power parities. Without Luxembourg.

7. Differences in National Inflation Rates Persist

According to the Maastricht Treaty, the European Central Bank has to secure the stability of the price level in the euro area. To comply with this provision, the ECB aims to keep the increase of the HCPI below 2 percent and, at the same time, prevent deflation. Even when aggregate inflation is in line with this definition of price stability, this does not mean that inflation in every single member country is on target; deviations from the Euroland average, as have been observed in the past, are quite possible. This, in turn, could complicate the process of decision making in the ECB and gives rise to the concern that due to pressures resulting from conflicting national interests monetary policy could be pushed away from the optimal path.

One possible major reason for sustained differences in national inflation rates is that as a consequence of high transport costs or national regulations not all goods and services included in the HCPI are internationally tradable. While inflation differentials of tradables are likely to disappear within Euroland, there is no convergence mechanism for prices of nontradables.⁹ To the extent that inflation of nontradables differs across countries, differences in national inflation rates will be the result. Theoretical considerations as well as empirical evidence suggest the existence of structural differences in the development of supply and demand for nontradable goods across EMU member countries which are a prerequisite for diverging price trends. One indication is that within existing currency areas usually neither price levels nor inflation rates do totally equalize. Ströhl (1994), for example, finds for a sample of 50 cities in Germany in the year 1993 that price levels differ by up to 12 percent — with differences in housing costs that tend to be even larger excluded —, and according to Cechetti (1998), average annual consumer price inflation rates of 15 US cities in six decades between 1918 and 1995 varied by a maximum of 1.0 to 1.6 percentage points.

Differences in the rate of increase of relative prices of nontradables are traditionally traced back to differences in productivity growth. The national inflation rate for nontradables exceeds the (internationally identical) inflation rate for tradables by the national difference of productivity growth in the two sectors (Balassa 1964; Samuelson 1964):¹⁰ In the case that the productivity in producing tradable goods rises by one percentage point faster than in producing nontradables, unit labor costs in the nontradable goods sector will increase by an additional one percentage point, provided both sectors draw from the same pool of labor. In order to compensate for this difference, prices for nontradables will have to rise by 1 percentage point relative to tradables. According to this line of reasoning, differences in national inflation rates of nontradable goods are due to national differences in sectoral productivity growth.¹¹

Table 5 presents data on price developments for tradable and nontradable goods in Euroland (excluding Ireland and Luxembourg) for the years 1971–1997. For each country, average annual growth rates of the deflators of value added are shown for the manufacturing sector — as a proxy for tradable goods prices — and the rest of the economy, respectively. In addition, the rate of increase of the relative price of nontradables is given which is approximately the inflation differential between the two sectors. As could be expected because of the typically higher productivity growth in the tradable goods sector, prices for nontradables increase at a considerably faster pace than prices for tradables, i.e., over time the relative price of nontradables rises in all countries. The rate of increase of this relative price does in fact differ across countries, which indicates a potential for diverging national inflation in the euro area. Changes in relative prices have been very similar, however, in the two largest EMU countries, Germany and France. Furthermore, the dispersion of the national inflation rates across Euroland has declined over recent years,

⁹ Prices of nontradables tend to be equalized only in the long term through direct investment and migration.

¹⁰ As to the empirical validity of this hypothesis see Canzoneri et al. (1999), Meier (1998), and De Gregorio et al. (1994).

¹¹ Under the assumption of negligible productivity growth in the nontradable goods sector (i.e., growth in real income per capita is based predominantly on productivity growth in the production of tradables), this hypothesis can be reformulated to state that the rate of increase of relative prices of nontradables is positively correlated with the rates of increase of income per capita.

Table 5: Average Annual Rates of Change of the Prices of Tradable and Nontradable Goods in Euroland, 1971–1997 (percent)^a

	Nontradable goods			Tradable goods			Difference between the rates of change in the prices of nontradable and tradable goods		
	1971–1980	1981–1990	1991–1997	1971–1980	1981–1990	1991–1997	1971–1980	1981–1990	1991–1997
Germany (West)	5.8	2.7	2.9	4.6	2.9	1.5	1.2	-0.2	1.4
France	10.2	6.3	2.2	8.9	6.2	0.6	1.3	0.0	1.6
Italy	15.3	11.2	5.1	14.1	9.2	3.5	1.2	2.0	1.6
Spain	15.9	9.7	5.1	13.3	8.6	3.2	2.6	1.1	1.8
Netherlands	.	2.5	2.4	.	0.9	0.9	.	1.6	1.5
Belgium	8.3	4.8	3.0	3.7	3.3	1.3	4.6	1.5	1.7
Austria	.	3.9	3.3	.	2.4	1.6	.	1.5	1.7
Finland	11.4	7.8	2.3	11.7	4.8	0.1	-0.3	2.9	2.2
Portugal	.	12.3	8.2	.	9.8	7.3	.	2.6	0.9

^aPrices of tradable goods calculated as ratio of nominal to real value added in manufacturing, prices of nontradable goods as ratio of nominal to real value added in the remaining sectors of the economy. Limited data availability: Netherlands 1988–1997, Belgium 1971–1996, Austria 1977–1996 and Portugal 1987–1995.

Source: OECD (1999a); own calculations.

a process which had been fostered by the reduction of trade barriers in the course of the implementation of the Single Market.

Whether differences in the development of relative prices in the observed magnitude during the 1990s will result in significant inflation differentials can be examined using the following equation, where \hat{p} is the national inflation rate that is composed of the weighted average of the inflation rate, using as weights the shares of the sectors in value added γ and $(1-\gamma)$, respectively:

$$[1] \quad \hat{p} = \gamma \hat{p}^N + (1-\gamma) \hat{p}^T = \gamma (\hat{p}^N - \hat{p}^T) + \hat{p}^T.$$

The difference of the national inflation rate to the euro area inflation rate \hat{p}^{EMU} is given by

$$[2] \quad \hat{p} - \hat{p}^{EMU} = \gamma (\hat{p}^N - \hat{p}^T) - \gamma^{EMU} (\hat{p}^N - \hat{p}^T)^{EMU} + (\hat{p}^T - \hat{p}^{T,EMU}),$$

where the index EMU indicates the euro area average for the respective variables. Under the assumption that prices of tradable goods rise at the same rate in all member countries — so that the last term of the equation can be eliminated —, the difference between the national inflation rate and the average inflation rate can be calculated from the difference in nontradable goods inflation and the difference in the share of nontradables in the economy.

In Table 6, the results presupposing a change in the relative prices of nontradables at rates experienced in the 1990s are shown (assumption 1). According to these calculations, national inflation rates would differ by a maximum of 0.7 percentage points, with Germany and Portugal having inflation rates below average and the other countries being above average. For example, in the case of average inflation in the euro area at 1.5 percent, German consumer prices would rise by 1.3 percent while Finnish inflation would come in at 1.8 percent.

Table 6: Calculated Deviations of National Inflation Rates from the Euroland Average in Percentage Points

	Germany	France	Italy	Spain	Netherlands	Belgium	Austria	Finland	Portugal
Assumption 1 ^a	-0.2	0.1	0.0	0.2	0.1	0.1	0.1	0.3	-0.4
Assumption 2 ^b	-0.6	-0.5	0.8	0.7	0.6	1.3	1.3	0.6	0.2

^aRelative prices of nontradables increase with the average rate seen in the 1990s. — ^bRelative prices of nontradables increase with the average rate seen in the 1980s.

Source: Own calculations.

Differences of this magnitude are unlikely to trigger fears of inflation or deflation in individual countries and can be judged to be of little relevance in the economic policy debate. But even when differentials in nontradable goods inflation would widen again to values seen over the 1980s (assumption 2), the resulting maximum difference in consumer price inflation from the EMU average would turn out to be a moderate 1.3 percentage points.¹² Apart from this, structural change is working toward the convergence of the increases in nontradable goods prices insofar as goods increasingly become tradable as a consequence of progressive deregulation in Euroland and the abolishment of still existing trade barriers as well as the perpetual decline of transport and information costs exemplified by the advent of trade via the internet.

Information on the inflation differentials to be expected for the euro area may also be inferred from recent price developments in the member countries. When short-term fluctuations due to cyclical or external factors are eliminated by calculating long-term averages, the data reveal that differences in inflation have already been very limited over the last ten years. Table 7 gives the average annual change of CPI and nominal exchange rate vis-à-vis the D-mark, respectively, over the 1989–1998 period. In addition, the change in the real exchange rate is shown, calculated as change in the nominal exchange rate corrected for differences in consumer price inflation relative to Germany. The countries can be divided into two groups, one comprising of countries with inflation rates exceeding 3 percent significantly (Italy, Spain and Portugal), and one comprising of the remaining countries with inflation between 2 and 3 percent. Inflation differentials among the countries of the latter group have already been small, the average difference with respect to the German inflation rate being 0.3 percentage points. Note that year-to-year differences have been considerably larger (1.2 percentage points). The small difference in inflation over the longer term can be explained by the fact that as a consequence of the quasi-fixed exchange rates in the European Monetary System, monetary policy as the main determinant of inflation in the long run has followed more or less the same course. This can be inferred from the stability of the central parities for most of the currencies, although a realignment had been possible within the system.¹³

Table 7: Inflation Rates and Exchange Rate Changes in Euroland, 1989–1998^a

	Consumer prices	Consumer prices relative to Germany	Nominal exchange rate vis-à-vis the D-mark	Real exchange rate vis-à-vis the D-mark ^b
Germany	2.7	.	.	.
France	2.2	-0.5	-0.1	0.4
Italy	4.5	1.8	2.9	1.1
Spain	4.7	1.9	2.5	0.6
Netherlands	2.3	-0.4	0.0	0.4
Belgium	2.3	-0.4	-0.1	0.3
Austria	2.6	-0.1	0.0	0.1
Finland	2.7	-0.1	2.5	2.4
Portugal	6.9	4.2	2.2	-2.0
Ireland	2.5	-0.2	0.7	0.9

^aAverage annual percentage rate of change. — ^bPercentage change of the nominal exchange rate minus percentage change of the consumer prices relative to Germany. An increase implies a real depreciation vis-à-vis the D-mark.

Source: IMF (1999); own calculations.

- ¹² Note that the results are derived under the assumption of internationally identical inflation in the tradable goods sector. While this assumption seems reasonable in a long-term perspective, it is likely that deviations from the average will be observed in the short term that may result in somewhat higher differences between national inflation rates. In this sense, the results presented have to be regarded as long-term results indicating structural differences in inflation.
- ¹³ Special factors can account for the devaluations of the exchange rates in the small open economies Finland and Ireland in nominal and real terms. Both currencies devalued considerably vis-à-vis the D-mark in the course of the ERM crises in 1992 and 1993 despite inflation rates that were even below Germany's inflation. In each case the exchange rate adjustment had been triggered by strong devaluations of the currency of the largest trade partner country, the pound sterling in the case of Ireland and the Swedish krona in the case of Finland.

These conclusions do not hold for the countries of the former group; here, inflation was significantly higher and the central parities were adjusted occasionally. The Italian lira even dropped out of the ERM for a couple of years. Obviously, monetary policy was too expansionary to be consistent with a stable exchange rate. In the run-up to EMU, however, the exchange rate became the main target of monetary policy and, as a result, inflation rates have converged toward the average of the latter group.

To summarize, it is fair to say that the differences in inflation rates in the euro area resulting from structural factors can be expected to remain limited. But even in the case of more pronounced deviations of national inflation from the euro area average, there would be no reason for the ECB to step in. As any other relative price, the rates of increase in relative prices of nontradables, which are the source of diverging national inflation rates, cannot be controlled by monetary policy — independently from the currency regime. The target variable of the ECB can only be the inflation rate for the whole currency area; diverging developments in individual countries should not influence the stance of monetary policy.

References

- Balassa, B. (1964). The Purchasing Power Parity Doctrine: A Reappraisal. *Journal of Political Economy* 72 (3): 584–596.
- Barro, R., and X. Sala-i-Martin (1995). *Economic Growth*. New York.
- Bode, E. (1998). *Lokale Wissensdiffusion und regionale Divergenz in Deutschland*. Kieler Studien 293. Tübingen.
- Boss, A., K.-J. Gern, C.-P. Meier, J. Scheide and M. Schlie (1999a). For a Stable Monetary Policy and Tax Competition in Euroland. Kiel Discussion Papers 338. Institut für Weltwirtschaft, Kiel.
- Canzoneri, M.B., R.E. Cumby and B. Diba (1999). Relative Labour Productivity and the Real Exchange Rate in the Long Run: Evidence from a Panel of OECD Countries. *Journal of International Economics* 44 (1): 1–25.
- Cechetti, S. (1998). Price Level Convergence among United States Cities: Lessons for the European Central Bank. Working Paper 32. Österreichische Nationalbank, Wien.
- De Gregorio J., A. Giovannini and H.C. Wolf (1994). International Evidence on Tradables and Nontradables Inflation. *European Economic Review* 38 (7): 1225–1224.
- ECB (European Central Bank) (1999a). *Monthly Bulletin*. May. Frankfurt am Main.
- (1999b). *Monthly Bulletin*. June. Frankfurt am Main.
- (1999c). *Monthly Bulletin*. August. Frankfurt am Main.
- Eurostat (1999). *Volkswirtschaftliche Gesamtrechnung*. Luxembourg.
- IMF (International Monetary Fund) (1999). *International Financial Statistics*. July. Washington, D.C.
- Lucas, R.E., Jr. (1996). Nobel Lecture: Monetary Neutrality. *Journal of Political Economy* 104 (4): 661–682.
- McCallum, B.T. (1987). The Case for Rules in the Conduct of Monetary Policy. *Weltwirtschaftliches Archiv* 123 (3): 415–429.
- Meier, C.-P. (1998). Reale Wechselkurse und internationale Wettbewerbsfähigkeit. Eine empirische Analyse der Auswirkungen von Wechselkursschwankungen für die Bundesrepublik Deutschland. Köln.
- OECD (1995). *Economic Outlook*. December. Paris.
- (1999a). *Statistical Compendium*. Volume 1. Paris.
- (1999b). *Main Economic Indicators*. August. Paris.
- (1999c). *Economic Outlook*. June. Paris.

- Quah, D.T. (1993). Galton's Fallacy and Tests of the Convergence Hypothesis. *The Scandinavian Journal of Economics* 95 (4): 427–443.
- Samuelson, P. (1964). Theoretical Notes on Trade Problems. *Review of Economics and Statistics* 46 (1): 145–164.
- Scheide, J. (1998). Central Banks: No Reason to Ignore Money. Kiel Discussion Papers 316. Institut für Weltwirtschaft, Kiel.
- Siebert, H. (Hrsg.) (1996). *Sozialpolitik auf dem Prüfstand*. Tübingen.
- (Hrsg.) (1998). *Redesigning Social Security*. Tübingen.
- Solveen, R. (1998). *Der Einfluß der Unabhängigkeit auf die Politik der Zentralbanken*. Kieler Studien 288. Tübingen.
- Ströhl, G. (1994). Zwischenörtlicher Vergleich des Verbraucherpreisniveaus in 50 Städten. *Wirtschaft und Statistik* (6): 415–433.
- Taylor, J.B. (1993). Discretion versus Policy Rules in Practice. *Carnegie-Rochester Conference on Public Policy* 39: 195–214.
- (1996). Monetary Policy Guidelines for Employment and Inflation Stability. Stanford University (mimeo).
- World Bank (1998). *World Development Indicators*. CD-ROM.