

# **EFN REPORT ON THE EURO AREA OUTLOOK**



**FALL 2002**  
**SHORT VERSION**

## About the European Forecasting Network

The European Forecasting Network (EFN) is a research group of European institutions, founded in 2001 and co-financed by the European Commission. The objective of the EFN is to provide a critical analysis of the current economic situation in the Euro area, short-term forecasts of the main macroeconomic and financial variables, policy advice, and in-depth study of topics of particular relevance for the working of the European Monetary Union. The EFN publishes two semi-annual reports, in the spring and in the fall. Further information on the EFN can be obtained from our web site, [www.efn.uni-bocconi.it](http://www.efn.uni-bocconi.it) or by e-mail at [efn@uni-bocconi.it](mailto:efn@uni-bocconi.it) .

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**Report closed on September 26, 2002**

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# Executive Summary

This Report analyses the current situation in the Euro area economy and discusses a number of policy issues concerned with the effects of fiscal policy and the convergence process in labour markets after the adoption of the common currency. We also look at the dating of business cycle turning points, and consider the consequences for the Euro area of the US current account and examine the extent to which it is structural and unsustainable. We also provide forecasts for key macroeconomic variables for 2002 and 2003 and discuss the nature of the current economic downturn and the light it throws on the conduct of economic policy in a monetary union.

The recovery from the world-wide slowdown during 2001 has proved slightly more sluggish than we expected in the Spring, and we now expect that GDP in the Euro area will grow by only 0.9 % in 2002 compared to 2001. In the Spring Report we believed that the Euro area would grow by 1.2%. However, our forecast for GDP growth in 2003 remains unchanged at 2.2%. Unemployment in the Euro area will continue to rise into 2003 to 8.6%.

The turning point that we identified in our Spring Report has now been passed and the grounds have been laid for a steady, but slow upswing in economic activity in the Euro area. The trough of the economic slowdown in the aftermath of the IT bubble has now been reached and GDP growth in the first and second quarters of 2002 was encouraging. There has not been as sharp a rise in unemployment as in previous downturns as employers anticipating a shallow slowdown, have hoarded labour. However, the absence of a quick economic recovery means

that unemployment will continue to rise into 2003.

Events in the US and Europe have confounded the pessimists. Although the NBER in the US marked March 2001 as the date on which the US went into recession, the slowdown has been very shallow. On a quarter by quarter basis GDP fell slightly in the first, second and third quarters of 2001, but resumed growing thereafter, albeit somewhat erratically. In the Euro area, GDP fell for one quarter only in 2001(q4).

Nevertheless, the reasonably benign picture for the Euro area as a whole masks big differences in economic performance between member countries, which is relevant because this is the first economic downturn during which monetary policy has been completely centralised at the ECB. The downturn has been felt much more keenly by Finland, Austria, Germany and Belgium, partly because these countries started in 2000 from a much weaker position. Other countries, such as Spain, Portugal and Greece, by contrast have managed to sustain a reasonable (though lower growth rate) throughout the downturn.

The worst performing economy is Finland with 1<sup>st</sup> quarter GDP in 2002 1.9% lower than the first quarter of 2001, much of this coming from very weak export performance. Finland's high-tech industries are particularly vulnerable to the world wide IT slowdown. Nevertheless, the downturn in Finland has not been as deep as the recession of the early 1990s, and recently there has been a sharp rise in consumer and business confidence and exports are rising again. There are also faint signs of recovery in the second quarter of 2002 in Germany, Italy and

Belgium, with a particularly sharp improvement in France.

There is a limit to how much monetary policy can insulate a small economy from a major contraction in export markets, even if monetary policy were not centralised at the ECB. Generally, those economies that have performed worst in the current downturn have been those with the greatest exposure to exports to markets outside of the Euro area. In these circumstances there is little that can be done, especially if fiscal policy under the strictures of the Stability and Growth Pact is more skewed towards medium term balance than short run output stabilisation.

While output continues to recover slowly, the outlook for the inflation rate in the harmonised index of consumer prices remains stubbornly high. The ECB is mandated by the Maastricht Treaty to maintain price stability. So the ECB does not have strict goal independence but is at liberty to decide what price stability actually means. Price stability has been defined by the Governing Council of the ECB as annual price increases of less than 2 %. But it has also been made clear that the objective of price stability should be pursued over the medium term. On this interpretation our forecasts of inflation of 2.1 % in 2003 is consistent with this approach. But it makes the 2% objective particularly vulnerable to, for example, a sharp rise in oil prices in the event of military action against Iraq.

We now summarize the contents of the policy papers contained in the Report, starting with the issue of dating the Euro area business cycle.

We need more information about Euro area business cycles as an input to the policymaking process. For example, separating out the cyclical component of fiscal policy from the underlying structural position is essential if under the Stability and Growth Pact the

automatic stabilisers are to be allowed to operate while maintaining the medium term commitment to a budget position of close to balance or in surplus. Separating out structural, long term fiscal policies from cyclical variations requires a business cycle chronology.

In the United States the NBER's dating committee has established a business chronology over a long period of time which is widely regarded as the authoritative dating of the US cycle. Economists who come up with a new technique for business cycle identification "prove" their technique by comparing their results with the NBER chronology. The NBER's committee comprises economists with expertise in various sectors of the economy and its approach is avowedly a multivariate one: they use information from a variety of sources in order to unambiguously date business cycle turning points. It would be good for Europe to establish a comparably authoritative chronology for its business cycle, perhaps through similar means to the NBER - perhaps through a different one. At risk of stating the obvious, it bears pointing out that the European situation is different in many ways from the one that faces analysts of the American cyclical experience. Not least, because of the short history of the Euro area economy, country experts might be needed more than sectorial experts. Historical analysis would be complicated by national differences, but all the more necessary for this reason. A complaint that is often made against the NBER procedure is that it can take a long while, in real time, to establish a turning point, partly for reasons to do with data revisions and availability; some of those problems are more acute in the European setting. It could be argued that with techniques at hand today nothing more is really needed than reliable GDP estimates, with the benefit

of being robust to revision, to provide reliable dating of the cycle. It would help also if there were a measure of GDP at the monthly frequency for the Euro area. In Part II of this Report we describe and apply some of the methods that are available for creating a business cycle chronology for the Euro area. The finding that most methods generate a very similar chronology, and that this chronology is rather common across Euro area countries, are encouraging.

The pooling of monetary policy in the Euro area has reawakened interest in fiscal policy and in the role that it could play in stimulating economic activity during a cyclical downturn. In the aftermath of September 11<sup>th</sup> the US not only loosened monetary policy but there was a fiscal relaxation through tax cuts and an increase in military expenditure. Here, in Part III we look, empirically, at the effect of fiscal policy in the four largest economies in the Euro area and separate out the systematic from the non-systematic parts of fiscal policy. The systematic part of fiscal policy in the form of plans for government expenditure and taxes, and the implications that this has for future taxation should have largely been internalised into saving and investment decisions. The systematic component will also contain the automatic stabilisers, or those parts of receipts and expenditures that vary with the business cycle. The non-systematic or unanticipated part of fiscal policy is that which has more relevance to short term fluctuations and to the discretionary use of fiscal policy at the level of individual countries when monetary policy is centralised in the ECB. We provide a set of stylized facts on the effects of non-systematic fiscal policy in the four largest countries of the Euro area. The stylized facts are then used to shed light on the fiscal policy coordination debate, on the effectiveness of fiscal policy in stabilizing economic activity, and on the

interaction of fiscal and monetary policy.

We find that there are relevant differences in the effects of non-systematic fiscal policy across countries, and substantial uncertainty about the size of these effects, which casts doubts on the possibility of a fiscal coordination, or at least complicates its implementation. The presence of spillovers across countries, another justification for a coordinated fiscal policy, is also uncertain, and their size turns out to be small.

Moreover, unanticipated changes in government expenditure are found to be largely ineffective in changing output or reducing its volatility, possibly with the exception of government investment, and, since they are not accompanied by tax increases that balance the budget, they can require deficit financing. There are minor differences between more discretionary policies, such as government consumption, and automatic stabilizers, such as social benefits. Tax shocks also appear to have minor effects on output, and tax cuts could also require deficit financing because of the sluggish reaction of expenditures. These findings suggest focusing more on an accurate specification and implementation of the systematic part of fiscal policy rather than trying to stabilize the economy with fiscal shocks.

The single market programme has helped to liberalise markets and to reduce non-tariff barriers to trade between the nation states of the European Union. However, much of this reform process has been confined to product and capital markets. While this matters a lot for the economic benefits that flow from specialisation, greater consumer choice and lower prices, the reform of labour markets has been much more timid. Yet the proper functioning of labour markets is a crucial part of the

move towards a better functioning currency area. Labour mobility and flexible wages play an important role in adjusting to non-symmetric economic shocks when individual nations do not have independent control over monetary policy, and fiscal policy is constrained. In Part IV of this Report we consider a number of issues that arise in the labour market with a common currency. There are already in place mechanisms for the regular monitoring of product and capital markets through the so-called *Cardiff Process*. However, there is not an equivalent process for labour markets. The Amsterdam Treaty commits the European Union to a high level of employment as an explicit objective and this was reiterated in Lisbon. But it is not clear how this translates into labour market performance and the role that the labour market will play in helping the process of economic and monetary convergence. The convergence of unit labour costs and productivity across the countries in the Euro area is studied in Part IV of this Report. It is found that while there has been convergence in the growth of nominal wages across the Euro area as inflation in prices and wages has converged in the movement towards a single currency, convergence in the levels of productivity has been absent. The danger is that with the transparency that a single currency brings, there will be increased convergence of nominal wages without improvements in productivity that ultimately determine standards of living.

Part V deals with an external development particularly important for the Euro area. In 2001 the US current account deficit reached 4.1% of GDP. The worry is that if the deficit does not move back closer to balance or keeps widening, U.S. external liabilities would represent a growing share of world portfolios. At some point investors

could become unwilling to hold dollars. The ensuing large adjustment in the current account and fall in the external value of the dollar could lead to substantial dislocations in the world economy and disruptions in U.S. and world financial markets.

The central issue is what is a sustainable current account deficit for an economy such as the US whose currency is very widely used for trading purposes. In Part V we examine two approaches. In the first, an intertemporal approach to the balance of payments emphasises both the importance of domestic saving and investment decisions and the role of international portfolio decisions by both domestic residents and foreigners. The question is what deficit is consistent with a number of reasonable assumptions about US growth, changes in the real exchange rate, import penetration and desired portfolio holdings. Calculations suggest that a deficit of 3.5% of GDP is sustainable.

The second approach is more quantitative, and decomposes the deficit into its cyclical and structural components. The results suggest that there is a distinctive cyclical component to the deficit. The current account shows small surpluses during the recessions of the early 1980s and 1990s and large deficits during the peaks of the mid-1980s and late 1990s. By contrast, the structural deficit is that path for the deficit consistent with the average (1980 – 2001) real exchange rate and US growth relative to the rest of the world. On this interpretation the difference between the actual deficit and the structural deficit can be attributed to the faster rate of growth of the US economy relative to the rest of the world.

A real business cycle interpretation of this finding is that the technological shock coming from electronics and IT has been taken up much more quickly

during the 1990s by the US compared to elsewhere. Since domestic savings are unlikely to rise, the investment boom domestically has to imply a current account deficit. The question is what the medium term outlook will be. In the standard growth model a technological shock will only affect growth over the medium term as the capital stock rises. However, once the technology has been

fully taken up elsewhere the (comparatively) high growth rate in the US will recede and the current account will move back towards a lower equilibrium. When this will happen depends upon how quickly the rest of the world adopts the productivity enhancing technologies coming from IT as fully as the US.

### **Highlights for the Euro area Economy**

- The Euro area will grow by 0.9% in 2002 and 2.2% in 2003.
- Inflation in the harmonised consumer price index is forecast to average 2.3 % in 2002 and to decline slightly in 2003 to 2.1%.
- Exports will rise by 1.7% in 2002 and on the back of a strong recovery in world trade by 8.7% in 2003.
- Investment remains very weak, falling by 1.7% in 2002 and rising by only 2.3% in 2003.
- Private consumption, after growing by only 1.8% in 2001, rises by only 0.5% in 2002 and 1.4% in 2003.
- The euro is forecast to be 2.0 % higher during 2002 and slightly lower by 0.6 %% in 2003.

Table I.1: Economic Outlook for the Euro area

	1999	2000	2001	2002: 2nd half	2002: annual	2003: annual				
				Point Forecast	Interval Forecast	Point Forecast	Interval Forecast	Point Forecast	Interval Forecast	
GDP	2.8	3.5	1.5	1.4	1.1 1.8	0.9	0.7 1.1	2.2	1.7 2.7	
Potential Output	2.6	3.2	2.4	2.3	2.0 2.5	2.4	2.1 2.8	1.9	1.3 2.5	
Private Consumption	3.5	2.5	1.8	0.5	-0.1 1.1	0.5	0.1 0.8	1.4	0.6 2.2	
Government Consumption	1.9	1.9	1.9	1.6	1.3 1.8	1.7	1.6 1.8	1.2	0.9 1.6	
Fixed Capital Formation	5.9	4.8	-0.6	-0.7	-2.3 1.0	-1.7	-2.6 -0.9	2.3	0.0 4.5	
Inventories / GDP	0.2	0.2	-0.2	0.0	-0.2 0.2	-0.1	-0.2 0.0	0.3	0.0 0.5	
Exports	5.3	12.4	2.5	4.8	3.6 6.1	1.7	1.0 2.3	8.7	6.8 10.5	
Imports	7.4	11.1	1.1	3.5	1.8 5.3	0.1	-0.8 0.9	8.6	6.3 10.8	
Unemployment Rate	9.5	8.5	8.0	8.4	8.3 8.4	8.3	8.2 8.3	8.6	8.4 8.9	
NAIRU	9.7	9.1	8.5	8.2	8.1 8.3	8.2	8.2 8.3	8.3	8.0 8.5	
World Trade	6.3	12.1	0.5	8.9	7.6 10.2	4.6	3.9 5.2	10.2	8.6 11.8	
Euro Nominal Effective Exchange Rate	-5.8	-11.1	1.8	3.2	-0.3 6.4	2.0	0.2 3.6	-0.6	-5.6 4.3	
Euro Real Effective Exchange Rate	-5.6	-10.2	2.8	4.3	0.9 7.5	3.3	1.6 4.9	-0.3	-5.3 4.5	
Short Term Interest Rate	3.0	4.4	4.3	3.4	3.0 3.7	3.4	3.2 3.6	3.7	3.2 4.4	
Long Term Interest Rate	4.7	5.4	5.0	5.2	4.9 5.6	5.2	5.0 5.4	5.2	4.6 5.8	
Labour Cost Index	2.3	3.2	3.3	3.4	3.1 3.7	3.6	3.4 3.8	2.6	2.1 3.1	
Labour Productivity	1.0	1.1	0.5	0.4	-0.3 1.0	0.4	0.2 0.6	2.3	1.6 2.9	
HICP	1.1	2.4	2.5	2.3	1.9 2.7	2.3	2.1 2.5	2.1	1.3 2.9	
Deflator Private Consumption	1.7	2.1	2.4	2.3	1.9 2.7	2.4	2.2 2.6	1.9	1.5 2.4	
GDP Deflator	1.8	1.3	2.3	2.0	1.5 2.4	2.1	1.9 2.4	1.7	1.2 2.3	

Percentage change in the average level compared with the same period a year earlier, except for unemployment rate, NAIRU and interest rates that are expressed in levels. Point forecasts and 80% confidence bounds are taken from EFN forecasting models and based on 2000 stochastic simulations.

## Table of Contents

PART I Euro area conjunctural analysis.....	1
Current economic situation – Overview .....	1
The outlook for 2002 and 2003.....	2
PART II: Dating the Euro area business cycle .....	5
The aggregate cycle .....	6
Country-specific cycles.....	8
Cyclical concordance .....	8
Conclusions .....	9
Part III: The Role of non-systematic fiscal policy in the Euro area .....	12
The effects of fiscal shocks.....	13
The effects of macroeconomic variables .....	14
Cross-country spillovers .....	14
Disaggregating taxes and government expenditure .....	15
Conclusions .....	16
Part IV The evolution of labour costs in the context of a currency union.....	18
Unit labour costs and labour market institutions .....	19
Convergence of wages, productivity and labour costs in Euro area countries .....	19
Policy guidelines.....	21
Part V The US current account deficit .....	22
Two approaches to sustainability.....	22
Simulations with MARMOTTE .....	24
Effects on the Euro area.....	25

## PART I Euro area conjunctural analysis

### Current economic situation – Overview

**G**DP in the Euro area grew by 1.4% during 2001. Over the course of the year, growth rates declined, and in the fourth quarter, seasonally adjusted GDP even dropped by 0.3%, compared to the previous quarter. But compared to previous economic downturns and the magnitude of the fall in world equity markets, the unwinding of the IT boom and the sharp shock to consumer and business sentiment after September 11<sup>th</sup> 2001, the downturn has been comparatively mild and shallow. The loosening of monetary policy during 2001 by the ECB and the US Fed appears to have done the trick. Nevertheless, there are still a number of major imbalances and continuing uncertainty and volatility in equity markets. Political and military events in the Middle East have increased uncertainty about oil prices, and investment in the private sector remains weak. There is little prospect of sharp improvement in economic performance in the next eighteen months.

In the first half of 2002 a slow economic recovery has begun in the Euro area. On a quarter by quarter basis, seasonally adjusted GDP grew by 0.4% in the first quarter and by 0.3% in the second. While in the first quarter Euro area growth had been driven by net exports, in the second quarter household consumption has also started to recover. The latter fell by 0.2% in the first quarter, followed by an increase of 0.4%. A significant unexpected increase of inflation in January exerted a negative influence on real disposable income. The rise in inflation was mainly caused by high food prices due to unfavourable weather conditions in southern Europe. In addition,

households faced a considerable plunge of equity wealth due to the stock market decline. Furthermore, unfavourable employment expectations caused households to restrain from spending. This is reflected in the retail confidence indicator which declined in January and February and has remained almost unchanged since then. With 0.8% negative rate in the second quarter, investment dropped for the sixth consecutive quarter. Capacity utilization in the manufacturing sector continued to decline in the first half 2002. Uncertainty about future profit prospects is still prevalent. This is reflected in the unclear trend in the industrial confidence indicators published by the EU commission. After stagnating in April, industrial confidence improved slightly in May, but fell again in June and stagnated in July. In the second quarter, exports including intra-area trade increased by 2%, after a slight increase between January and March. In 2001, exports had dropped in each quarter. Imports continued to decline in the first quarter of 2002, but increased by 1.7% in the second. Net exports contributed 0.3 percentage points to overall GDP growth in the first quarter and 0.1 percentage points in the second. The resurgence of export growth was driven by the ongoing recovery of the world economy, notably in the US, in the first quarter. Euro area imports followed the path of weak domestic demand.

The slight recovery of the Euro area economy in the first half of this year is also prevalent in industrial production. After declining in each quarter of 2001, seasonally adjusted industrial production grew by 0.9% in the first quarter and by 0.25% in the second. After an increase from January to March, production of intermediate goods declined again in April and May,

before recovering again in June. The declining trend in the production of capital goods that started in June 2001 could be reversed in January. This can be taken as an evidence for a stabilisation of investment activity. However, the recovery does not seem to be very robust at the current stage which can be seen from the interruption of the positive development in May.

The inflation rates during the first seven months of 2002 have been above the forecasted path estimated in the Spring 2002 EFN Report. This has been mainly due to a one-off upward movement in prices concentrated basically in the month of January and in the prices of food, energy and services, associated in part with the introduction of euro notes and coins. As a consequence, the rate of core inflation, which excludes prices of non-processed food and energy, in August 2002 has been 2.5%. A study of the forecast errors in the different components of the HICP and a corresponding intervention analysis suggests that rounding effects related to the introduction of the euro could have pushed up the prices of food and services, with a total effect on the core inflation rate of around three tenths of a percentage point. Therefore, it can be said that euro rounding effects are responsible for the slightly higher-than-expected level of core inflation experienced in these months of 2002. Total inflation has also been affected by upward movements in energy prices.

In conclusion, as forecasted in the Spring Report, inflation in the Euro area has been decreasing through 2002 but from a higher-than-expected inflation rate registered in January 2002 due to euro rounding effects, seasonal price effects and upward movements in crude oil prices.

## **The outlook for 2002 and 2003**

Table I.1 provides an overview of the expected developments of the macroeconomic indicators in 2002 and 2003. Point forecasts are shown together with 80% confidence bands. The point forecast for Euro area GDP growth is 0.9% for 2002 and 2.2% for 2003. Given the confidence bands, with a probability of 80% the actual GDP growth rate will be in the range of 0.7% to 1.1% in 2002. Next year the expected GDP growth rate will fall into the range 1.7% to 2.7%. In 2002, economic activity will remain sluggish in the Euro area. Therefore, imports will stagnate, while exports will grow moderately. Thus, this year the main contribution to GDP growth will stem from net exports. In 2003 when the recovery of the world economy stimulates domestic activity of the Euro area, domestic demand will be the driving force of GDP growth. Potential output will grow by 2.4% in 2002 and by 1.9% in 2003. The decline in the growth rate can be explained by the negative performance of investment. As in 2002, capital formation will decrease for the third consecutive year, capital accumulation will also be sluggish which has adverse effects on potential GDP. Due to the low growth rates of both actual and potential GDP, the output gap will not be closed until the end of 2003. Therefore, from this side there will be no inflationary pressure. The labour market reacts to the development of production with a time lag. Therefore, and due to weak GDP growth over the forecasting horizon, unemployment will continue to rise until the end of 2003 when it reaches 8.6%. In addition, high wage growth in the past exerts a negative influence on employment creation with a time lag. In 2003, wages will increase at a lower rate as actual unemployment increases whereas the NAIRU remains more or less stable.

After low economic growth last year, the recovery of the world economy that started at the beginning of 2002 will remain sluggish in the remaining course of this year. It will gain momentum next year. Due to a negative carry over effect and a weak first half of the year, the average annual growth rate of world trade will only reach 4.6% in 2002. In 2003, world trade will increase by 9.6%.

From a high of 1.14 euro to the dollars in April of 2002, the exchange rate in the last three months has stabilised just above one. There are always particularly large margins of error associated with forecasting exchange rates, but we expect that it will remain broadly where it is to the end of 2002 and through 2003. The real euro exchange rate should also remain constant in 2003 and appreciate by about 3% in 2002.

Table I.2: Contribution to change in GDP

	2001	2002	2003
<i>Domestic Demand</i>	0.9	0.3	1.9
Private Consumption	1.0	0.3	0.8
Government Consumption	0.4	0.3	0.2
Fixed Capital Formation	-0.1	-0.4	0.5
Change in Inventories	-0.4	0.1	0.4
<i>Net Exports</i>	0.6	0.6	0.3
Exports	1.0	0.6	3.3
Imports	-0.4	-0.0	-3.0
GDP	1.5	0.9	2.2

Percentage points

The year-on-year inflation rate is expected to increase from 1.9%, the value in July, to 2.5% in December 2002 and then oscillate around a 2% mean value in 2003. A similar pattern is expected for the annual percentage change in prices, with values of 2.3% for 2002 and 2.1% for 2003 (see Tables I.1 and I.3). The higher inflation rates forecasted for the last part of 2002 are mainly due to the expected behaviour of energy prices which, during this part of 2001, showed a negative mean value of 0.94%. Core inflation is expected to be quite stable around 2.5% in the remaining months of 2002 and to drop to 2.3% in 2003, because rounding effects will no longer be present. Total inflation in 2003 will also benefit from an expected zero inflation rate in energy consumer prices.

The above results also imply that the inflation target will not be fulfilled in the last four months of 2002 and that the probability of reaching it at the average annual rate for 2003 is just 50%. The important point in this respect is that core inflation has not been below 2% since March 2001. The ECB is enjoined by the Maastricht Treaty to use the harmonised index of consumer prices in its pursuit of price stability. So the question is why they should look also at something like core inflation. One answer is that the price stability requirement is rightly conceived of as a medium term target and there are going to be a number of perturbations to inflation in the short run that ought not invite adjustments in monetary policy. Hence, tracking core inflation, which excludes volatile items such as food, tobacco and energy, may provide a

better guide to medium term developments in inflation.

Another possibly worrying feature of inflation in the Euro area is that consumer prices of non-energy industrial goods are expected to grow at year-on-year rates around 1.5% in 2002 and 1.2% for 2003, while the corresponding rates for the US are

minus 1.4% for 2002 and minus 0.6% for 2003. The different degree to which the US is incorporating technological innovations could be the reason for this important differential. Policy measures which introduce more competitiveness into European markets could induce firms to invest more in new technologies.

Table I.3: Inflation Rates in the EMU and in the US

	Forecasts		
	2001	2002	2003
<b>TOTAL INFLATION</b>			
Euro area (100%).	2.5	<b>2.3</b>	<b>2.1</b>
US (81.5%).	2.6	<b>1.0</b>	<b>2.1</b>
<b>CORE INFLATION</b>			
Services and Non-energy industrial goods excluding food and tobacco.			
Euro area (70.97%).	1.9	<b>2.5</b>	<b>2.3</b>
US (56.4%).	2.1	<b>1.6</b>	<b>1.9</b>
<b>DIFFERENT COMPONENTS OF CORE INFLATION</b>			
(1) Services.			
Euro area (38.90%).	2.5	<b>3.2</b>	<b>3.2</b>
US (27.4%).	3.6	<b>3.7</b>	<b>3.5</b>
(2) Non-energy industrial goods excluding food and tobacco.			
Euro area (32.07%).	1.1	<b>1.5</b>	<b>1.2</b>
US (29.0%).	-0.2	<b>-1.4</b>	<b>-0.6</b>

Percentage change in the average level compared with the same period a year earlier. In brackets we show the percentage coverage of each index compared to the HICP. The US index covers 81.4% of the items included in the HICP. The excluded item is the imputed rent on privately owned property.

## PART II: Dating the Euro area business cycle

The business cycle is commonly understood to mean broadly-based co-movements of economic variables in a sequentially oscillatory manner. The term 'cycle' is a misnomer to the extent to which it suggests a regular periodicity, though the term has been in use for more than a century (trade cycles were a preoccupation of many economists of the 19<sup>th</sup> century). One of the features of real world business cycles is that their length and depth (duration and amplitude) seems to vary. Indeed one of the current preoccupations of US business cycle experts is to explain the apparent recent lengthening of the cycle there.

Two definitions of the cycle are often used - the so-called classical cycle and the growth or deviation cycle. The difference between the two is conceptually simple. In the case of the deviation cycle, turning points are defined with respect to deviations of the rate of growth of GDP from an appropriately defined trend rate of growth. There is a large technical literature which is concerned with the best method of extracting a trend from the data and it turns out that the exact method adopted may carry quite important implications for the subsequent dating of the turning points. The classical cycle, by contrast, selects its turning points on the basis of an absolute decline (or rise) in the value of GDP.

In early post-war decades, especially in Western Europe, growth was relatively persistent and absolute declines in output were comparatively rare; the growth cycle then seemed to be of more analytical value especially as inflexions in the rate of growth of output could reasonably be related to fluctuations in the levels of employment and

unemployment. In more recent decades, however, there have been a number of instances of absolute declines in output, and popular description at any rate has focused more on the classical cycle (for example there is a widespread impression that a recession defines itself as two consecutive quarters of absolute decline). In addition, the concern mentioned above that de-trending methods can affect the information content of the series in unwonted ways, has reinforced the case for examining the classical cycle. In this paper we perform our dating exercise on both concepts of the cycle.

We need more information about Euro area business cycles as an input to the policymaking process. For example, separating out the cyclical component of fiscal policy from the underlying structural position is essential if under the Stability and Growth Pact the automatic stabilisers are to be allowed to operate while maintaining the medium term commitment to a budget position of close to balance or in surplus. Separating out structural, long term fiscal policies from cyclical variations requires a business cycle chronology.

Moreover, if there are business cycle downturns, then from the point of view of an optimal currency area, the more synchronized they are between the nation states of the Euro area, the easier it will be set monetary policy at the aggregate level. In the longer term economic integration is likely to alter the business cycles of individual countries, but in the short term we need to monitor the way in which business cycles behave in individual countries to ensure that over time there is as great a degree of synchronisation as is consistent with the efficient working of product and labour markets.

In the United States the NBER's dating committee has established a business chronology over a long period of time which is widely regarded as the authoritative dating of the US cycle. Economists who come up with a new technique for business cycle identification "prove" their technique by comparing their results with the NBER chronology. The NBER's committee comprises economists with expertise in various sectors of the economy and its approach is avowedly a multivariate one: they use information from a variety of sources in order to unambiguously date business cycle turning points. Here we apply some techniques to the Euro area that are easier to use and can be more timely. It would be good for Europe to establish a comparably authoritative chronology for its business cycle, perhaps through similar means to the NBER - perhaps through a different one. At risk of stating the obvious, it bears pointing out that the European situation is different in many ways from the one that faces analysts of the American cyclical experience. Not least, because of the short history of the Euro area economy, country experts might be needed more than sectorial experts. Historical analysis would be complicated by national differences, but all the more necessary for this reason. A complaint that is often made against the NBER procedure is that it can take a long while, in real time, to establish a turning point, partly for reasons to do with data revisions and availability; some of those problems are more acute in the European setting. Then also, it might be argued that with techniques at hand today nothing more is really needed than reliable GDP estimates, with the benefit of being robust to revision, to provide reliable dating of the cycle. To provide more accurate dating, better monthly data are certainly needed.

## **The aggregate cycle**

This section analyses aggregate time series data available for the Euro area both from the perspective of the classical and deviation cycle approaches. The emphasis is on Euro area GDP, measured at constant prices.

### *The Classical business cycle*

Our classical business cycle chronology is presented compactly in Figure II.1. Two alternative measures of Euro area GDP are employed: the ECB series and the series produced by Beyer, Hendry and Doornik. The former has a longer sample period (1970-2001) than the latter (1980-2001) and reveals one more cycle. Otherwise, the three cycles identified in the shorter data period overlap almost exactly, the only difference being in the location of the last trough which is anticipated by one quarter if one takes the BDH measure, and the three decades from 1970 comprise four cycles altogether. It should also be noticed that the two quarters' recession in 1982 is a minor event and would be censored if the dating algorithm was tailored to impose minimum requirements on the depth of recessions and expansions; we will return to this issue shortly.

Table II.1 displays some descriptive statistics. There is a notable asymmetry between the average length of expansions and recessions, the former much longer (28 quarters) than the latter (3 quarters), which is to be expected of classical cycles in a growing economy. The probabilities of being in one or other phase reflect the relative values of these phase lengths over the sample period. The amplitudes of the expansion periods are also much bigger than those of the recession periods. "Steepness", following the suggestion of Harding and Pagan (2001) is measured as the quotient of the amplitude and the duration of the phase. Expansions last

longer, and are steeper than recessions, which are quite brief and yet more gently sloped. The shape of the euro business cycle is much as we would expect from previous analysis of country based business cycles.

### *Deviation Cycles*

An alternative business cycle definition refers to the recurrent, though not strictly periodic, deviations around the long term path of the series. The deviation or growth cycle typically involves trying to capture what is essentially an unobserved component and various methods have been proposed to extract it.

Figure II.2 presents several measures of the deviation cycle in the Euro area GDP, with the associated turning points. The first measure (displayed in the upper left panel) is derived using the Baxter and King filter, which is available for the central part of the sample excluding the first and last 12 quarters: this loss of data is a major drawback of the Baxter-King filter. The second, displayed on the upper right panel, is the Hodrick-Prescott cycle. By the judicious choice of HP dampening parameter it is possible to mimic very closely the results of the Baxter-King filter, yet avoiding the penalty of losing data. As can be seen for the period covered in common by the two methods, the band pass filter closely replicates the cycle estimates produced by the Baxter-King filter, albeit with some additional noise - without losing the estimates at the beginning and end of the sample. Finally, the bottom panels display measures of the output gap derived respectively from a bivariate model of GDP and CPI

inflation and a multivariate model based on total factor productivity, labour force participation rates, the unemployment rate, capacity utilization and CPI inflation. This method contrasts with the statistical methods of separating out the cycle from the trend by using a production function. The notion of an output gap is in principle more useful than the deviation cycle, since it provides a measure of inflationary pressures.

Figure II.2 shows a broad agreement in identifying turning points: the 74.1 and 80.1 peaks are common to all four methods. The location of the start of the 90s recession is more uncertain since there are two neighbouring peaks at the beginning of 1990 and 1992 which is a feature of the expenditure components and the GDP of individual countries. Also the beginning of the 80s expansion is scored differently by the different methods. This is likely due to minor differences in the timing of the cycle in the largest Euro area countries, (see next section).

The right hand part of Table II.1 presents some characteristics of the deviation cycles extracted by the HP quarterly band pass filter when no censoring rule on the amplitude of the fluctuations is invoked. It can be seen that this results in a relatively large number of turning points which affects the statistics for duration and amplitude. A stylized fact, however, that is robust to the choice of censoring rules is that the average amplitude of recessions and expansions is about the same, as implied by the symmetry of the cyclical model or signal extraction filter.

Table II.1: BC dating of Euro area time series: summary statistics

	Classical BC dating	Deviation BC dating
Number of cycles P-P	4	10
Number of cycles T-T	4	9
Average Expansion Prob.	0.9032	0.6290
Average Recession Prob.	0.0968	0.3710
Average Duration of Exp.	28	7.8
Average Duration of Rec.	3	5.1111
Average Amplitude of Exp.	0.2117	0.0159
Average Amplitude of Rec.	-0.0143	-0.0168
Steepness of expansions	0.0076	0.0020
Steepness of recessions	-0.0048	-0.0033

### Country-specific cycles

Our focus so far has been on the Euro area aggregate. But there is also interest in the business cycles of individual countries. We focus on two data sets, the first relating to GDP at constant prices for five countries, Germany, France, Italy, UK and the US, starting from 1970 and available from various sources, among them the OECD's Main Economic Indicators and the US Bureau of Economic Analysis. For Germany the series, made available by the IFO, has been seasonally adjusted, and corrected for working days and the level shift due to reunification, using the basic structural model with regression effects. The Euro area series is used for comparison. The second set is produced by Eurostat and provides a highly comparable set of statistics on real GDP based on the new system of national accounts (ESA95), for a larger set of countries but for a shorter time span, beginning in 1980 for most countries.

Figure II.3 presents the turning points of the classical business cycle for the Euro area, Germany, France, Italy, UK and the US. A visual inspection of Figure II.3 suggests a large degree of synchronization and concordance among the Euro area country specific business cycles.

One feature of the performance of the US economy in the 1990s has been the sustainability (until the downturn of 2001) of the upswing from the recession of the early 1990s. This has been thought of particular note and some have pointed to it as evidence of a trend breaking jump in US productivity growth as a result of the rapid adoption of new technologies in telecommunications. However, we can also observe a similarly sustained cyclical upswing in the Euro area. Figure II.3 shows that in the Euro area after the downturn in 1992, the Euro area also experienced a sustained upswing until 2002. This development has been disguised by the varying performance of individual countries and their exposure to idiosyncratic shocks, for example reunification in Germany.

However, it is also true that over the period from the first quarter of 1992 to the last quarter of 2001 GDP in the US grew by 36%, the Euro area by 19% and Japan by 9%. This more than anything points to the need for the full implementation of the structural reforms in product, labour and capital markets in order to allow the Euro area to match the growth rates of the US.

### Cyclical concordance

A simple measure of cyclical concordance between two countries can

be based on the proportion of the time that they share the same phase (expansion, recession), but because of the bias towards expansion, this is not a very revealing measure. If we correct this measure for this bias and then divide the consequent mean-corrected index of concordance by its standard error, we can arrive at a standardized index of concordance. Table II.2 displays the standardized index of concordance between the classical business cycles for the individual

countries and the Euro area aggregate cycle. The UK cycle shows even less concordance with the Euro area cycle than the US.

The standardized concordance indexes based on deviation cycles are reported in Table II.3. These results largely confirm the presumption of a high degree of synchronization within the Euro area. But now the UK is slightly more synchronized with the Euro area than the US.

Table II.2: Classical BC: Standardised Concordance Index

	EA	D	UK	F	I	US
EA	-	7.15	2.48	6.29	6.35	3.40
D	7.15	-	1.93	5.41	5.43	4.43
UK	2.48	1.93	-	3.00	2.33	3.50
F	6.29	5.41	3.00	-	4.59	1.92
I	6.35	5.43	2.33	4.59	-	3.20
US	3.40	4.43	3.50	1.92	3.20	-

Table II.3: Deviation Cycle: Standardised Concordance Index

	EA	D	UK	F	I	US
EA	-	4.83	3.42	4.71	5.77	2.75
D	4.83	-	2.95	2.66	3.48	2.53
UK	3.42	2.95	-	2.07	2.33	2.26
F	4.71	2.66	2.07	-	3.67	2.47
I	5.77	3.48	2.33	3.67	-	1.90
US	2.75	2.53	2.26	2.47	1.90	-

## Conclusions

We have reported the results of technical exercises in the dating of the Euro area business cycle and the cycles of the main constituent economies. We distinguished between the classical and deviation (or growth) cycle, and used what we regard as best-practice techniques to identify these cycles, in every case concentrating upon a single, univariate summary of economic

activity. We also examined the degree of synchronicity or coherence between the cycles. For the purpose of monitoring the integration of the Euro area, it is important to be able to track movements in the coherence of the cyclical experience of the Euro area. Timely evidence of a possible fall in the degree of coherence between parts of the Euro area may require changes in policy to prevent the fragmentation of economic activity and increases in inequality between different regions.

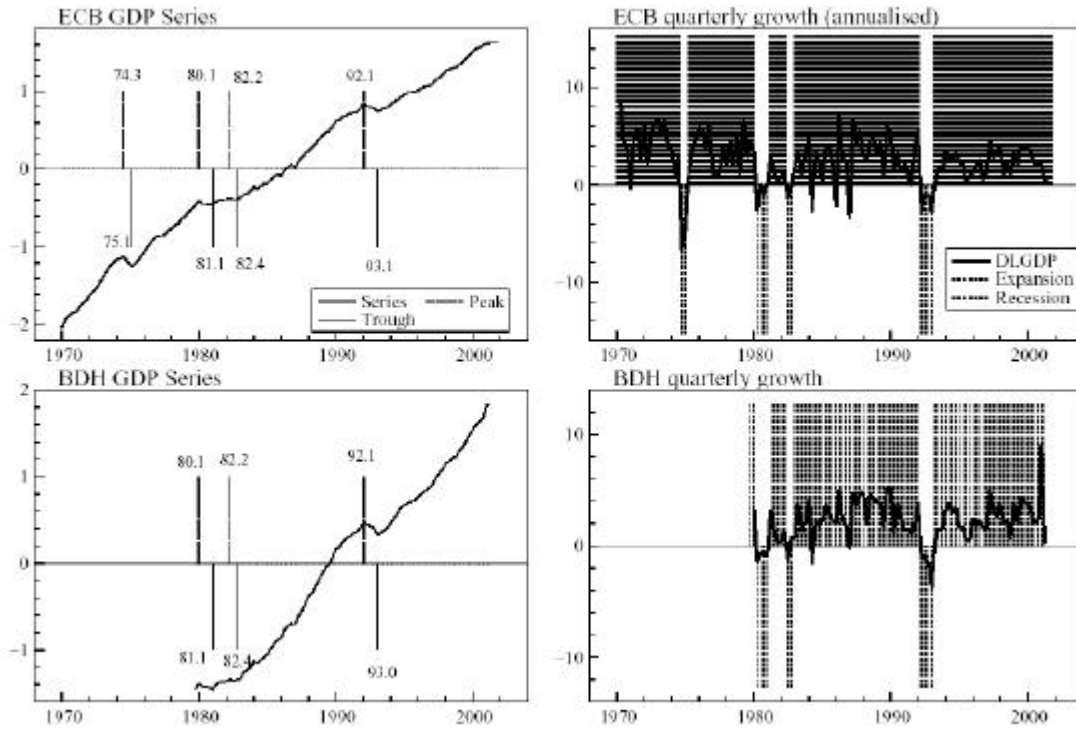


Figure II.1: Classical cycle turning points, expansions and recessions, in the Euro area quarterly real GDP (seasonally adjusted, logarithms); ECB series and Beyer, Doornik and Hendry (2000) estimates.

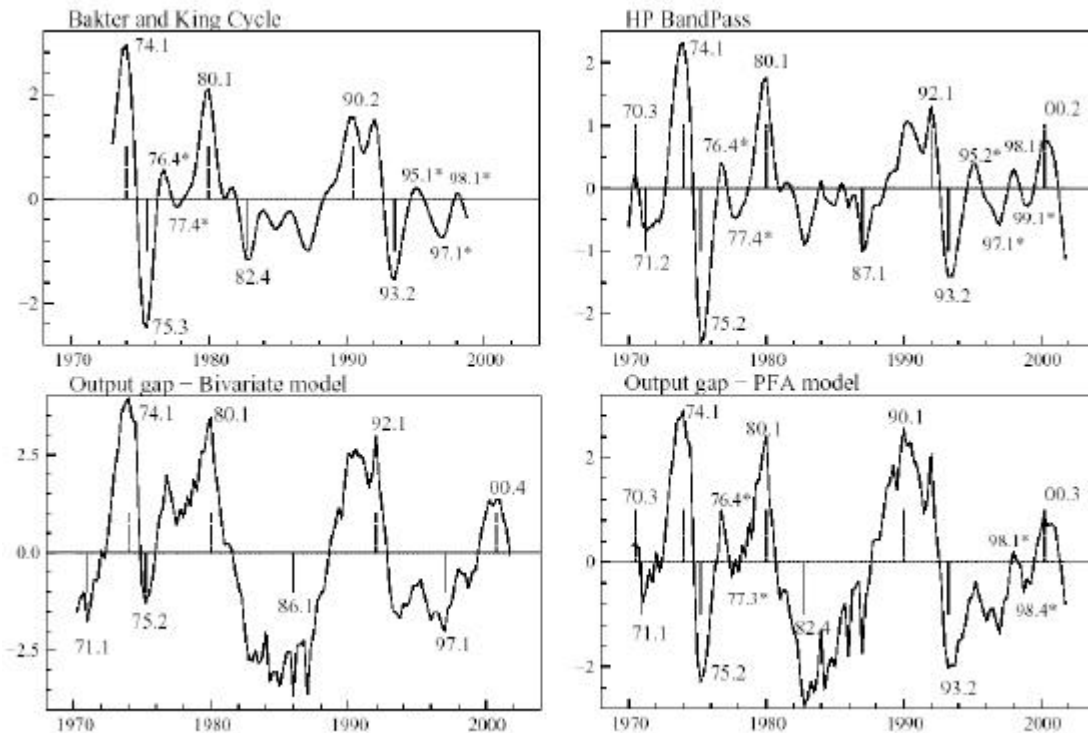


Figure II.2: Turning points for four alternative measures of the Euro area deviation cycle. An asterisk (\*) denotes a turning point that was censored according to amplitude considerations (see text for details).

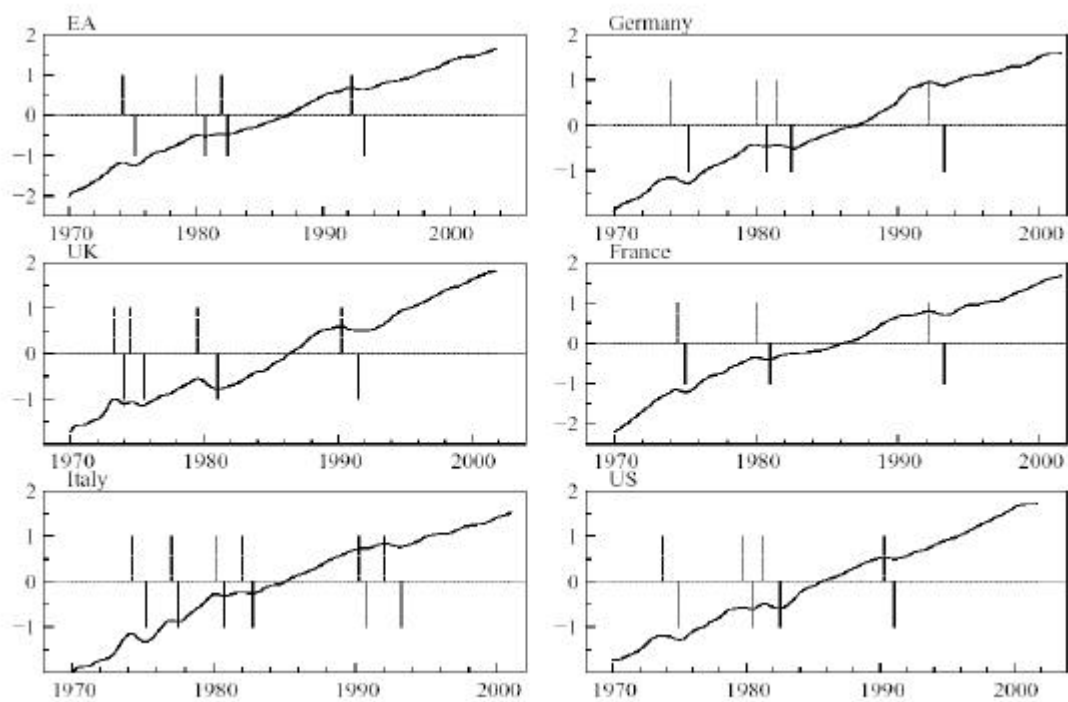


Figure II.3: Classical cycle turning points for EA, Germany, France, Italy, UK and the US, based on HP(1.25) filtered quarterly real GDP.

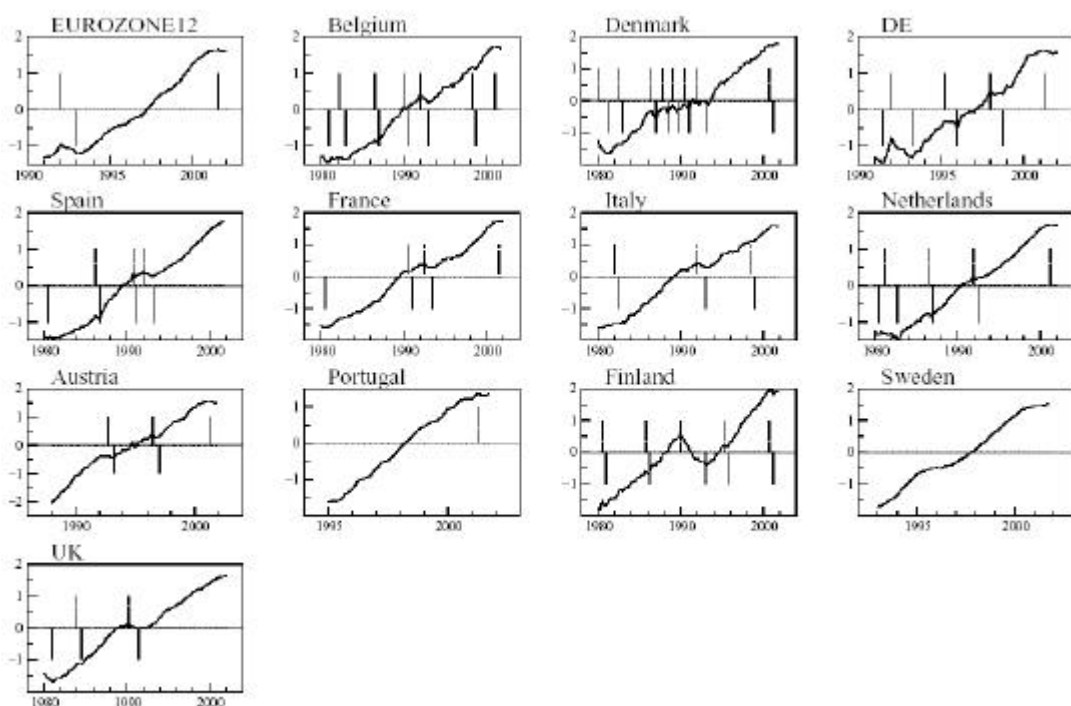


Figure II.4: Classical cycle turning points, for the Euro area countries based on quarterly real GDP (seasonally adjusted, logarithms); Eurostat series, 1980.1-2002.1.

## Part III: The Role of non-systematic fiscal policy in the Euro area

The increased centralisation of monetary policy across the world, into currency boards or through dollarisation, or by the pooling of monetary policy as in the Euro area, has reawakened interest in fiscal policy and in the role of fiscal policy in stimulating economic activity. Here we look, empirically, at the effect of fiscal policy in the four largest economies in the Euro area and separate out the systematic from the non-systematic parts of fiscal policy. The systematic part of fiscal policy in the form of plans for government expenditure and taxes, and the implications that this has for future taxation should have largely been internalised into saving and investment decisions. The non-systematic or unanticipated part of fiscal policy is that which has more relevance to short term fluctuations and to the use of fiscal policy at the level of individual countries when monetary policy is centralised in the ECB, within the confines of the Stability and Growth Programme. This part provides a set of stylized facts on the effects of non-systematic fiscal policy in the four largest countries of the Euro area. The stylized facts are then used to shed light on the fiscal policy coordination debate, on the effectiveness of fiscal policy in stabilizing economic activity, and on the interaction of fiscal and monetary policy.

We find that there are big differences in the effects of non-systematic fiscal policy across countries, and substantial uncertainty about the size of these effects, which casts doubts on the possibility of a fiscal coordination, or at least complicates its implementation. The presence of spillovers across countries, another justification for a coordinated fiscal policy, is also

uncertain, and their size turns out to be small.

Moreover, unanticipated changes in government expenditure are found to be largely ineffective in changing output, possibly with the exception of government investment, and, since they are not accompanied by tax increases that balance the budget, they can require deficit financing. There are minor differences between more discretionary policies, such as government consumption, and automatic stabilizers, such as social benefits. Tax policies also appear to have minor effects on output, and tax cuts could also require deficit financing because of the sluggish reaction of expenditures.

As far as the interaction with monetary policy is concerned, fiscal policy shocks appear to have an impact on interest rates, either directly or through the output gap and inflation, and the exclusion of fiscal variables can bias, in a few cases, the evaluation of the effects of monetary policy. On the other hand, the effects of monetary policy on disbursements and receipts seem to be minor.

A few caveats are in order to interpret correctly our results. First, there is an implicit assumption that the fiscal shock exerts its effects when it is implemented rather than when it is announced. Second, we stress that we focus on non-systematic fiscal policy, and that the effects of systematic policy could be rather different. Third, we focus on the effects of fiscal variables on key macroeconomic variables such as output growth and inflation, but there can be other welfare effects of fiscal policy, e.g. on income distribution or quality of life that are not captured. Finally, other studies have found substantially different effects after the '70s so we

focus on the period 1981-2001. The drawback is that the limited number of observations results in substantial uncertainty about the estimated effects.

### **The effects of fiscal shocks**

In this section we evaluate the effects of a shock to government disbursements or receipts in Germany, France, Italy and Spain. In the first subsection we discuss the dynamic responses of the variables of interest to fiscal shocks. In the second subsection we conduct a counterfactual experiment. We dynamically simulate the model setting to zero the fiscal shocks, and compare actual and simulated behaviour in order to evaluate whether non-systematic fiscal policy had a stabilizing role.

#### *The dynamic response of the economy to fiscal shocks*

Firstly, the effects of government expenditure on the output gap are very limited, with the exception of Germany where the response is positive and significant. Second, inflation increases significantly in France, which also leads to an increase in the interest rate (an insignificant increase takes place also in Italy and Spain). The reaction of inflation in the other countries is instead limited and not statistically significant. Third, in all countries, the expenditure shock is very persistent and the reaction of taxes is delayed and not sufficient to balance the budget. Overall, these results cast serious doubts on the stabilization role of fiscal policy implemented through expenditure changes, the effects of which on output appear to be limited, while they could lead to an increase in inflation and require deficit financing.

Let us now make three comments on the effects of a (positive) tax shock. First, the output gap decreases, as predicted by Keynesian theory, in Germany only. In the other countries the effects are very limited, but positive and significant

in Italy, perhaps as a consequence of the improvement in the government deficit and more generally in fiscal solvency. An alternative explanation for the positive effects of a tax shock could be that, since it is actually a revenue shock, it can be due either to an increase in the tax rate or to an increase in the tax base, and the latter is positively correlated with the output gap. Yet, if this were the case, an increase in the output gap should be also associated with higher revenues, while this does not appear to be the case, as we will see below.

Second, the consequences of the tax shock on inflation are in general limited, as well as those on the interest rate, though it significantly decreases in France and increases in Spain. The latter effect is explained by an associated increase in the price of raw materials, which appears to lead Spanish inflation.

Third, in all countries, a tax shock is associated with only a limited increase in expenditures, so that overall the deficit is reduced.

In summary, the effects of fiscal shocks are rather different across countries and surrounded by considerable uncertainty. Yet, a consistent pattern is that expenditure and tax shocks have limited stabilization effects, a result in line with Perotti (2002), but tax shocks can play a role in deficit reduction while expenditure shocks may require deficit financing.

#### *Assessing the in-sample effects of fiscal shocks*

To provide further evidence on the effects of non-systematic fiscal policy, we simulated the structural VAR models setting to zero the fiscal shocks and to their realized values all the other shocks. Thus, a comparison of the actual and simulated behaviour of the macroeconomic variables provides an

indication of the in-sample effects of non-systematic fiscal policy.

The results are reported in the first two rows of each panel in Table III.1. Fiscal policy shocks appear to have a negative effect on the average output gap in all countries except Italy. In other words, the output gap improves without fiscal shocks. Moreover, its standard deviation is reduced by non-systematic fiscal policy only for France and Spain. The effects on the levels of inflation and the interest rate are minor, with a slight generalized increase in the standard deviation of these variables.

To evaluate whether there are differences between discretionary policy and automatic stabilizers, we have repeated the same exercise using, respectively, government consumption and social benefits instead of total expenditures. The results are reported in the remaining rows of Table III.1. The major interesting finding is that social benefits slightly improve the output gap in Germany, but at the cost of a higher inflation and interest rates. Moreover, except in Germany, the output gap volatility increases more without government consumption than without social benefits.

In summary, this analysis suggests that non-systematic fiscal policy played in general only a minor role in stabilizing the four largest economies of the Euro area over the period 1981-2001, with a limited impact also on inflation and the interest rate.

### **The effects of macroeconomic variables**

A higher unexpected output gap is associated in all countries with higher inflation, and in turn with higher interest rates, in agreement with a Taylor rule type of explanation of monetary policy. Expenditures decrease in all countries, and then increase. Receipts follow a similar pattern.

As far as an inflation shock is concerned, it leads to an increase in interest rates in all countries, except Spain where the effect is slightly negative and it is also associated with a non significant decrease in the output gap. In Germany the output gap reacts instead positively, while it is virtually unaffected in Italy and France. In all countries the impact effect on the fiscal variables is very limited, with the exception of Germany and Spain where there is a delayed reduction in receipts.

In summary, the response of fiscal and monetary variables to unexpected changes in the output gap and inflation is rather similar across the four countries, though with some differences in the magnitude of the effects.

### **Cross-country spillovers**

To evaluate whether non-systematic fiscal policy generates significant spillovers across countries, we estimated VARs that include the output gap, expenditures and receipts (all as ratios to GDP) for Germany and the same variables for, in turn, France, Italy, and Spain. Thus, we focus on spillovers from and to Germany. The main assumptions we make in constructing the VAR are that there is no contemporaneous feedback of foreign variables on Germany, and that the output gap is not contemporaneously affected by domestic fiscal policy.

Here we comment on the main findings, focusing on the reaction of foreign countries to German shocks, since German variables react very little to foreign shocks.

A positive output shock in Germany has a positive and significant effect in all countries, marginally so for Spain. Fiscal variables in turn react, and the general pattern is a slight reduction in expenditures, accompanied by a similar reduction in receipts, a result similar to

what we obtained before in the case of a home output shock.

German fiscal shocks, by contrast, appear to have a limited direct effect on the other 3 euro countries, the responses are rather small and not significant, possibly with the exception of an increase in German expenditures on France (French expenditures and receipts react positively and significantly).

The results we obtained so far should be interpreted with care because the analysis in the previous sections suggests that there could be an omitted variable bias. To address this issue, and provide more information on the usefulness of non-systematic fiscal policy coordination, we adopt an alternative approach. We simulate the 8-variable VARs, substituting each country fiscal shocks with the German ones, in order to mimic the effects of an extreme form of policy coordination, with Germany implicitly in control of fiscal policy for the whole of the Euro area.

The results are summarized in Table III.2. Substituting home for German fiscal shocks improves the average output gap for Spain only, at the cost of a slightly higher volatility and of a mild increase in inflation and the interest rate. The decrease of the output gap is rather marked in Italy, and is accompanied by higher inflation and interest rates, while the effects in France are minor for all the three variables.

In the last part of Table III.2 we also report the correlation between the German and the other countries structural fiscal shocks. The figures are all rather small, the largest value is 0.29 for the German-Spanish expenditure shocks, and even negative values are obtained in a few cases. Similar figures are obtained with the VARs residuals. Hence, the coordination in non-systematic fiscal policy appears to be

very low, and the results we obtained in this section on the size of the fiscal spillovers and the low efficacy of following German policy cast further doubts on the usefulness of a closer coordination.

### **Disaggregating taxes and government expenditure**

We now disaggregate government receipts into revenues from taxes on business and on households, from indirect taxes, and from social contributions. Similarly, we consider separately three components of disbursements: government consumption, investment, and social benefits. Government consumption and investment are usually considered as discretionary, while social benefits depend on the level of unemployment and therefore the state of the economy, we think of social benefits as part of the automatic stabilizers. We can evaluate, therefore, whether there are major differences in the effects of these two types of non-systematic policy.

We find that increases in taxes on business or households do not appear to have a significant negative effect on output, except in Germany, or a positive effect on prices. Indirect taxes and social contributions lead instead to a generalized mild increase in inflation, but the output gap decreases in Germany only, and only in the case of social contributions.

The results on expenditures are also rather varied. Government consumption has a small or even negative effect on output in all countries except Italy. Government investment instead has a positive but delayed effect on the gap, except in Germany where the impact is also positive. The results for social benefits are more mixed, but in general positive, possibly with some delay. The consequences for inflation are usually

positive but minor and not statistically significant.

To conclude, it may be worth recalling once more that here we are measuring the effects of the non-systematic components of fiscal policy, so that the level of each of the taxes or expenditures we have considered could generate additional effects on the output gap or inflation. It is also remarkable and relevant for policy making that there are several differences across countries in the effects of fiscal policy. One possible explanation is that we are using different identification schemes (though this is due to rejection of the same transmission mechanism by the data). Yet, the differences are still present in the case of Germany and France, for which exactly the same identification scheme is applied.

## Conclusions

This chapter provides a set of stylized facts on the effects of non-systematic fiscal policy in the four largest countries of the Euro area, and discusses their policy implications.

A remarkable and policy relevant finding is that there emerge several differences across countries in the effects of fiscal shocks, which cannot be attributed to the econometric methodology (and also cast serious doubts on analyses based on panel data). This makes non-systematic fiscal policy coordination difficult to be implemented, and the absence of direct spillovers across countries further limits its scope. A thorough examination of the source of these cross-country differences is beyond the scope of this chapter, since it requires a careful institutional analysis, but can be an interesting topic for future research.

The overall picture that emerges is that expenditure policies are rather ineffective in reducing the output gap, possibly with the exception of government investment, and can require deficit financing. Tax shocks appear to be rather ineffective too in reducing business cycle fluctuations, but could be used to reduce the government deficit when needed.

Moreover, non-systematic fiscal policy appears to have an impact on interest rates, either direct or through the output gap and inflation, and the exclusion of fiscal variables can bias in a few cases the evaluation of the effects of monetary shocks. Instead, in general, the effects of monetary policy on disbursements and receipts appear to be minor.

A final caveat is that this analysis covers a period when the fiscal conditions of the countries changed considerably, in particular in the '90s after the signing of the Maastricht treaty and of the Stability and Growth pact. The question then is whether the enhanced fiscal discipline, combined with a single currency, can be expected to change substantially the results we obtained. For example, the requirement of a close to balanced budget can force the governments to improve the efficacy of government expenditure by carefully selecting its composition or changing the decision and implementation process. Or the pressing comments of the European Central Bank on those high debt countries that could create problems for the stability of the euro could convince them to create stronger links between taxes and expenditures. But the recent experience has shown that it takes time for the governments to accept the stricter rules imposed by the monetary union, so that the results we derived could provide a good guide also for the near future.

Table III.1: Mean and standard deviation of actual and simulated series.

		Germany		France		Italy		Spain	
		<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>
Output Gap	<i>(actual)</i>	-0.2407	2.8167	0.1098	1.1888	0.1022	1.3027	-0.2949	1.5629
	<i>(base)</i>	-0.2135	2.5650	0.1742	1.5489	0.0287	1.3565	-0.2733	1.7978
	<i>(gov con)</i>	-0.2299	2.4098	-0.1272	1.9217	0.0411	1.3409	-0.2171	1.9732
	<i>(soc ben)</i>	-0.2557	2.8326	0.1249	1.3692	0.0705	1.2358	-0.1169	1.4954
Inflation	<i>(actual)</i>	1.2347	0.9635	1.8446	1.6798	3.0470	2.1083	3.0478	1.7899
	<i>(base)</i>	1.2339	0.9263	1.9351	1.7003	3.1218	2.0122	3.0112	1.6363
	<i>(gov con)</i>	1.2370	0.8992	1.6347	1.7913	3.0903	2.0497	2.8066	1.9869
	<i>(soc ben)</i>	1.1148	0.9989	1.8945	1.6858	3.0673	2.0938	3.3296	1.6391
Interest r.	<i>(actual)</i>	5.9257	2.4962	8.1512	3.6383	11.3304	4.9669	11.1043	4.8841
	<i>(base)</i>	5.9361	2.2330	8.9889	3.1972	11.1974	4.8695	11.0456	5.3162
	<i>(gov con)</i>	5.9571	2.2944	5.8596	5.8816	11.3385	4.7993	11.3204	5.6622
	<i>(soc ben)</i>	5.5048	2.6038	8.8894	4.0230	11.3690	4.8356	11.2975	4.0296

(actual) = actual series; (base) = series simulated by setting to zero the fiscal shocks in the base case scenario; (gov con) = series simulated by setting to zero the government consumption/GDP shock and the shock to total revenue/GDP in VAR with government consumption/GDP instead of total expenditures/GDP; (soc. ben) = series simulated by setting to zero the shock to social benefits/GDP and the shock to total revenue/GDP in VAR with social benefits/GDP instead of total expenditures/GDP.

Table III.2: Mean and standard deviation of actual and simulated series with German shocks.

		France		Italy		Spain	
		<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>	<i>mean</i>	<i>sd</i>
Output Gap	<i>(actual)</i>	0.1098	1.1888	0.1022	1.3027	-0.2949	1.5629
	<i>(simulated)</i>	0.0858	1.5831	0.0528	1.2018	-0.1464	1.6371
Inflation	<i>(actual)</i>	1.8446	1.6798	3.0470	2.1083	3.0478	1.7899
	<i>(simulated)</i>	1.8252	1.7880	3.1690	1.9932	3.2134	1.6902
Interest r.	<i>(actual)</i>	8.1512	3.6383	11.3304	4.9669	11.1043	4.8841
	<i>(simulated)</i>	8.1587	4.4920	11.3590	4.7164	11.2967	4.3993
	<i>(corr_s G)</i>	0.1486		0.0339		0.2918	
	<i>(corr_s T)</i>	-0.1166		-0.2582		-0.1517	

(actual) = actual series; (simulated) = series simulated using Germany fiscal shocks instead of country specific shocks; (corr\_s G) and (corr\_s T) = correlation among each country structural fiscal shocks (G total government expenditure, T total government revenues) and Germany structural fiscal shocks;

## Part IV The evolution of labour costs in the context of a currency union.

It is widely understood that inside a currency union, the exchange rate can only be used to improve competitiveness against third countries but not against other countries participating in the union. For this reason, to keep an intraregional equilibrium in terms of economic activity and employment, the relationship between wages and productivity is central. However, it is expected that market competition and the introduction of the euro will reduce wage differentials between European countries, and this fact could imply a convergence process of unit labour costs. There are three factors that could contribute to a reduction in wage differentials: migration, the Balassa-Samuelson effect and the role of trade unions.

Firstly, if workers from low wage economies move to economies with high wages, the process towards wage equalisation could be enhanced. Secondly, there is the Balassa-Samuelson effect. This suggests that countries with fast growing labour productivity in the tradable sector face higher inflation in their non-tradable sector than their trade partners. As a result, even if they have a fully fixed exchange rate, a currency board or indeed a common currency with their trade partners, they will experience higher overall inflation and consequently higher wages. If in low-wage countries, the non-tradable sector is more relevant than in high-wage countries, there could be a process towards wage equalisation. However, since the effect is more a rise in the relative price of non-tradable goods, rather than a general increase in the price level, the inflation differential due to the B-S effect would have no implications for the competitiveness of

the country's tradable goods sector. Finally, the transparency of a common currency could reduce wage differentials across countries due to a “demonstration” or “fair wage” effect. Being able to compare wages in the same currency between European countries could increase convergence between wages.

While productivity rates are lower in poorer economies, wages may be influenced by factors at the national level, such as wage bargaining between unions and employers. The experience of the United States shows that in a first stage, unions tried to reduce geographical wage differentials and only the pressure of external competitors has changed this trend towards a higher wage differentiation. In the case of the German reunification, the trend has been similar. However, the European case could be different: historical, cultural and institutional differences and the pressure of external competitors could act in an opposite direction. Moreover, the coordination could be complex, as the Doorn initiative (bargaining cooperation of the trade union federations of Belgium, Germany, Netherlands and Luxembourg) shows. It is also worth mentioning in this context the wage moderation effect of the price stability target of the ECB.

This chapter analyses the evolution of wages, productivity and labour costs among Euro area countries and is organised as follows. The next section considers the relationship between wages and productivity in the different European countries and the role of the different labour markets institutions as a mechanism to limit wage increases to productivity gains. Then, we presents empirical evidence about convergence

of wages, productivity and unit labour costs in Euro area countries. The chapter ends with some policy guidelines.

### **Unit labour costs and labour market institutions**

Unit labour costs in the last 20 years, among the member states of the European Union can be separated into three different components: the evolution of nominal wages, the evolution of productivity in real terms and the evolution of the exchange rate. Looking at data for Euro area countries from 1981 to 2001, the two most important components in the evolution of unit labour cost are wages and the exchange rate while productivity has a very limited role in the evolution of a country's competitiveness. Focusing on the relative contribution of intra-EU exchange rates (the ones that have disappeared as a result of the introduction of the Euro) and extra-EU exchange rate (the one that can be used as a response to adverse symmetric common shocks), it turns out that while in Finland, France, Greece, Ireland, Italy, Portugal and Spain, the exchange rate against the mark has been used as a way to react when wages evolution goes out of line with productivity, in other countries such as Austria and the Netherlands this is not the case.

The process of economic convergence to a single currency requires convergence in inflation rates. By the time the single currency has been adopted, this has been largely achieved. As intra-EU exchange rates can no longer be used in the future to restore lost competitiveness, the future evolution of wages should be in line with the evolution of productivity, for a given inflation rate in the Euro area. But, in Euro area countries, during the last decades, have wages evolved in line with productivity? To obtain a

quantitative measure of the intensity of the relationship between wages and productivity, we have estimated aggregate wage curves for the European countries, plus six other OECD countries (Australia, Canada, Japan, Norway, Switzerland and the United States) from 1960 to 2001. In the twenty countries we examined, a positive and significant relationship between wages and productivity has been found. However, the results have shown that there are important differences in the response of wages to productivity among these countries. The countries where the response of wages to changes in productivity is highest are Canada, Netherlands, Spain, United States, Switzerland, Italy, France and Japan.

But, what explains these differences in the response of wages to productivity? In other words, which factors can determine that wages evolution is in line with productivity? In order to answer this question, we have estimated different multiple regression models using as an endogenous variable the estimates of the response of wages to productivity changes, with explanatory variables related with different economic factors and labour market institutions. The results of these models have shown that the degree of centralisation, trade union density and the technological level are relevant variables to explain cross-country differences in the response of wages to productivity. Policy measures in the proper direction could help to reduce these differences across the Euro area countries.

### **Convergence of wages, productivity and labour costs in Euro area countries**

In this section, convergence of wages, productivity and unit labour costs is analysed using different approaches:

cross-section tests of the average growth across a sample of countries ( $\beta$  convergence); measures of the dispersion of these variables across countries over time ( $\sigma$ -convergence); and, finally, time series tests of the stationarity of differences in the levels over time (mainly, unit root and cointegration tests). The assumptions behind these approaches are different. With cross-section tests economies are assumed to be in transition towards a unique steady state (absolute convergence), and initial differences should tend to shrink over time. Different steady states can also be considered (conditional convergence) introducing other explanatory variables or using panel data with fixed effects.

However, with time series tests, economies are assumed to be near steady-state equilibrium.

Table IV.1 shows results for  $\beta$  convergence for Euro area countries in the period 1981-2001. From this table, we can conclude that there is  $\beta$  convergence in terms of unit labour costs and compensation per employee, being higher for the former. However, for labour productivity, the speed of convergence is not significant. The values of the speed of convergence for unit labour costs and compensation per employee imply that, in the first case, thirty-eight years would be required to reduce to half the initial differences among countries, while for the second more than fifty years would be required.

Table IV.1:  $\beta$ -convergence: cross-section results.

$\beta$ -convergence EU-11 (1981-2001)		Cross-section	Panel data	
			Panel data (pool)	Panel data (Country fixed effects)
Unit labour costs	$\beta$	1.82 %*	5.82 %*	10.84 %*
	$R^2$	0.668		
Compensation per employee	$\beta$	1.34 %*	4 %*	8.30 %*
	$R^2$	0.607		
Labour productivity	$\beta$	1.63%	0.73%	1.74%
	$R^2$	0.17		

Source: Own estimates from OECD data. EU-11: Austria, Belgium, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain. \* significant at the 5% level

The results confirm that convergence has taken place in growth rates of nominal wages, as price inflation converged, but there is little evidence from this analysis that productivity levels are converging. Since unit labour costs are the difference between wages and productivity, convergence here is largely a reflection of a convergence in the growth rates of nominal wages. From the point of view of the competitiveness of parts of the Euro area, once there is a common currency, nominal and real wages across the area must differ depending on productivity.

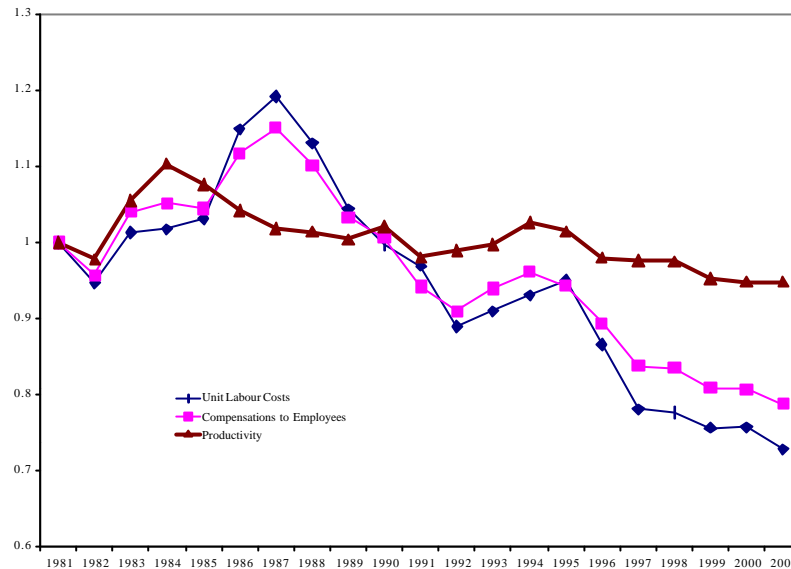
Regions that have low productivity on average will pay lower wages.

Another way to examine convergence is to look at the degree of variation, or dispersion of wages and productivity over time, with the  $\sigma$ -convergence method. Figure IV.1 provides a visual picture of the process of convergence over time. Again the reduction in the dispersion of wages and unit labour costs reflects the convergence of inflation rates. There is some suggestion that productivity has converged slightly during the second half of the 1990s, but

over the last twenty years, there have been persistent differences in productivity and therefore in the

standard of living of different parts of the Euro area.

Figure IV.1:  $\sigma$ -convergence of Unit labour costs, Compensations and Productivity.



Source: Own calculations from OECD data. The values of  $\sigma$ -convergence have been normalised to unity in the initial period.

### Policy guidelines

Differences in real and nominal wages across the Euro area reflect differences in average productivity. Convergence in real wages ought therefore to take place via relative increases in productivity (as in Ireland). However, if after the introduction of the euro wage differentials shrink due to a “demonstration” or “fair wage” effect, competitiveness would be damaged and since the exchange rate can not be used, employment would suffer. For this reason, increases in wages should be accompanied by productivity

improvements as the only way to maintain competitiveness.

The evidence in the second section of this chapter suggests that there are some policy options that should be taken into account to improve the current situation: the collective wage bargaining systems should be more decentralised, the level of collective bargaining should be closer to the firm, and it should be possible to apply opt-outs at the regional or at the firm level. Workers, unions and firms should take into account regional, sectorial and firm conditions when negotiating wages.

## Part V The US current account deficit

In 2001 the US current account deficit reached 4.1% of GDP. The worry is that if the deficit does not move back closer to balance or keeps widening, U.S. external liabilities would represent a growing share of world portfolios. At some point investors could become unwilling to hold dollars. The ensuing large adjustment in the current account and fall in the external value of the dollar could lead to substantial dislocations in the world economy and disruptions in U.S. and world financial markets.

The deficit rose very quickly from 1.5% of GDP in 1995, which was the average of the previous two decades, to 4.5% in 2000. The rapid growth of the U.S. economy relative to Europe and Japan, coupled with a steady strengthening of the dollar driven largely by capital flows is the main factor contributing to the emergence of the deficit. The domestic counterpart was the investment boom occurred between 1996 and 2000 and the contemporaneous drop in private

agents' saving rate. The mild slowdown in economic activity in 2001 reduced the gap slightly.

The central issue is what is a sustainable current account deficit for an economy such as the US whose currency is very widely used for trading purposes.

### Two approaches to sustainability

We examine two approaches to determine what the sustainable current account deficit is. In the first, an intertemporal approach to the balance of payments emphasises both the importance of domestic saving and investment decisions and the role of international portfolio decisions by both domestic residents and foreigners. The question is what deficit is consistent with a number of reasonable assumptions about US growth, changes in the real exchange rate, import penetration and desired portfolio holdings. Calculations suggest that a deficit of 3.5% of GDP is sustainable.

Figure V.1: The US current account deficit and the growth rate

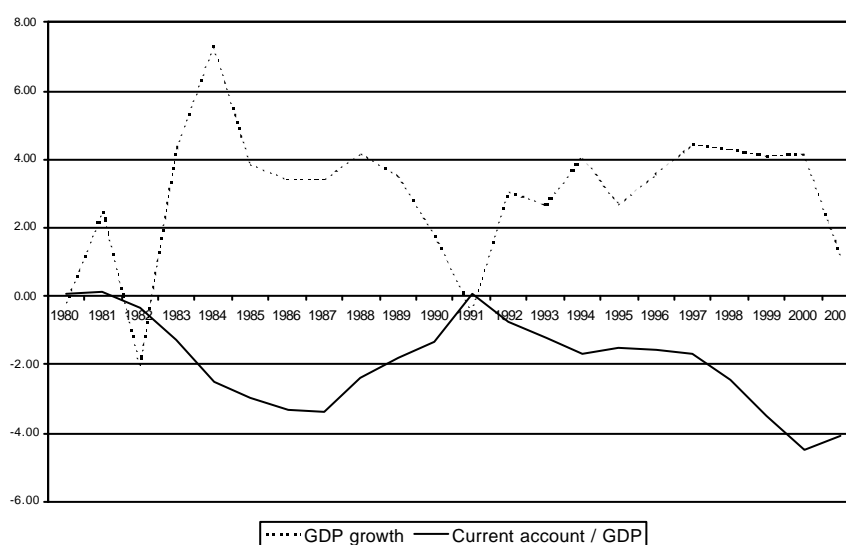


Figure V.2: The US current account deficit and the real effective exchange rate

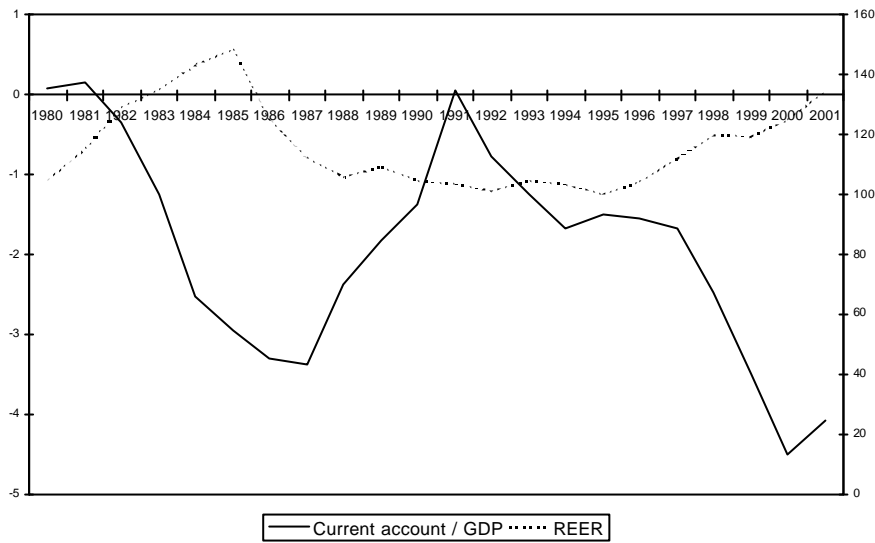
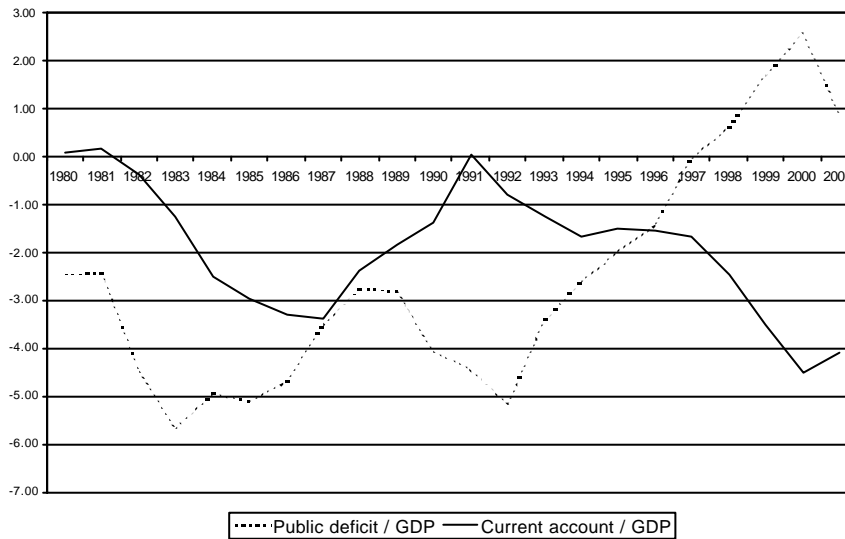


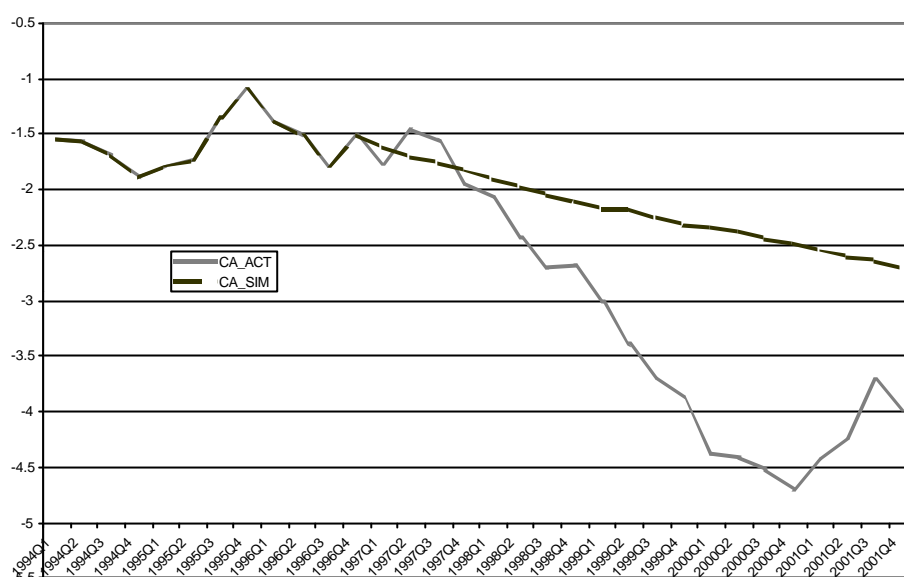
Figure V.3: The US current account deficit and the US public deficit- surplus



The second approach is more quantitative, and uses a structural VAR in order to decompose the deficit into its cyclical and structural components. Visual inspection of Figures 1 to 4 reveals a very distinct cyclical component to the deficit. The current account shows small surpluses during the recessions of the early 1980s and 1990s and large deficits during the peaks of the mid-1980s and late 1990s.

By contrast, the structural deficit is that path for the deficit consistent with average (1980 – 2001) real exchange rate and US growth relative to the rest of the world. On this interpretation, the difference between the actual deficit and the structural deficit can be attributed to the faster rate of growth of the US economy relative to the rest of the world.

Figure V.4: Observed and “Structural” current account deficit



A real business cycle interpretation of this finding is that the technological shock coming from electronics and IT has been taken up much more quickly during the 1990s by the US compared to elsewhere. Since domestic savings are unlikely to rise in response (and may well fall) the investment boom domestically has to imply a current account deficit. The question is what the medium term outlook will be. In the standard growth model a technological shock will only affect growth over the medium term as the capital stock rises. However, once the technology has been fully taken up elsewhere the (comparatively) high growth rate in the US will recede and the current account will move back towards a lower equilibrium.

### Simulations with MARMOTTE

While the kind of analysis in the previous section is re-assuring, it abstracts from the adjustment process once the technological advantage is eroded. We have carried out two simulations on a modified version of the MARMOTTE multicountry model which includes just the US, Japan and the Euro area as a whole. The basic

question we tried to address is the following: is it possible to replicate the most important features of the U.S. business cycle of the recent years (namely, the investment boom, the deepening of the current account and the massive real appreciation of the US dollar) by means of simple shocks? The aim of the exercise is twofold. On the one hand we seek to interpret the past by identifying the most important shocks. On the other, we try to give some hints about the future developments of the current account and the real exchange rate. In particular we want to assess the likelihood of a reversal in the current account deficit.

Starting from the second half of the 1990s two kinds of shocks hit the US economy: a positive permanent productivity shock and a reduction in the risk premium on US assets.

The introduction of IT technology led to a permanent increase in total factor productivity, whose magnitude was partly unexpected by agents. Insofar as agents had to revise upward their expectations of productivity over the first few years, this surprise is

modelled by a sequence of unexpected additive shocks to total factor productivity. Furthermore, to account for expectations of sustained higher growth and profitability in the US economy compared to the Euro area and Japan, the second shock has been calibrated as a significant reduction of the US risk premium. It was modelled as a temporary sequential reduction of the US risk premium over a period of three years, followed by a reversal at the end of the fourth year, which brought it back to the level prevailing at the end of the first year.

The combination of these two shocks reproduces quite well the dynamics of the US macroeconomic performance. The positive productivity shock leads to a huge increase in investment until the end of 2000 as production factors became relatively less expensive. Insofar as households expected a permanent increase in their level of income and wealth, they started to consume more. The rise in domestic demand, reflected in sustained GDP growth, boosted US imports and so the US current account deteriorates. This volume effect is further amplified by a price effect, arising from the real appreciation of the dollar, which follows the nominal rate. The depreciation of the euro and the Yen is the direct result of the reduction of the risk premium on the US assets. This entails huge inflows of capital to the US. Indeed, any US portfolio investment becomes more attractive by its relatively higher return.

In 2001, the productivity growth is halted. Firms, having accumulated too much capital, revise downwards their investment plans. This moderates permanently GDP growth and thereby imports, which stop the deterioration of the trade balance afterwards.

From 2002 onwards, such a scenario foresees investment growing slowly due to past over-accumulation. The reversion of expectations about the risk of the US economy entails a sizeable nominal depreciation of the dollar. Even if the dollar depreciates in real terms, it remains appreciated with respect to its baseline value. The overall effect on the trade balance is a continuous, but slow reduction of the deficit.

### **Effects on the Euro area**

The spillovers on Euro area GDP are significant during the first years of the shock (roughly until 2002), due to the increased demand stemming from the United States and from the pro competitive effects of the Euro's real depreciation. This also contributes to the improvement of the trade balance. These effects dampen over time. When the effects of the productivity shocks are over and the nominal appreciation of the US dollar due to the inflows of capital ends, the euro experiences a marked real appreciation, with a negative impact on the trade balance and growth.

The effects on different parts of the Euro area are also asymmetric because of the different composition of exports and imports and greater exposure to trade outside of the Euro area. Because Irish imports from outside the Euro area are almost 32 % of GDP, compared to 9.6% for France, Ireland is most hit by the depreciation, losing 4.6% of GDP in total. Portugal, which exports only the equivalent of 7% of GDP to countries outside the Euro area is least affected, losing only 0.9% of GDP.