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WORKING PAPER

Strategies for the

EU Economy

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Executive Summary

The European Union is still suffering from very high unemployment. It was only recently that the unemployment rate fell below 10%, signalling that employment is the policy target most badly missed. One major reason for this poor performance on the labour market is insufficient growth. In fact during the nineties the growth process in Europe was intermittent, with no steady expansion of production.

In this study reasons for this unsatisfactory development are analysed. In our view, growth and expansion must be the cornerstone of a new policy strategy. After having been concentrated on inflation and deficit targets, European economic policy should now focus on growth targets. And these targets should be far-reaching, since a growth rate of 3% and more is necessary for several years in order to have a significant impact on employment.

In Part I of the study, European growth performance is compared to that of the US economy. In no other industrial country of comparable size has growth been so intensive and employment-creating as in the US. Consequently, developments in the US may be used as a benchmark performance for Europe. By doing this, and by comparing the macro- and micro-economic strategies being followed in the US and Europe, weak spots in economic policy can be identified.

It is also necessary to look for the reasons for Europe's lagging growth rate compared to that of the US at the micro as well as the macro level. Both sides of the market, supply as well as demand, have to be considered. In particular, the interaction between these categories must be addressed. No macro policy delivers stable results if microeconomic conditions provide wrong incentives. On the other hand no micro policy will be successful if macroeconomic conditions do not allow for expansion. The same reasoning applies to supply- and demand-side policies. No growth process will prevail if one market side is neglected. Any improvement of supply-side conditions at the expense of the demand-side ones will fail and *vice versa*. Hence any one-sided analysis may neglect fundamental issues which in the end could make a significant contribution to growth and employment.

In recent years, not only have domestic policy issues had an impact on the level of European economic activity but adverse external shocks may have played a role too. When exchange rates were, at least to some extent, flexible among European countries, there were several currency crises in Europe. In 1992 the British Pound and the Italian Lira had to leave the exchange rate mechanism of the EMS because of depreciation due to high inflation rates in these countries. Such a situation created uncertainty about exchange rates and hampered trade. The second shock was the Mexico crisis which again affected the Italian Lira. Finally the currency crisis in South East Asia and the subsequent breakdown of economic activity in these countries reduced exports to that region. So the international environment may not have been stable enough to foster European growth in the 1990s.

In addition to these macroeconomic deficiencies, there may have been microeconomic shortcomings. The level of regulation in Europe, especially in the service sector, was still high throughout the nineties. It was not before the end of the decade that major service areas, especially those related to information technologies, were deregulated within the EU. A major issue was privatisation and competition. Here, too, only at the end of the decade were telecommunications privatised and deregulation opened up competition.

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In the light of these arguments a general assessment of policy conditions is required to outline a strategy for achieving a higher growth path in Europe.

Investment in infrastructures was proposed, for instance, in the Commission's *White Paper on Growth, Competitiveness and Unemployment* (1993), as providing both a stimulus on the demand-side and a supply-side support to the productive structure. The overall impact of large-scale infrastructure projects is discussed in Part II of this study.

- First, the state of public finances is considered to see if there is any room for increasing public investment within the framework of the Stability Pact. In the EU as a whole, public fixed capital formation increased from World War II up to the mid-1960s. This phase of expansion was followed by a downward trend. Public investment was reduced in line with cuts in expenditure in order to improve fiscal balances, but also with the broad movement of privatisation in the 1980s. The short recovery at the beginning of the 1990s was

interrupted, after the recession of 1993, by the process of European fiscal consolidation. But this decline seems to have come to an end. The level of public investment is now considered insufficient in most countries. The effort to preserve the existing public services and infrastructure requires by itself a sharp rise in expenditure.

- Secondly, the outcome of the Delors' Plan is examined. The European Growth Initiative has provided momentum in supporting the financing of infrastructure investment with the additional purpose of promoting economic recovery. Funding from Member States' national budgets made up a great part of the investment, but budgetary constraints slowed down the rhythm of public funding. Private sector involvement has been marginal: the approach encouraging partnership between the private and public sectors has been implemented largely in energy and telecommunications projects. In 1999 the European Parliament and the Council decided to double the financial assistance of the European Commission, reaching a total of €4.6 billion for transport projects only. In its implementation, and in its rather low amount, such initiatives have proved disappointing as an instrument of expansionary policy.

- Thirdly, a Plan to boost large-scale investment in the EU is considered. It can finance transnational transport projects, which can be profitable in the long term. For ecological purposes, it can finance transnational projects like freight rail transportation, which may become profitable if taxes are introduced to reduce pollution effects or traffic congestion. The Plan might also finance some purely national public investments (accommodation for low-income families, urban renewal and public transport). To be effective, the Plan must finance projects which would not be otherwise financed by financial institutions. To reduce the impact on long-term interest rates, the Plan must finance projects that induce in the long run a positive effect on supply. These two requisites may be inconsistent. It may be added, though, that no interest rate rise will occur if the Plan is implemented in a situation of relatively low private demand.

To assess the macroeconomic impact of the Plan, a macroeconometric model of the world economy based on a neo-Keynesian framework (Mimosa) was utilised. A Plan inducing public investment equal to 1% of EU GDP provokes a significant upsurge of economic activity. It improves public accounts because the increase in GDP brings fiscal resources. But it induces a rise of nominal interest rates, both short- and long-term, because of its

inflationary effects. In the long run, the Euro depreciates because of the higher inflation, but in the short run it appreciates because of higher interest rates. In the short run (the first three years), GDP increases by 2.4% and inflation rate by 0.4%. In the medium run (years 6 to 10), the GDP increases by 1% and the inflation rate by 0.6%. If we assume that public investment has some impact on productive capacity (more precisely, half the impact of private investment), the impact on GDP is more lasting. The inflation rate is also higher, due to the decrease of the unemployment rate. Thus in the medium run GDP increases by 2.2% and the inflation rate by 1.2%, which implies some increases in interest rates.

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Any interpretation of the current situation and of the impact of economic policy requires confronting the issue of which theoretical explanation should be chosen for EU growth and employment performance.

Part III of the study first considers the mainstream interpretation of the employment situation in the EU countries, showing that it relies on a theoretical approach – the 'neo-classical synthesis' – based on the idea of an automatic tendency in competitive market economies to a full employment situation. A critique of this approach is followed by a brief outline of an alternative, Keynesian, approach, whereby the possibility of persistent unemployment is recognised; employment levels are 'path-dependent', dependent as they are on employers' decisions based on expectations of profitable saleability of their products. Thus effective demand plays a crucial role in determining employment levels, and an expansionary demand policy is an essential component of any policy package aimed at increasing employment.

Secondly, the issue of EU work-force employability is discussed, starting from considering lags in technology performance and the inherent skill-bias impact of new technologies in the EU, US and Japan. In this respect, the EU's recent situation seems to be characterised, on average, by a weaker adoption of new technologies and a consequently weaker impact of technological and organisational changes in terms of job creation and wage dispersion, in respect to the US and Japan.

Thirdly, several considerations about country-specific orientations and the complexity of the relationship between technology, productivity and job creation are taken into account in delineating a policy package including a number of components.

On the one hand, an expansionary demand-side policy may prove essential. However, it must not consist of support to consumption expenditure, be it private or public; it should rather rely on public investment in infrastructures on the lines already indicated in Part II of this study.

On the other hand, supply-side policies are also necessary, though they must be seen as complementary to demand-side intervention rather than alternative to it. Specifically, increased flexibility is necessary both in the labour market and in the economy as a whole, confronted as we are with a continuously changing technical, economic and social environment. This implies a wide set of interventions, ranging from flexibility in the utilisation of the work force within any given productive unit, to easier territorial mobility.

Due to the continuously changing and – in the context of the 'knowledge economy' – increasing skill requirements, a most important component of this set of interventions concerns the educational system: investments are necessary for improving its efficiency and for expanding it, both in the area of basic education and in that of specialised knowledge; and it must be stressed, in this respect, that specialised knowledge does not mean specific working skills directed to specific jobs, but rather 'basic' specialised knowledge in the various sciences, including, together with natural sciences, the ability to communicate with others and to understand them (i.e., history, and more generally 'culture').

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Part I: WHAT COULD DRIVE THE EU ECONOMY TO A HIGHER GROWTH PATH?

1. Introduction

The European Union is still suffering from very high unemployment. It was only recently that the unemployment rate fell below 10 %, signalling that employment is still the policy target which is not being met. One major reason for this poor performance on the labour market is insufficient growth. In fact during the nineties the growth process in Europe was intermittent, and a steady expansion of production has not been achieved.

In the following study, reasons for this unsatisfactory development will be analysed. Generally it has to be said that economic policy in Europe did not pay enough attention to the strengthening of expansionary forces. Instead, economic policy focused rather more on inflation and consolidating public budgets. Both targets were seen as necessary to promote European integration. This is certainly a sensible concept with regard to inflation rates. Only with small differences in inflation is a monetary union sensible. Otherwise structural distortions may occur, since those countries with relatively high inflation rates will not be competitive in a unified monetary area.

On the other hand the importance of public deficits may have been highly overrated. With an independent central bank such as the ECB, inflationary pressure resulting from public deficits should be of minor importance. However, now that monetary union is in place and the convergence of inflation, as well as of public deficits has been achieved, it seems to be time to consider a different strategy for a future European economic policy[1]. Growth and expansion must now be the cornerstone of an economic policy strategy. After concentrating on inflation and deficit targets the focus should now shift to growth targets. These targets should be demanding if there is to be a significant effect on employment: e.g. a growth rate of 3% and more over several years.

The US economy is an example that proves that it is not impossible to achieve such a high rate of expansion.

2. Growth Performance in Europe

In the following section, the growth performance of Europe will be compared to that of the US economy. In no other industrial country of comparable size, has growth been so intensive and so much employment been created as in the US. Consequently, US development will be used as a benchmark performance for Europe. By doing so and comparing the macro- and microeconomic strategies being followed in the US with those of Europe, potential weak spots of economic policy will be identified.

2.1 Growth in the US and Europe

Economic performance in Europe in the 1990s has been characterised by weak growth compared to the US. After the recession in 1993 the recovery was interrupted by two slumps in 1995 and 1998. The growth record thus was not only substantially different from the performance in the 1970s, but also from that of the United States. While in the 1970s the economies in the US and in Europe moved parallel to each other along the business cycle and experienced fluctuations of the same magnitude, the US economy picked up immediately

[1] cf. Barrell et al., 1999

after the double dip recession of the early 1980s and followed a stable growth path in the remaining years of the decade with growth rates of about 4 %. In Europe, on the other hand, the slump of the early 1980s was much more persistent.

After the recession of 1981, the European economies recovered only slightly with moderate growth rates. A comparable performance to the US – with growth rates of more than 3 % – was only achieved at the end of the decade. Similar differences in the economic performance of both regions can be observed in the 1990s. After the deep and severe recession in 1990/1991 the US economy recovered quickly, reaching growth rates of between 2 % and 4 % within six quarters. Europe suffered from the slowdown of the world economy in 1990/1991, but benefited from the expansionary effect of German unification.

After the positive fiscal impulse of German unification petered out in 1992, the monetary restraint became dominant and Europe slumped into a recession similar to that of the US, albeit two years later. After a short recovery in 1994, growth rates in the European economy fell again – parallel to the development of the USA, but on a lower level. As in previous cycles, the US economy recovered quickly with high rates, while Europe suffered from fiscal consolidation in 1997 prior to Economic and Monetary Union and the turmoil on the international financial markets in 1998/1999.

Figure 1: Comparison of Growth EU 15 - USA

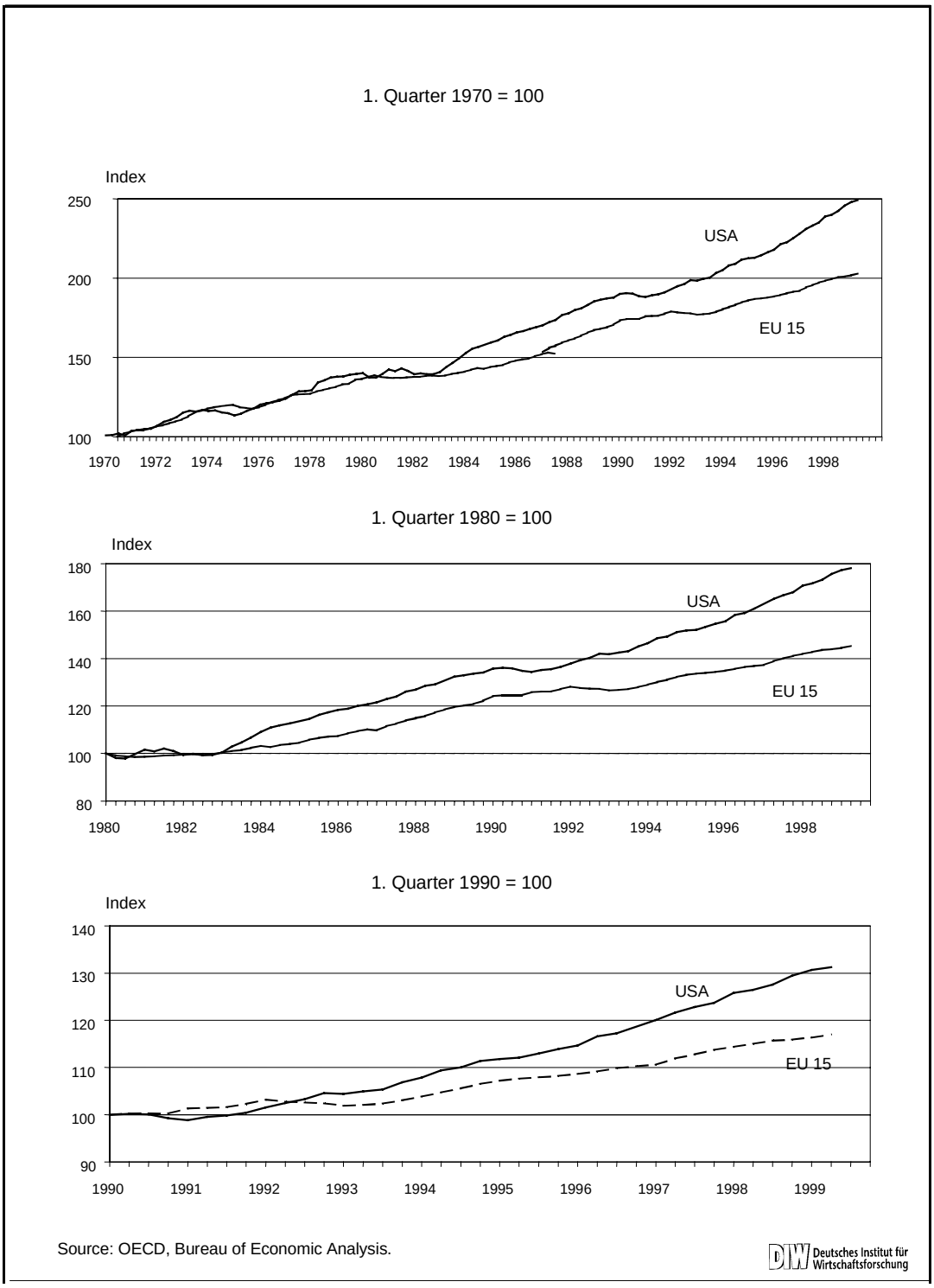
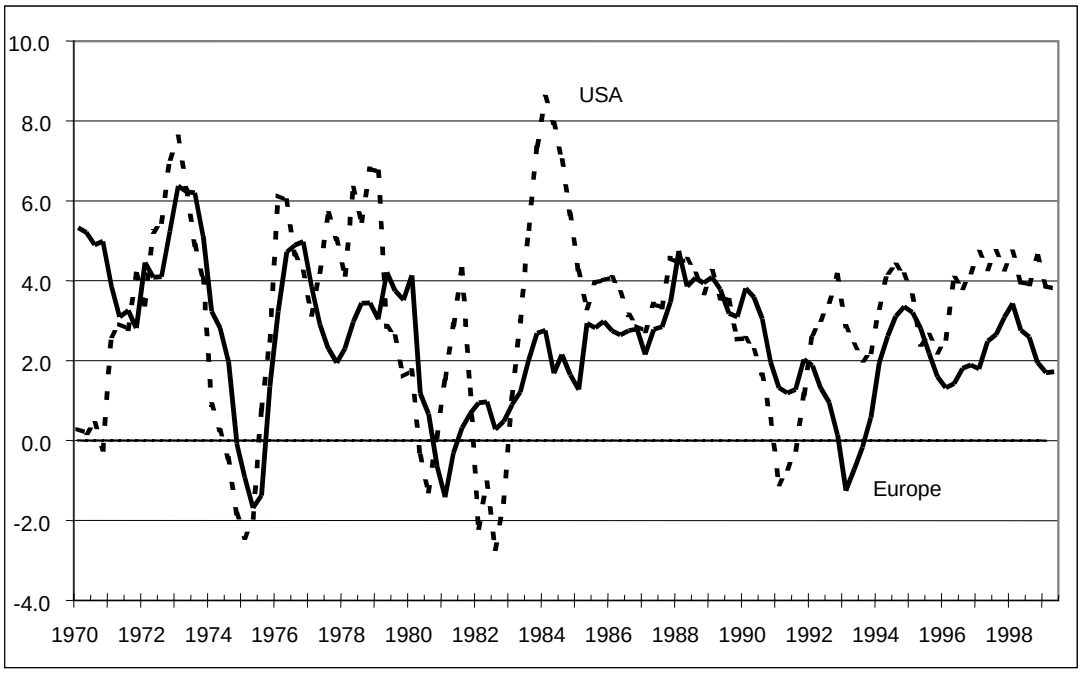


Figure 2: Growth Rates of GDP in Europe and the USA



Source: OECD, Bureau of Economic Analysis

2.2 An Interpretation

The common view of macroeconomic fluctuations and growth relies on the conceptual framework of two different blocks: 'aggregate demand' and 'aggregate supply'.[2] In a framework such as this, an economy may be affected by two types of shocks with varying effects on the performance of an economy. While aggregate *demand* shocks, e.g. fiscal spending or monetary disturbances, cause real variables to temporarily deviate from their long-run paths and affect output and prices in the same direction, aggregate *supply* shocks, e.g. technological/productivity or labour supply disturbances, affect output and prices in the opposite direction and are more likely to influence the growth performance of an economy rather than the business cycle. In this context, demand shocks peter out after a certain time and leave the dynamic relation between output and employment unaffected, while supply shocks do change this dynamic relation and have long-run effects on output.[3]

In the light of these findings, the weak growth performance of the European economy compared to the US has to be analysed under two different frameworks. First, the flat growth path in Europe may result from negative supply shocks in the 1980s and 1990s while the more intensive use of new technologies in the US has driven the US economy to a higher growth path.. However, even if demand disturbances do not affect the real economy in the short and medium run, convergence with the equilibrium growth path may be persistent. The long lasting effects of such nominal shocks may then be indistinguishable from truly permanent ones in a finite data sample. Such persistent behaviour of demand shocks may

[2] Cf. Blanchard, 1989. However, the discrimination between "aggregate demand" and "aggregate supply" shocks is somewhat arbitrary. An alternative way to classify different types of shocks would be to call them "nominal" or "real" in the sense that demand shocks are mostly reflected in prices and wages in the long-run while supply shocks have "real" effects on output in the long-run.

[3] cf. Blanchard/Quah 1989.

occur either after changes of fiscal policy which may affect the savings rate or in the presence of increasing returns and learning by doing.[4] Furthermore, monetary shocks may be persistent due to their influence on capital accumulation if the shock is not balanced by an opposite shock of the same magnitude.

To distinguish between short and long-run effects of various shocks, the movement of GDP, which usually follows a unit root process, has to be split up into its temporary and permanent components. A method for such a decomposition was provided by Beveridge and Nelson (1981). We have undertaken the decomposition of GDP of EU-15 and for the US according to Beveridge-Nelson's method. The temporary components of GDP are shown in figure 3. The early 1980s were characterised in both regions by a deep recession. In the US two subsequent negative shocks hit the economy, but in 1983 the expansionary fiscal policy triggered a positive shock of nearly the same magnitude.

In Europe however, the negative shock of the early 1980s petered out very slowly leaving GDP below its permanent level for some time. Only in the wake of the monetary stimulus at the end of the 1980s did actual GDP surpass its permanent level.

In the early 1990s, the US economy first stepped into a recession, while in Europe the negative impulse from the slowdown of the US was compensated by the expansionary fiscal stimulus during German unification. Then in 1992, when this positive shock had faded, the impact of monetary restriction made Europe slump into a recession. In the following years the European economy suffered from numerous negative shocks such as an increase in long-term interest rates in 1994, fiscal consolidation in 1996 and 1997 and turbulence on the financial markets at the end of the decade. Actual output then remained at its permanent (lower) level without any significant positive impulse.

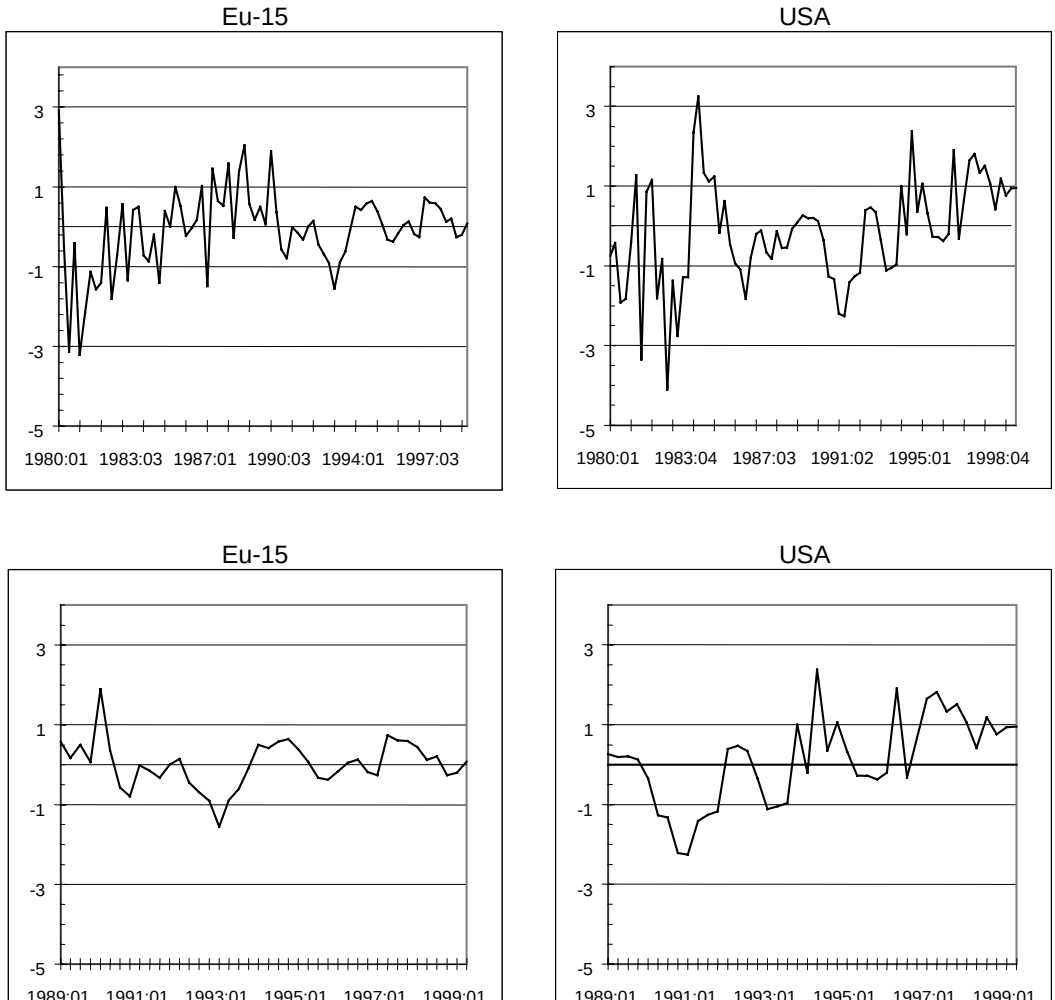
The most important findings are therefore that in the US a negative nominal shock which forced the economy into a recession was usually followed by a positive nominal shock of about the same magnitude, while in Europe the latter has not been the case.[5]

[4] Blanchard and Quah (1989).

[5] The Beveridge-Nelson technique is not the only method to decompose GDP into its temporary and permanent parts. An alternative approach was proposed by Blanchard and Quah (1989), who discriminate between nominal and real shocks estimating a structural VAR. Analysis on European economies using this method has been done by Karras (1994), Gacasto and Pellegrini (1999), Keating and Ney (1999).

Figure 3: Beveridge-Nelson Decomposition of Real Gross Domestic Product

Temporary Components in Percent of GDP



Source: OECD, Bureau of Economic Analysis, DIW calculations.

Deutsches Institut für Wirtschaftsforschung

3 A Growth Strategy for Europe

3.1 Adverse Effects on European Growth

The reasons why European growth has lagged behind the US have to be looked for on the micro as well as on the macro level. Both sides of the market, supply as well as demand, also have to be considered. In particular the interaction between these categories must be addressed. No macro policy delivers stable results if microeconomic conditions provide the wrong incentives. On the other hand no micro policy will be successful if macroeconomic conditions do not allow any expansion. The same reasoning applies to supply and demand side policies. No growth process will prevail if one market side is neglected. Any improvement of supply side conditions at the expense of demand side will fail and vice versa. Hence each one sided analysis may neglect fundamental issues which in the end could make a significant contribution to growth and employment. In the light of these arguments a general assessment of policy conditions is required in order to outline a strategy for a higher growth path in Europe.

In general, deficits during the previous decade have to be addressed. The analysis already outlined in the previous chapter shows that the EU has faced many more adverse shocks during the nineties than the US. The first approach therefore is the hypothesis that *macroeconomic* conditions have been worse in Europe than in the US.

3.1.1 Germany

Due to unification, Germany experienced a boom in 1990/91, which temporarily allowed it to avoid the recession which afflicted many other OECD countries. The macroeconomic consequences of unification were quite similar to those of a classic Keynesian policy designed to stimulate aggregate demand. Growth and the expansion of employment reached new record highs. But even vigorous investment and capacity enlargement could not prevent prices from rising and the unions took the opportunity of the booming economy to demand substantial wage rises which spurred inflation. However the Bundesbank reacted and raised short-term rates sharply.

The effects of the expansionary fiscal policy at that time temporarily compensated for the dampening effects of monetary policy, but then overall production declined. Interest rates were now at a very high level and became an enormous burden on the economy. To finance the huge transfers to east Germany, the government had refused to increase taxes until late 1992, which was exactly the wrong moment, as the output gap had widened considerably. Wage policy in 1993/94 was characterised by marked moderation. The conditions for a new upswing would not have been too bad, but the Bundesbank was unwilling to loosen its monetary-policy reins. So the upturn of 1994 only lasted for a relatively short period. The D-Mark appreciated more than the currencies of other European countries and investment was discouraged by the expectations of rising capital market rates, whilst for a short time wage settlements were pushed through in some sectors. It was only from 1996 onwards (figure 5), with a lesser D-Mark rate and a continued (even if too late) lowering of interest rates, that growth picked up again. The upswing was primarily export-led, since the depreciation of the D-Mark in combination with moderate wage rises had significantly increased the competitiveness of the German economy.

The price of this strategy was stagnant consumption as wages increased very moderately[6]. In 1998 employment finally started to rise and private consumption recovered. Without the effects of the crisis in Asia, Russia and South America, which dampened exports and growth

[6] C.f. Lindlar and Scheremet (1998).

especially in the second half of 1998, a longer lasting recovery would have been expected. And it was only in 1999, when the effects from the crisis flattened out and those of fiscal policy became less restrictive, that the economy picked up again.

Looking to long run labour market developments, the development in the last decade showed that a large number of jobs can be lost very quickly in a recession, but that even with a recovery new jobs may be created only very gradually. But in the nineties recovery periods have been too short and too weak to generate considerable employment. Economic policy relied on supply-side policies. Low wage increases stimulated exports, but hampered internal demand. Most of the time interest rates have either been too high or lowered too late and too slowly.

Fiscal policy, on the other hand, did not compensate, but was rather procyclical and restrictive in order to fulfil the Maastricht criteria. It was only at the end of the decade that monetary and fiscal policies were on the way to being in line with the requirements for higher economic growth. With well co-ordinated economic policies, growth could now potentially continue for several years.

Figure 4: Exchange rate D-Mark against ...

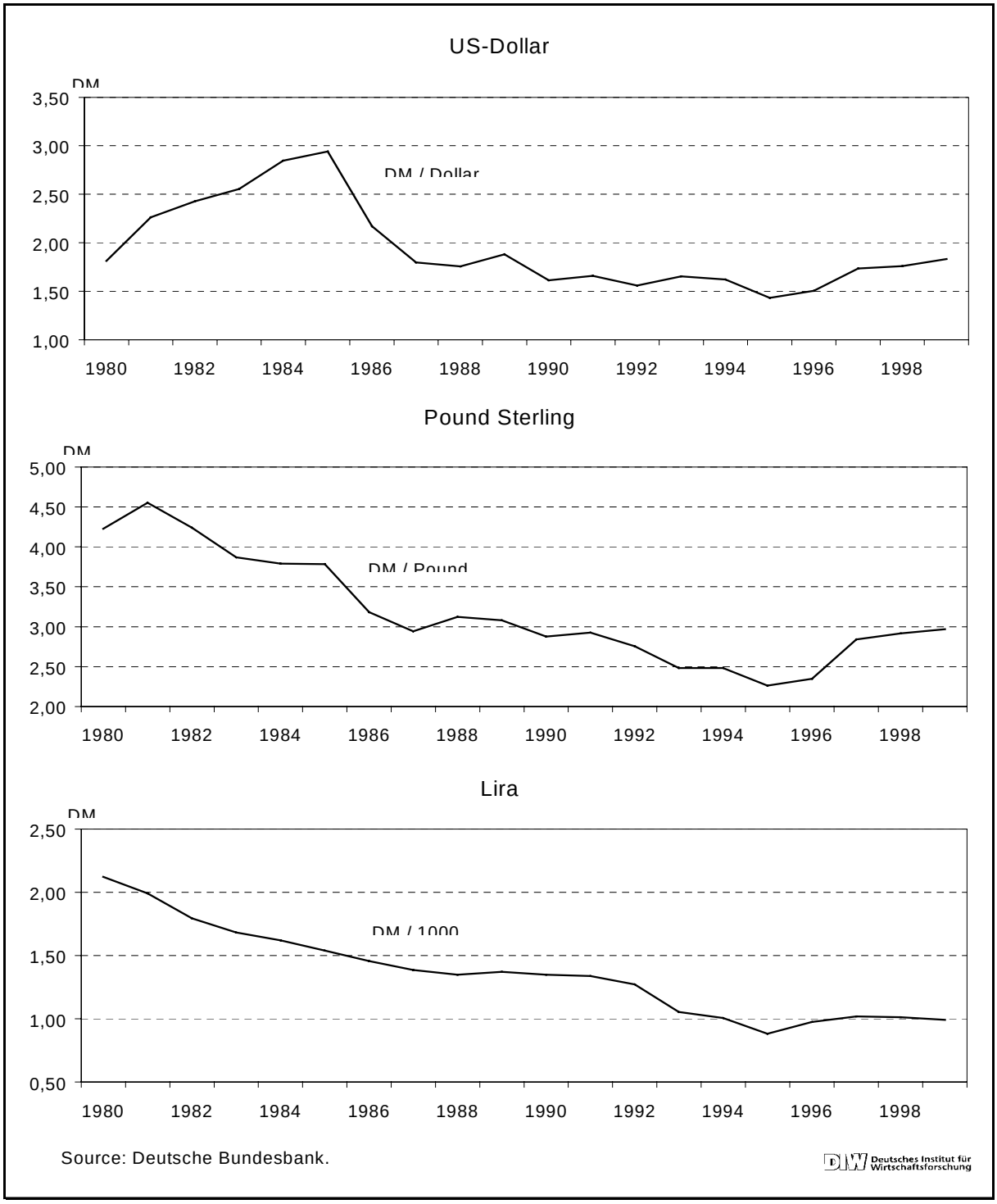
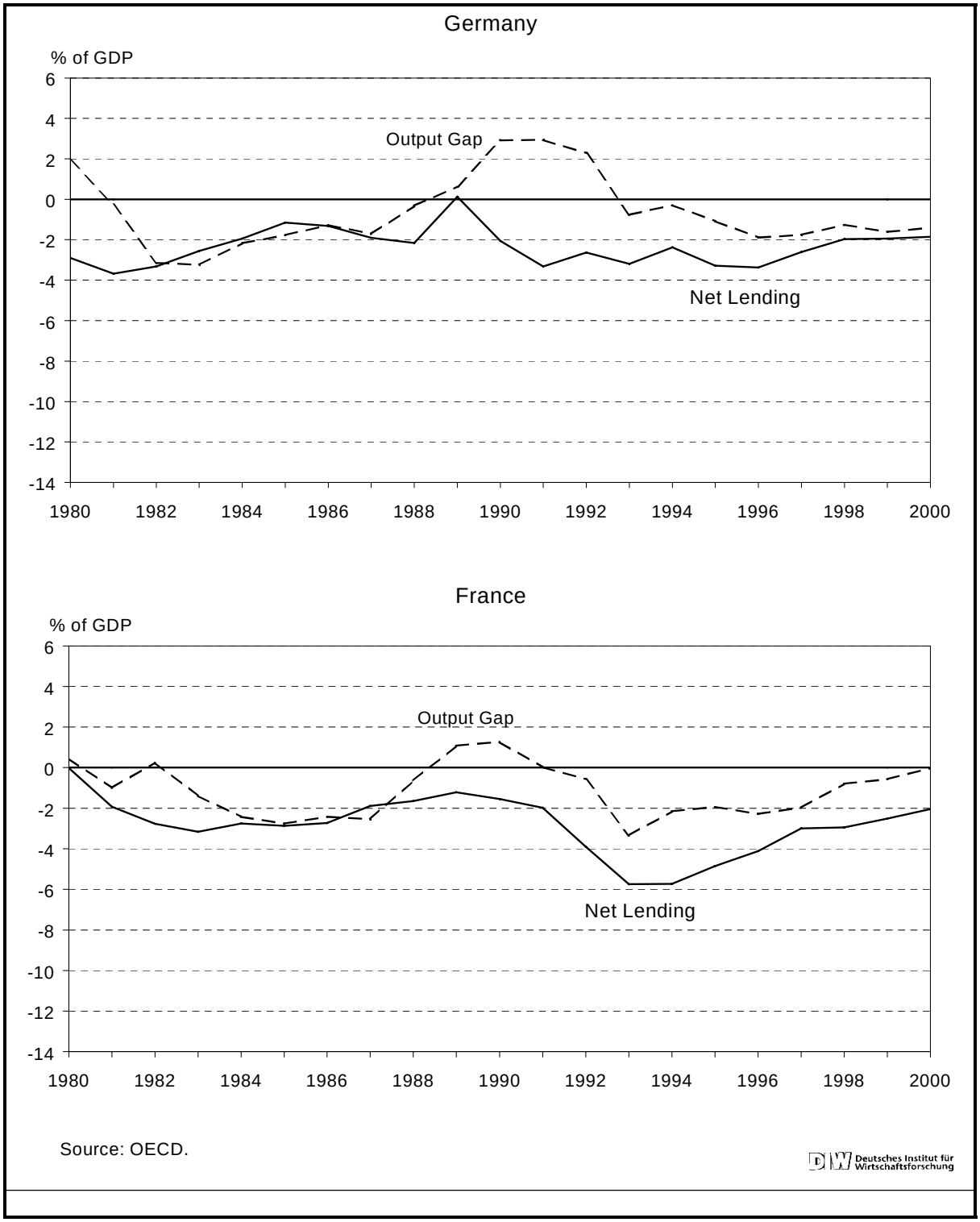


Figure 5: Net Lending of the Public Sector and Output Gap



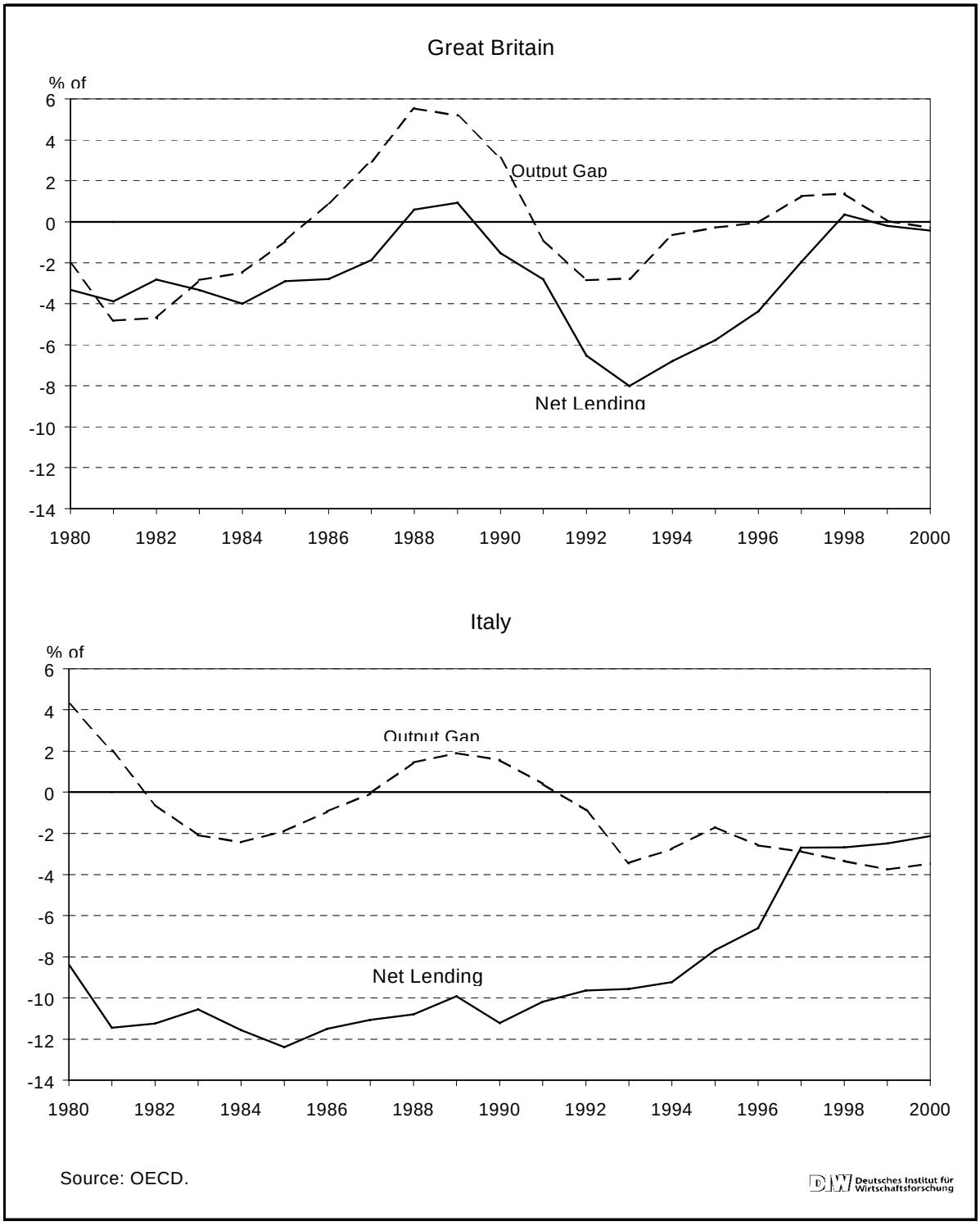
3.1.2 France

During the nineties, French economic policy consciously opted to subject itself to the constraints imposed by the European convergence process, as manifested by its orientation towards the Maastricht criteria and the monetary course set by the *Bundesbank*. In 1990, France was moving towards a recession, and it was only due to the unification boom in Germany, which bolstered French exports, that this could be averted. However, high interest rates in Germany required even higher interest rates in France to defend the exchange rate of the franc within the European Monetary System. At that time French monetary policy obviously lacked the credibility to fight inflation as strongly as the *Bundesbank* did. In view of the size of its budget deficits, French fiscal policy was unable to compensate for the restrictive impact of monetary policy to the extent required and France too was drawn into a recession in 1993.

In the following years, French economic policy was in many respects similar to that pursued in Germany. With the exception of a short sharp recovery in 1994, economic growth was subdued till 1996. In 1995 the real external value of the franc rose, along with that of the D-Mark. It was only in 1996 that the economy recovered, once the real appreciation of the currency had been reversed and interest rates had fallen perceptibly. The change of government in 1997 was followed by a change in policy, and focus was shifted to measures to stimulate domestic demand. As in the run-up to monetary union, monetary policy was no longer available as a national policy instrument, so fiscal policy and collective bargaining were left as the main areas for economic policy. As a result the remaining leeway in these areas was indeed exploited. Fiscal policy makers restrained the pace of consolidation to the minimum permissible under the Maastricht treaty, with a deficit ratio of exactly 3% in 1997 and 2.9% in 1998. Collective bargaining, unlike in Germany, was no longer geared to reducing unit wage costs as a way of raising competitiveness and stimulating foreign demand. In order to achieve cuts in spending without simultaneously damaging consumption, a number of social benefits were made more conditional on income. All in all, the fiscal burden on low-income households was reduced.

As a result of this policy of bolstering domestic demand, economic growth in France has since evolved quite favourably, and there has been a rapid improvement in the country's labour market indicators. The rapid rate of economic growth has also begun to pay off in terms of fiscal consolidation: government revenues are rising quickly, while expenditure, particularly that incurred as a result of unemployment, is falling.

Figure 6: Net Lending of the Public Sector and Output Gap



3.1.3 Italy

In Italy too, a longer period of growth came to an end in 1990. Only the effects of the German unification boom prevented a recession. But international competitiveness worsened dramatically. This was due to the lack of convergence of prices and wages against the most important trading partners. Within only two years, the current account deficit doubled. With the political shift in 1992, a new period of reforms and fiscal restrictions started. A considerable devaluation in September 1992 led to an export boom. But monetary and fiscal policy was very restrictive and recovery could only be observed at the end of 1993. The inflation rate came down, not least as a result of the total abandoning of the 'scala mobile', (automatic index-led wage increases), and interest rates were lowered. But with the currency crisis in 1995, interest rates were raised again and fiscal policy became extremely restrictive when, two years before the envisaged start of the Euro, the current fiscal deficit was still at 6.7% of GDP (cf. figure 6). Surprisingly, with tax increases, a new 'euro-tax' and the broadening of the tax basis as well as by cutting public expenditure, Italy succeeded in fulfilling the fiscal deficit criteria of the Maastricht treaty in 1998. But the price of this success in terms of a loss in economic growth and employment was high. In spite of a high and lasting output gap, fiscal policy was procyclical for nearly all of the nineties, while monetary policy was directed to price stability and could not compensate for the harmful effects of fiscal policy. It was only in 1999, with a certain normalisation of interest rates and a much less restrictive fiscal policy, did the general conditions for higher growth become more favourable.

The crucial point of economic policy in the nineties was unemployment. During the recession of 1993/94 the unemployment rate rose from its already high level of 9% to 12% and came only down again at the very end of the decade. Currently, with a normalisation in economic policy conditions and with economic recovery in Europe, prospects for growth and employment in Italy are getting better too.

3.1.4 Great Britain

After a boom in the second half of the eighties, Great Britain entered a deep recession in mid-1990. At the beginning of 1992, GDP had fallen by 4.5% and unemployment had risen by more than 1 million. Due to the overvaluation of the pound, which was fixed at that time within the European Monetary system, the current account deficit widened substantially. At this time, Britain was suffering from supply-side deficiencies. The rapid pace of wage growth compared with the European core countries damaged the country's competitiveness. After the Bundesbank's raising of interest rates in summer 1992, the exchange-rate orientation became untenable, and the British government suspended the pound's participation in the EMS. This decision allowed a change in monetary policy to a more expansionary stance, thus setting the foundations for the following strong and persistent economic expansion. As a consequence of the devaluation, exports picked up and with low interest rates and the reduction of private household debt, private consumption also started to rise. Between 1993 and 1998 the British economy grew at a rate of about 3%, compared to just 2% in western Europe as a whole. With this relatively high growth the unemployment rate came down considerably.

When in 1994 western Europe experienced a sharp rise in interest rates, Britain could not avoid this trend entirely, but was not as seriously affected as the other EU-countries. In deference to those countries aiming to join the EMU., the public deficit was allowed to rise up from 1.5% to 8% of nominal GDP when the output gap deepened in the beginning of the nineties (figure 6). In contrast to most continental countries, Britain followed an anticyclical

fiscal policy. Consequently during the long recovery period, the budget was swiftly consolidated and it was more or less balanced in the last years.

Only in 1997, when consumer price inflation rose to over 4%, monetary policy was tightened once again and the external value of the pound rose sharply. Together with the international crisis in 1998, this led to a stagnation of economic growth in the beginning of 1999. But with both a rapidly less restrictive monetary policy and - once again - a more expansionary stance of fiscal policy, this period was of a short duration and the economy soon picked up again. Nevertheless, the overvalued pound and its effects on foreign trade may be a risk for medium-term economic development.

3.1.5 European Monetary Union

In contrast to Great Britain, which left the EMS in 1992 and unlike Italy, did not join it again, the development of the large European continental countries – and thus in the later EMU area as a whole – was characterised by monetary and fiscal policies with the main priority being the fulfilment of the Maastricht criteria. Monetary policy was dominated mainly by the Bundesbank's policy which, especially in the first half of the nineties, had to cope with the requirements of German unification and was often contrary to the business-cycle requirements of other countries. Fiscal policy too, was restrictive and in most countries most of the nineties pro-cyclical. But, as the British example has shown, a strong anticyclical fiscal policy which initially leads to high public deficits, can contribute to the long-term target of fiscal consolidation as well, by stimulating growth and thus increasing tax revenues and reducing expenditure related to – with higher growth, decreasing – unemployment.

Unlike monetary policy – at least in the EMU countries -, fiscal policy is still a matter of national policies. However, the general rules of this policy will be increasingly determined at a European level. Firstly, stability and convergence programmes already exist. At present, most countries are consolidating faster than was expected within these programmes. Secondly, there are discussions within the European Union regarding the desirable level of public activity, tax systems and the structure of expenditure and revenues. Certainly there are no clear criteria, as to what level of state activity would be best. However, after the long-lasting and necessary efforts for consolidation, there is a general desire to return to a more 'normal' period of lower rates for taxes and social contributions. Especially with regard to pension systems this may conflict with demographic developments, and new solutions have to be found. In general, there is a trend towards lower tax rates, an enlargement of the tax base, a cutting of social expenditure and/or at the same time a shifting towards a more private financing of social security and especially old-age insurance systems. All this will have to be discussed from a European perspective too. In this respect, it should not be forgotten, that reducing state activity and public social welfare may lead to non-desirable detractions from the positive effects of the macroeconomic effectiveness of built-in-stabilisers.

To sum up this short survey of the development in the 4 big European countries we can draw some conclusions for the European Currency Union as a whole:

- For a significant part of the EU, in particular Italy and UK, inflation was still a problem at the beginning of the nineties. The respective central banks tried in line with attempts to foster European economic integration, to curb inflation down to the level which was prevalent in more stable countries such as Germany. This process has obviously inflicted a loss of growth on these economies. Supply side problems were certainly at the heart of the problem . Wage demands, in these countries in particular, were too high to be consistent with tighter inflation targets. However in general, inflation was no longer a problem in Europe during the nineties. As it can be viewed as a second possible source of

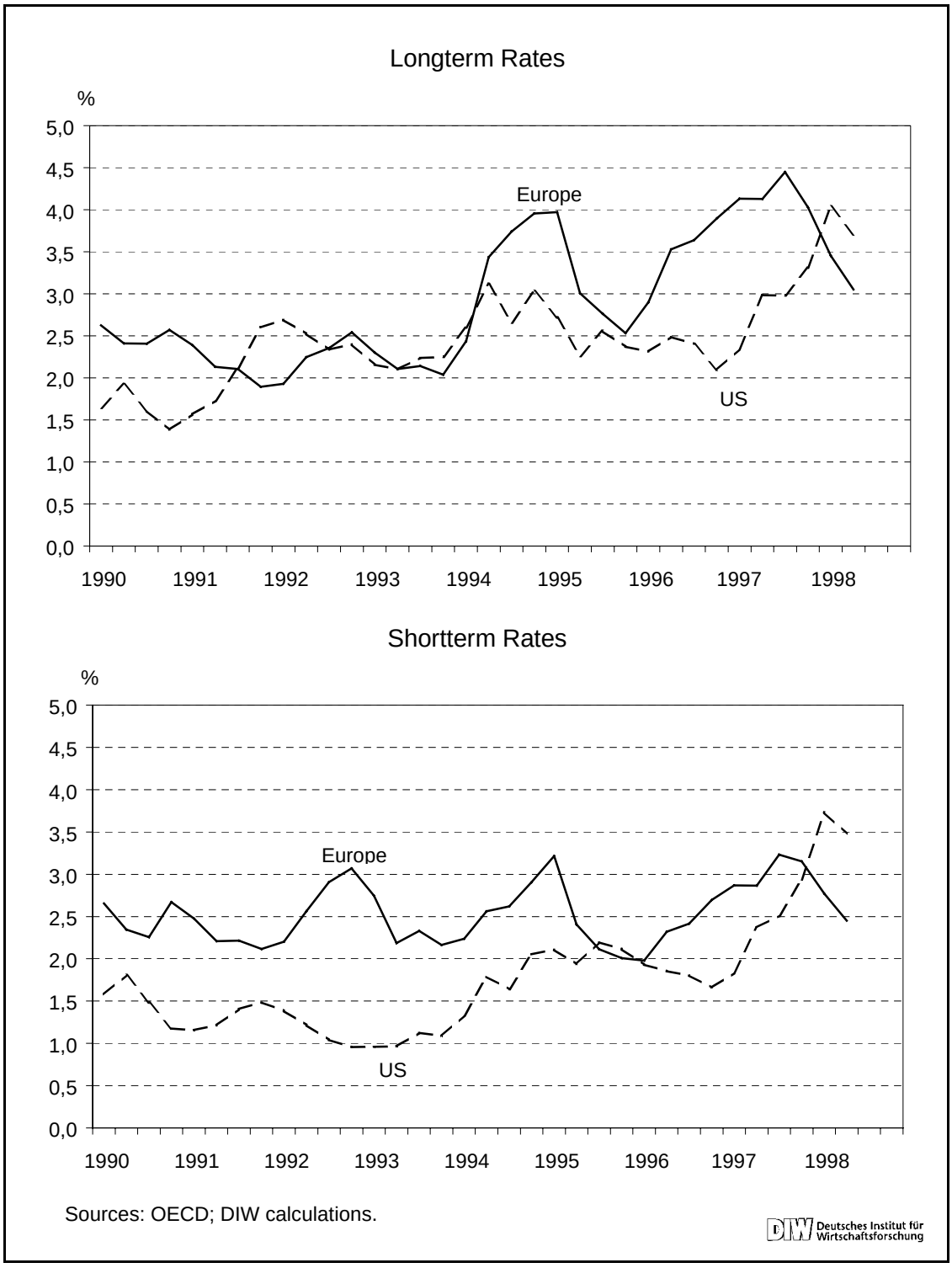
mistakes, monetary policy has to be analysed in order to determine whether it has drawn the right conclusions and if its stance has left enough leeway to ensure expansion. For quite some time during the nineties real interest rates in Europe have been still comparatively high indicating that monetary conditions were not as favourable e.g. as in the eighties and less favourable than those in the US (cf. Figure 7).

- The third macroeconomic issue to be addressed is the role of fiscal policy Whilst on the road to European Monetary Union most of the governments had to enter a tight fiscal course in order to meet the budget standards set by the Maastricht treaty and consecutively those of the Growth and Stability pact. This course has shown some negative growth effects, too.
- Not only domestic policy issues had an impact on the level of European economic activity but adverse external shocks may also have played a role. As long as exchange rates were at least to some extent flexible among European countries, there were several currency crises in Europe. In 1992 the British Pound and the Italian lira were forced to leave the exchange rate mechanism of the EMS because of real appreciation due to high inflation rates in these countries. Such a situation creates uncertainty about exchange rates and may hamper trade. The second crisis was the Mexico crisis which again affected the Italian lira. Finally the currency crisis in South East Asia and the subsequent break down of economic dynamics in these countries reduced exports to that region. So it may be deduced that the international environment may not have been stable enough to foster growth.

In addition to these macroeconomic deficits there may have been *microeconomic* shortcomings. The level of regulation in Europe, especially in the service sector, was still high throughout the nineties. It was not until the end of the decade that major service areas, especially as far as information technologies related areas were concerned, were deregulated within the EU. Another major issue was privatisation and competition. Here too it was only at the end of the decade that telecommunications were privatised and deregulation opened up competition.

One has to take into account that the structural change all major industrial countries are facing is one which moves them more and more to a knowledge-based society. Knowledge is a very specific asset as it shows significant external effects. Once produced it can be distributed and replicated without high costs. Hence there is the assumption that the production of knowledge is insufficient when being produced exclusively by the private sector. Nevertheless knowledge is essential for economies to preserve their economic competitiveness. Consequently, a certain degree of public investment into knowledge producing fields may be advisable. Here the fiscal restriction may have produced adverse effects by cutting expenditure into these types of public investment, to the extent that knowledge production may have been reduced and thus in the end the competence to use modern information technologies in Europe was too low compared with the US.

Figure 7: Long and Short term Real Interest Rates in Europe and the US Long term Rates



3.2 Preconditions for a Stable and High Growth Path

In line with arguments from the preconditions of the previous chapter , it is clear that a stable growth path cannot result from one-sided measures. Instead the economy as a whole has to be directed to a course of expansion.

3.2.1 External Stability

In the light of the recent distortions in South East Asia external stability is one precondition. In the end this means that the international currency system should be constructed so that it is not prone to further crises. In the wake of the Asian currency turmoil several attempts have been made to define a stable currency environment as well as a stabilising role for the IMF. However basic problems have not been solved so that one cannot exclude further disruption on international currency markets. In particular this means that the presently comfortable role that the relatively weak Euro has may not prevail. Therefore an international co-ordination approach on exchange rate movements appears to be necessary. Currency markets are notorious for failing to move along the path outlined by fundamentals. Speculative, partly self-fulfilling motives dominate currency movements at least in the short run. At times, drastic changes of currency values will always have an adverse effect on international trade and thus affect export oriented economies in particular. However, if major central banks agree on a fundamental direction of currency movements and convey these views to the public, then more stable movements of currencies are likely. In particular an agreement about multilateral interventions could be of some advantage. In order not to endanger domestic stability these could be sterilised to keep monetary conditions on the desired track. However up to now, no such agreement is in sight. Hence it cannot be excluded that further currency crises may hit the world economy.

Nevertheless the EMU members are now in a far better position than throughout the nineties, as a result of the introduction of the Euro, which at least protects them against internal currency shocks. Therefore the bulk of exports are no longer subject to currency changes and a potential distortion on currency markets will hit the EMU members less than previously. For that reason their growth prospects have improved, although problems for the UK and other members of the EMS might still occur, should their currencies come under pressure.

3.2.2. Monetary Expansion

Furthermore, domestic policy has to give clear signals that it is entering an expansionary course. First of all such a requirement affects monetary policy. Monetary conditions are essential for economic activity, as they determine the conditions at which economic agents can take on debts.[7] Monetary conditions feed into investment plans of households and firms through various transmission channels. Of utmost importance is the credit channel. By fixing short-term interest rates central banks influence the conditions at which banks lend their money to households and firms. The decision of firms to invest or households e.g. to build a house is, at the margin, determined by the opportunity costs of a credit. If potential investors do not have the necessary financial means to finance their investment they have to pay for credit along with the respective interest. If they do have the money, they may consider lending money, providing interest rates are high enough. However, expectations regarding possible decisions of the central bank, as well as the consequences of its action have already been shown to have an impact on economic behaviour. There is widespread consensus among economists that monetary decisions have an impact on the real economy at least in the short

[7] Nelson (1995)

run.[8] The precise length of the short run is highly debatable. However from an economic policy perspective the time span of real effectiveness seems long enough to be of importance[9].

In order to induce a process of high growth the conditions have to be so that there is a strong incentive for potential investors to invest. This is only the case as long as real interest rates are low enough. Measured by this variable, Europe has never experienced a monetary push during the nineties such as that of the US given by the Fed in 1991/92. It was only recently that real interest rates in Europe were lower than in the US. (Cf. Figure 7) But at that time the US then had already experienced a long period of high growth, whereas Europe had just managed to get shaky upswings. In the past, the convergence of inflation rates to the lower level of the monetary anchor obliged Germany to follow a rather restrictive monetary course at the European level. With the introduction of the Euro these reasons are now obsolete, at least for the EMU members, and the ECB should do everything to keep real interest rates low.

The fact that any influence upon short-term and policy-set interest rates on the long-term rates exists is quite often denied. A finding such as this would indeed severely limit the real effectiveness of monetary policy, since long-term rates are more important for investment decisions than short-term rates. On the other hand central banks may have an influence, because by changing the short end of the capital market, the relative price of liquidity is changed, too. This leads to appropriate shifts in portfolios. In fact some tests show that there is some impact of monetary policy variables on long-term rates.

The correlation between short- and long-term rates in Europe is reasonably high (0.7 after 2 quarters in Europe). An important point is whether real interest rates are stationary, i.e. there is no clear-cut tendency towards higher or lower levels in the long run. Findings such as these would anyhow hardly be explained by prevalent economic theories. Tests show short-term as well as long-term real rates are stationary with a positive intercept.[10] Hence no long run tendency towards higher or lower real interest rates can be observed.

In order to measure the impact of a change in short-term rates, we put both interest rates into a Vector Autoregressive System (VAR). An important issue is whether expectations on monetary policy decisions play a major role. Market participants form their beliefs on future monetary policy action and act appropriately on the market. In that case a change in short-term rates would be preceded by changing long-term rates, because markets in general do not err on the direction of an interest rate move. Otherwise, when expectations do not play a major role, the long-term rates would be affected after a change in short-term rates.

Tests with an unrestricted VAR show that the expectation hypothesis, where a lead short-term rate (RKZEU) is included, contains more information for the development also of the long-term rates (RLZEU) than the reverse. Looking at the Impulse - Response Function of the VAR (figure 8), which shows the reaction of long-term rates upon a standardised short-term rate change and vice versa, one gets the impression that the expectation of higher short-term rates leads to higher long-term rates. e.g. a decrease of the one quarter ahead short-term rate by one standard deviation shock causes long-term rates to fall by about 0.2 standard deviation. Hence if the Central Bank succeeds in establishing the expectations of a period of

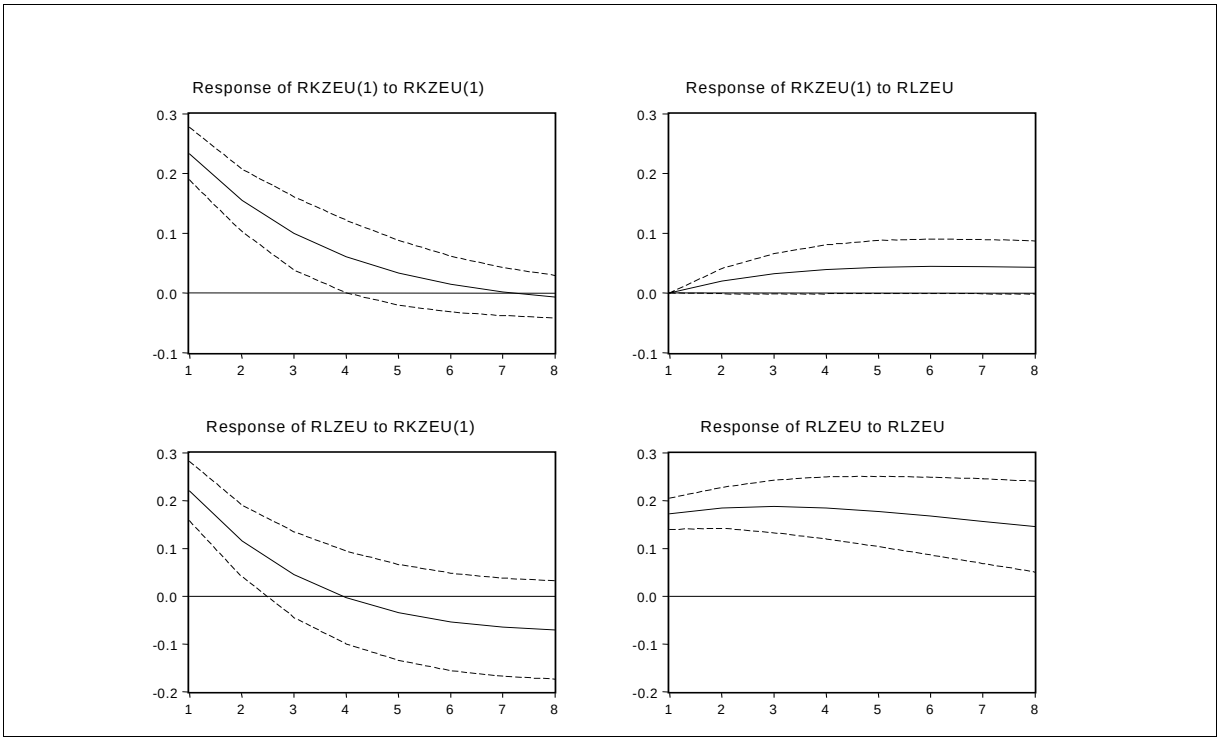
[8] Taylor (1997).

[9] Romer (1993).

[10] These results are obtained by applying an ADF test with European short-term as well as long-term interest rates. For data details cf. Hahn/Müller (2000).

low interest rate the capital market interest will reflect that. To achieve this, the monetary authority has to be credible in its action. In that case markets participants feel they can predict the course of monetary policy relatively safely. There is no need of any kind of risk premiums on interest rates which cover uncertainties. However, any indecisiveness regarding a central Bank's course could damage this asset.

Figure 8: Response to One S.D. Innovations ± 2 S.E.



Looking at the record of the ECB, it is still very doubtful whether European monetary policy will follow such a course. Interests rates were reluctantly lowered in spring 1999, even though the international currency turmoil had already unfolded. However in contrast, before there were clear signs of any inflationary developments, rates were raised again. There is still no sign that the stability target of the ECB will be violated. However real interest rates in Europe are once again on the rise. So it remains uncertain as to whether monetary conditions in Europe are appropriate for a growth target around 3 % for several years.

3.2.3 A Stabilising Fiscal Strategy

In the following section, the best practise fiscal strategy, which ensures that fiscal policy does not hamper growth, will be outlined. Many observers see US fiscal policy as an example for Europe, because the US-government accounts for a low proportion of the state in total economic activities and because of the declining trend in public deficits during the nineties. Some even state that this was the precondition for the long-term growth process in the US. The aim of this chapter is to analyse the trend of public-sector deficits/surpluses in the USA and the underlying strategy. As it turns out, fiscal consolidation was rather the consequence of the growth process. Only its cyclical flexibility was a precondition for sustained growth.

When, in the mid-1980s, the US federal government budget recorded growing deficits, primarily because of the substantial increase in defence spending, and the threat of a major burden of interest payments in the future became very real, top priority on the economic-

policy agenda was quickly given to the goal of balancing the government budget. Fiscal policy was subjected to binding rules, the aim of which was to underpin the credibility of the efforts towards consolidation. The federal budget was to be brought into balance by setting statutory targets for the deficit. The targets referred exclusively to the current federal deficit; in other words, public investment and other capital transactions were excluded. The targets consisted of figures for the absolute level of the deficit. If these limits were exceeded by more than 10 billion dollars in the budget projections, corresponding generalised cuts in spending were to be automatically applied (sequester).[11]

The aim of this law was to exert pressure in order to limit spending growth. The government had to justify measures that involved additional spending against the background of the forecasts for the deficit. However, although the federal deficits were reduced, the goal of balancing the federal budget was not achieved.

In the autumn of 1990 a new strategy was adopted to balance the budget. The focus was then to carry out strict control of expenditure, without setting a concrete deficit target.[12] This new concept differs from the preceding law in one central respect. In a cyclical downturn the government budget deficit is permitted to increase to the extent that the increase results from the effects of the built-in stabilisers. During an economic boom, on the other hand, the deficit must narrow, as the favourable situation on the revenue side may not be used to finance additional spending, but rather may only be used for consolidation. Consequently this strategy implies a deficit that 'breathes' in rhythm with the business cycle, and one that, moreover, thanks to its anti-cyclical orientation, aims to stabilise the business cycle.

One approach for analysing the impact of fiscal policy on the business cycle is to set positive or negative demand impulses against the fluctuations in the business cycle, as represented by changes in capacity utilisation. The demand impulses were calculated by extrapolating the revenue of and expenditure by government and the social insurance institutions actually recorded in the previous year by the rate of growth of potential output. These values represent the cyclically neutral reference line. Positive demand impulses occur when actual receipts are lower and/or spending higher than the extrapolated values.

As the upper left-hand graph in figure 9 shows, in the USA government demand impulses and capacity utilisation exhibit a contrary pattern over time. In phases in which productive capacity was under-utilised, this was offset by positive government demand impulses. As the economy recovered, the positive impulses grew weaker, or even turned negative. In recent years US fiscal policy has been shown to have reacted appropriately to changes in the cyclical situation. In 1989 even a slight cyclical weakening led to expansionary demand impulses, following a period in which fiscal policy had been rather restrictive. This shift from a restrictive to an expansionary effect was largely due to the built-in stabilisers in the area of mandatory spending. Discretionary demand-management programmes, on the other hand, were not implemented, in accordance with legal requirements. The statutory limits on spending subsequently meant that the favourable trend on the revenue side could be used during the upturn to reduce the current deficit. At the same time this helped to prevent the economy from overheating.

All in all, fiscal policy in the USA was anti-cyclical and exerted a stabilising impact on economic trends throughout the period under consideration. The negative relationship is revealed even in a simple correlation between demand impulse and capacity utilisation (cf.

[11] For a detailed description see OECD (1988).

[12] See OECD (1991).

figure 9). This outcome reflects both the strategy of accepting budget deficits in the recessionary phase, if necessary leading to changes in legislation, and the persistent restrictive impact of US fiscal policy during economic boom phases, when consolidation was once again given top priority. Yet the restrictive effects were never so severe that they endangered the upturn. Such a trend is, however, conditional on other policy areas, especially, as outlined above for monetary policy, providing consistent support for economic expansion.

Economic policy in Europe[13] is different fundamentally from that in the USA. At the end of the 1970s, Europe seems to have changed its policy stance (bottom left-hand graph in figure 9). Prior to that, as in the USA, there was a negative correlation between fiscal-policy impulses and the business cycle, whereas since then fiscal policy has been rather pro-cyclical in its orientation. In 1992 and 1993, when Europe slumped into a recession, fiscal policy was still slightly expansionary, primarily thanks to the built-in stabilisers, whereas in 1994 it changed its orientation to a restrictive course. The remaining years where characterised by a forced consolidation especially in the run-up to EMU. This put severe pressure on economic recovery, which had only just begun.

Decisive for the success of consolidation efforts in the USA and the superior economic performance of the US economy, was that the fiscal strategy was targeted at the root cause of the problem of public debt, namely the tendency for government to introduce additional spending programmes when tax revenues are flowing freely. By contrast, the Maastricht Treaty and the Stability and Growth Act have set a maximum limit on the magnitude of the budget deficit and, apart from the more general objective of a balanced budget in the longer run, neither the Treaty of Maastricht nor the Dublin Stability Pact contain provisions on restricting expenditure in periods in which the economy is growing strongly. Consequently, European efforts to consolidate public finances are based on a philosophy in line with the strategy of the 1980s in the US, which was recognised to be inappropriate and which was consequently replaced.

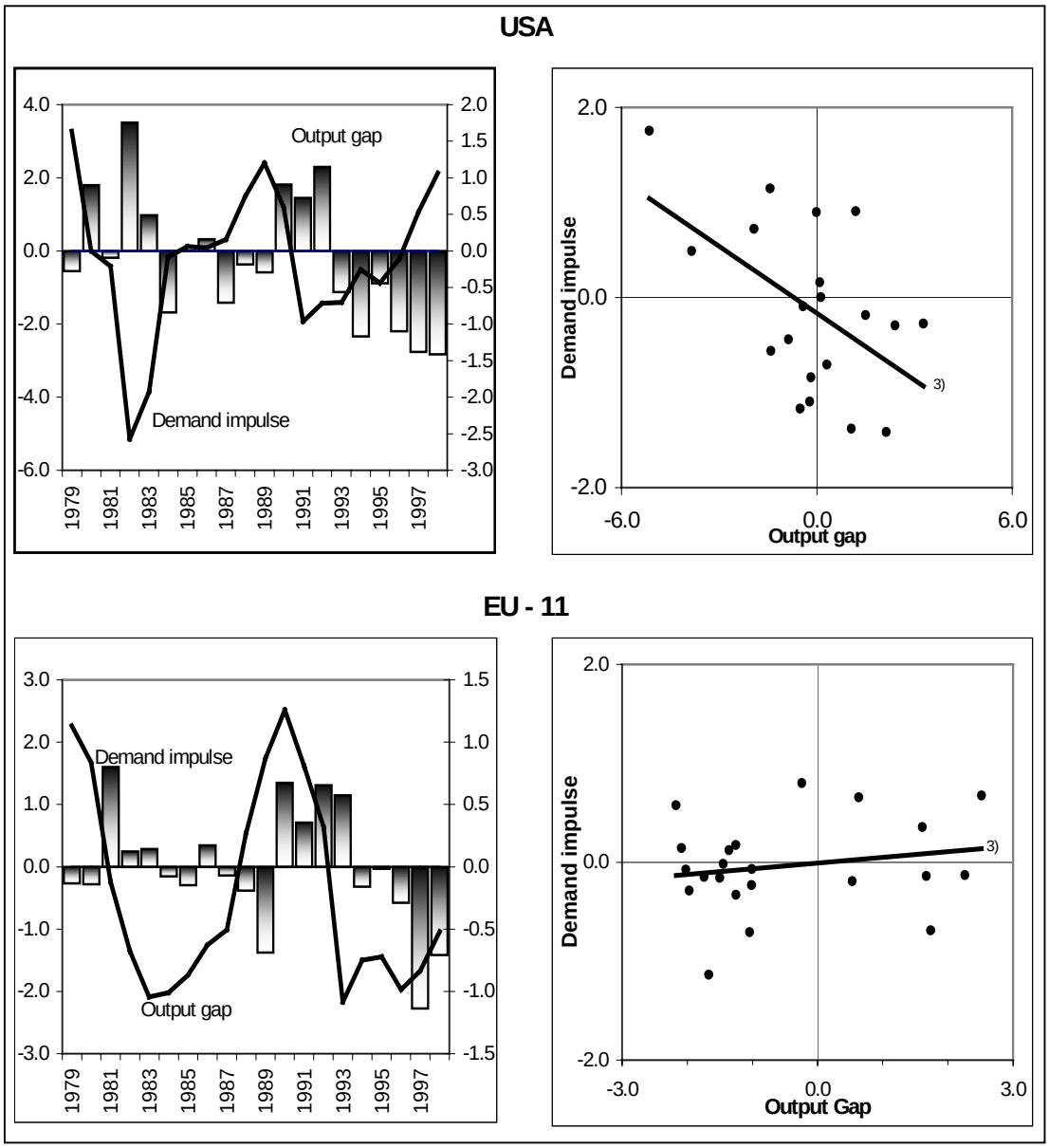
A precondition for a stable growth process then is fiscal flexibility. The positive side of the past consolidation efforts is that the public deficits in Europe are now very low compared to historical standards. In fact if the economic upturn would hold on for only a few years surpluses may occur. Therefore it is now relatively easy to advocate and practise a course of fiscal flexibility.

3.2.4 Macroeconomic Wage Policy

Many European countries suffered from severe supply side problems until the early nineties. These were mainly reflected in wage settlements which induced relatively high inflation rates and at the same time hampered international competitiveness, mainly in Italy and the UK. Since the mid - nineties this has changed markedly. In the course of deregulation of the labour markets, rising unemployment and the consequent loss of power for unions have led to very moderate wage settlements (Figure 10). Since 1996 wages, at least in the EMU member states, have risen at a relatively low rate which at no time endangered price stability, even though growth rates increased slightly at the end of 1999. With a rise of unit labour costs below 2 % (Figure 11) the international competitiveness of the EMU countries has increased, something that is reflected in the surplus of the external balances.

[13] The notable exception seems to be the UK where public deficits were also very flexible.

Figure 9: Fiscal Demand Impulses[1)] and Output Gap[2)] as % of GDP,1979 to 1997



[1]Deviations between spending/revenue affecting domestic demand and the 'neutrality line' extrapolated using potential output as a % of nominal GDP. – [2] Difference between current GDP and potential output as a% of GDP (output gap). – [3] The lines mark the average correlation between the two variables over the observation period.

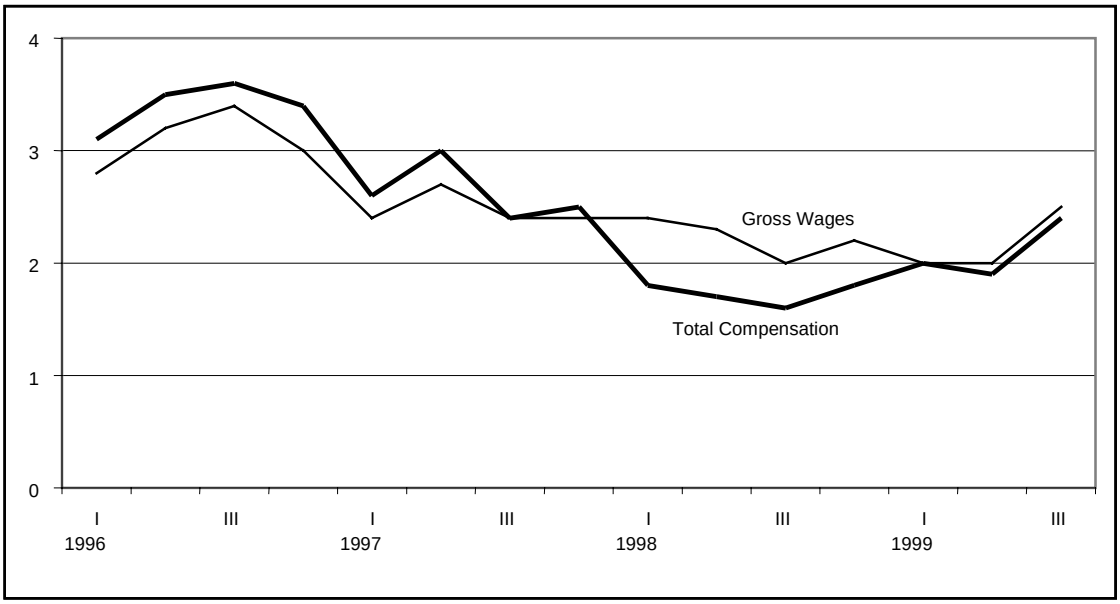
Source: OECD, Economic Outlook, DIW calculations.

A necessary requirement for a stable growth path is that aggregate wages move in line with aggregate productivity plus a compensation for a tolerable rate of inflation. In that case unit labour costs and therefore prices will not increase to the extent which would endanger the stability targets of the ECB. However, this requires price rises induced by e.g. an oil price shock or increases of indirect taxes not to be incorporated in wage settlements. Only external shocks can incite some inflationary impact in the short run. Furthermore the competitiveness

of firms, i.e. appropriate supply conditions, is preserved as wages rise in line with economic strength. Simultaneously, demand is stabilised to a large extent since the fruits of economic success flow partly into the pockets of the employees who will spend their increased income. Thus, establishing a productivity oriented wage path is one of the major prerequisites for stable and high growth. Presently wage rises are even lower than that prescribed by that rule. So in particular in a country like Germany, there is still some leeway left to stimulate demand by higher wages. However, it is up to now not clear that there are institutional structures in Europe which ensure that wages move as outlined above. Both seem plausible in that, either in times of high growth, wages may outpace the upper limit and cause inflation or that wage competition results in sort of a (real) depreciation race in Europe which in the end leads to deflationary tendencies. Hence the institutional setting for wage formation in Europe is an issue to be clarified. Only then can wage formation support a long term-growth process.

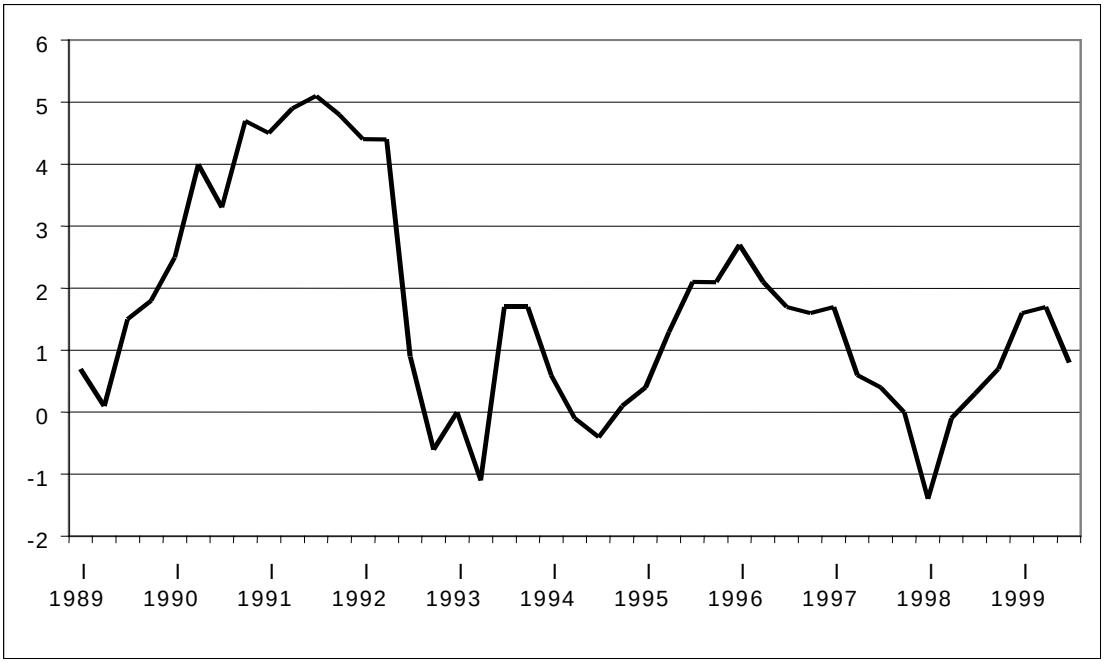
There are several institutional settings which may lead to such an outcome: It may happen in a decentralised way. Then there is competition on both sides of the labour market between individual firms as well as between individual employees. On the other hand a centralised setting is also feasible where strong trade unions on the supply side and employer associations on the demand side can bargain wage settlements. In both cases the outcome of bargaining processes will lead to results which support stable and long term growth. Only if the bargaining power is asymmetrical or the incentives to violate aggregate policy targets is present are problems created. These may occur if trade unions or employers are too powerful and do not have to fear the adverse aggregate impacts of their behaviour.

Figure 10: Labour Price Index in EU–11% change on previous year



Source: European Central Bank

Figure 11: Unit Labour Cost in EU–11% change on previous year



Source: European Central Bank

3.2.5 Microeconomic Strategies

All statistics show that Europe is lagging significantly behind the US with respect to technological change in the direction of the information or knowledge society.[14] In 1994 there were only 9.2 personal computers per inhabitant in EU(15) compared to 29.7 in the US.[15] A similar relationship is that of mobile phones. Although these figures may have converged slightly in the meantime, they show that the US is markedly ahead and showing a higher permanent growth path caused by information technologies. One reason for this can be found within the macroeconomic conditions which were more favourable in the US. A more expansive macroeconomic frame stimulated investment which predominantly flew into fields such as information technology (IT) which were considered promising for the future. Hence the lack of IT is at least partly caused by macroeconomic factors.

On the other hand a lot could be done on the micro level to increase incentives to speed up technological change. Most important would be the improvement of the educational system in Europe. Fiscal consolidation strategies should not lead to diminishing efforts in education, since this is still a major asset of European economies. In addition, the deregulation of the telecommunication sector which has partly begun in Europe has to be completed. Two essential factors must be considered in this process. The first is that privatisation should receive strong incentives for investing privately appropriated profits. Furthermore to ensure a widespread growth of this sector, deregulation must also lead to increased competition. Only then will prices fall significantly and demand for IT products will increase appropriately and induce high rates of growth.

The emergence of IT involves new relationships between organisations and individuals. These will be marked by a flat hierarchy, very high flexibility and probably increased individual responsibility. With this in mind, new pay schemes and ownership concepts may be necessary. The importance of traditional firms with clear cut distinctions between employer and employee function may shrink. Thus wage policy on the micro level should be encouraged to find appropriate remuneration schemes. They must satisfy on the one hand the need for pay security, as well as the demands of a flexible working scheme with individual responsibility on the other.

In addition to that, electronic trading devices such as the Internet will change the availability of labour. In some areas labour may be hired now on a global basis without requiring migration. The costs of hiring foreign labour thus shrinks. In such an environment bottlenecks of labour supply may be overcome more easily than previously. This has microeconomic consequences in that firms' labour demand is less likely to be subject to rationing. It also has macroeconomic consequences, as the absence of bottlenecks makes inflationary wage hikes less likely. In fact this may be one of the explanations as to why, despite the low unemployment figures, US inflation is so moderate. In the past under these circumstances inflation would have accelerated significantly. So that this also an argument for monetary policy taking a comparatively looser stance than in the past. This does not mean inflation is dead, but it is, for microeconomic reasons, less likely.

[14] For a survey cf Dumort /Dryden (1997).

[15] Dumort /Dryden (1997), p. 287.

4 Conclusion

The preceding analysis has shown that major deficits of European economic policy are on the macro level. Neither monetary nor fiscal policy have been directed towards the fostering of growth. Instead they have focused on curbing inflation and public deficits. In the end this showed up in major temporary adverse shocks which significantly hampered growth in Europe. Wage formation was a problem at the beginning of the nineties, although wage increases have now converged to a level where supply conditions are no longer negatively affected. As a first step for a higher growth path in Europe monetary policy must become more expansionary and fiscal policy more flexible than in the past. For wage policy appropriate institutional settings have to be found to ensure that wage demands remain stability oriented in the future, too.

On the microeconomic level as well much remains to be done in order to make a step towards the “New Economy” with a higher growth potential and less pressure of inflation. To achieve that, the European educational system has to be overhauled in order to promote the adaptation and application of information technology. The deregulation process connected with privatisation and competition also has to be continued. On the company level many institutional changes are necessary, with respect to microeconomic wage formation.

Only by implementing a package of all these strategies, will Europe reach a growth path which is high enough to make a significant contribution to the reduction of unemployment.

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Part II: FINANCING LARGE-SCALE EU INFRASTRUCTURE PROJECTS

Introduction

This study discusses the proposal which consists of financing large-scale infrastructure investments by issuing EU bonds, first introduced by President Delors in his White Paper on "Growth, Competitiveness and Employment" in 1993. This proposal has been partly implemented insofar as the European Commission and the EIB have financed a number of large projects. But it is not considered as a major tool of European economic policy. Monetary policy is the major instrument of short and medium-run oriented strategies while fiscal policy is mainly devoted to the reduction of public deficits and debts. From a more structural point of view, European policies stress the liberalisation of product and labour markets over the last years. In the current context, shall the proposal on large-scale investments be abandoned or shall it still be part of European strategy?

This paper will first examine the state of public accounts, with a view to assessing whether there is any room for increasing public investment within the framework of the Stability Pact. Taking into account the current state of the EU economy, namely the growth revival, is there any need for such an increase? The current state of public investment will then be analysed. Are there indications showing that its present level is too low?

Second, the outcome of the Delors Plan in this field will be examined. What assessment can be made in early 2000 of the large EU infrastructure projects financed since 1994? At the microeconomic level, was it useful to promote some kind of investment, which would have been decided otherwise? Are there large EU infrastructure projects, concerning many EU countries with a high collective profitability, which need to be financed by a common European body? What are the costs of these investments as compared to national public or private financing? What financial instruments would be required?

Third, the impacts of such a measure on activity, inflation, public debt and deficit, interest rates and exchange rates will be analysed. Can these instruments be useful for stabilisation purposes or for structural macroeconomic improvement?

Some more general topics of the European Commission's report *"The EU economy: 1999 Review"* are discussed in the annex.

1. The Current Macroeconomic Context

A satisfactory level of growth.

It is now expected that, from 1996 to 2001, the annual GDP growth rate will be of 2.7 per cent for the EU15 (table 1), with four countries with a growth rate higher than 3.5 per cent (Ireland, Finland, Spain and Netherlands) and three countries lagging behind (Denmark, Germany and Italy). The main problem is the interpretation of this quite satisfactory level of growth. Do we currently stand in the upper part of the cycle or in the beginning of a new period of growth, boosted by the return of a good *policy mix* and/or by *New Economy* phenomena?

This evolution has induced a net decrease of the unemployment rate in the EU (2 points since 1996) and especially in Spain, Ireland and Finland. At the beginning of 2000, six countries

have an unemployment rate below 6 per cent, but seven have always mass unemployment. The average unemployment rate is 9.7 per cent for EU11, 8.8 per cent for EU15.

Table 1. GDP growth rates and unemployment rate in EU

	1996/2001*	Unemployment rate**	Unemployment rate evolution***
Austria	2.8	4.2	– 0.1
Belgium	2.8	8.7	– 1.0
Finland	4.2	9.9	– 4.7
France	2.9	10.4	– 2.0
Germany	2.2	9.0	0.1
Ireland	8.2	5.8	– 5.8
Italy	1.9	11.1	– 0.6
Netherlands	3.7	2.6	– 3.7
Portugal	3.2	4.4	– 2.9
Spain	3.7	15.0	– 7.2
EU11	2.7	9.7	– 1.7
Britain	2.7	5.9	– 2.1
Denmark	2.4	4.1	– 2.7
Greece	3.2	11.1	1.1
Sweden	3.0	6.6	– 3.0
EU15	2.7	8.8	– 2.0

* consensus forecast for 2000 and 2001.

** end 1999.

*** since 1996.

With annual increases of 0.5 per cent in labour supply and of 2 per cent in labour productivity, the EU11 economy still needs a growth rate of 3.5 per cent for 5 years in order to bring the level of the unemployment rate down to 5 per cent. During the nineties, the average GDP growth was 2.0 per cent for the EU and 3.2 for the United States.

So the question is how such a level of growth may be reached and maintained. Three replies can be given. The first one is to call for a more expansionist policy mix. If the Euro zone equilibrium rate of unemployment is really 5 per cent, the output gap is currently close to – 4.5 per cent (and not to – 0.8 as in OECD estimates) which means that:

- the neutral interest rate, according to the Taylor rule, is near 1.4 % (with an expectation of 1.6 for the inflation rate and with a real equilibrium rate of 2.5).
- the public sector structural balance showed a surplus of 1.3 per cent of GDP in 1999 (a deficit of 1.2 per cent and a cyclical deficit of 2.5 per cent and interest payments of 3.9 per cent of GDP), which gives some room for a more expansionary policy.

The second says that it will not be possible to reach a level of unemployment rate like 5 or 6 per cent unless most European countries undertake strong reforms of their labour markets. If

not, the current expansion episode will end with a high level of wage increases, then of inflation. Current increases of real wages are clearly lower than the standard increase in labour productivity in all EU countries except Britain, which is near full employment (table 2). So European countries still have room for conducting more activist economic policies. Nevertheless, two problems may appear. Some countries, which are already in full-employment, do not need these policies, but they represent only 12 per cent of EU11 GDP when mass unemployment countries represent 88 per cent. For a long period of time, the ECB and the financial market may think that the equilibrium unemployment rate in the Euro zone is something like 9 per cent. So the ECB will increase too quickly its interest rate or the financial market will increase the long term interest rate, particularly because they think that monetary policy takes time to act and that central bankers must act preventively. So they may impede, being scared by a non-existent risk of inflation, the potential of growth to be realised.

Table 2 Real wage rates in EU

	Inflation*	Wages*	Real wages*
	1.4	2.0	0.6
Belgium	2.0	2.9	1.4
Britain	2.0	6.2	4.2
Denmark	3.2	4.1	0.9
France	1.6	2.7	0.9
Germany	1.8	1.5	– 0.3
Italy	2.4	2.0	– 0.4
Netherlands	1.9	2.8	0.9
Spain	2.9	2.2	– 0.7
Sweden	0.9	2.1	1.2
EU11	2.0	2.4	0.4

* Increases in percent in 1999.

The third says that EU countries must make significant efforts in the fields of gross fixed capital formation and investment in R&D to be able to have a high level of growth. The problem is that EU countries already have low interest rates. In March 2000, the euro bank prime interest rate was 3.7 per cent, which is 1.2 point of percentage below the expected GDP growth (against 2.1 per cent above in the United States). The 10-year yields of corporate bonds are around 5.9 per cent which is 1.1 per cent above the expected GDP growth (the same level as in the United States). The level of firms' profitability is good. So it is hard to see what could be done to foster private investment. As far as public investment is concerned, the investments that would have a positive impact on potential growth have to be listed. The main contribution that economic policy may make to boost investment is to make credible the sustainability of growth. But the ECB cannot give up its inflation target and governments cannot give up the Stability Pact. A more expansionist economic policy could lead, at least in the short run, to an increase in long run interest rates if markets fear an inflation revival.

A Favourable Budgetary Framework

The use of an active fiscal policy during an economic slowdown was largely debated during the first half of 1999. Should automatic stabilisers have supported domestic demand during

the weakening of economic growth at the beginning of 1999? The first year of the euro was considered as central to build the credibility of the zone. This objective clearly stood in the way of an expansive fiscal policy. This search for credibility is not so obvious in 2000. It may leave open the possibility of room for manoeuvre to speed public investment.

European economic activity is picking up strongly, bolstered by a favourable international environment. We expect a GDP growth in the EU of around 3.3 per cent in 2000 and 2001, with no serious inflationary threat. How will European governments use this extra room for manoeuvre resulting from this sustained forecasted growth for the second half of 1999 and 2000?

Given the expected dynamism of growth in 2000, governments are not obliged to undertake restrictive fiscal policies to improve budgetary positions. Most governments have chosen to split the resources induced by growth between the automatic improvement of public deficit and some tax reductions. With these aims in view, the growth of expenditure will have to be limited. This will limit the scope for expanding public investment. The details of the expenditure choices presented in the stability programmes may help to measure the room for manoeuvre available for public investment.

EU countries now conduct their fiscal policies within the framework of the Stability and Growth Pact. Each country has to produce a yearly stability programme (for the countries in the euro area) or a convergence programme (for those outside the euro area). Those programmes must present the fiscal choices to reach the "medium–term objectives for bugetary positions close to balance or in surplus".

The OECD and the European Commission have recently published new estimates of the minimum benchmarks for EU Member States' budgetary positions consistent with an active counter-cyclical fiscal policy, keeping the deficit below the 3 per cent of GDP reference (but arbitrary) value. The conclusions of both studies are relatively optimistic. It appears that the "medium-term objectives of budgetary positions close to balance or in surplus" presented in the stability and convergence programmes of 1999 are well sufficient to support a cyclical downturn and to let the automatic stabilisers operate. The deficit targets presented by the Member States are even more ambitious than the minimum required according to the EU calculation. This minimum budget deficit offering sufficient safety margins has been estimated at – 1 per cent in 2002, compared to the projection of – 0.8 per cent in the stability programmes (respectively – 0.8 per cent and – 0.5 for the Union as a whole).

The latest estimates of the Member States' budgetary positions show a better than expected budget balance for 1999 (table 3). The likely reduction of global fiscal deficit is 0.4 per cent of GDP in the euro area and 0.5 per cent in the European Union. This fiscal improvement has been obtained despite the weakening of economic conditions in the first half of 1999. When the first 1999 programmes were presented, projections were more optimistic for 1999 economic growth, but estimates for fiscal positions in 1998 were slightly worse than their realisations. Despite the slowdown during the first half of 1999, the favourable fiscal developments can be explained by the better than estimated starting point, by expenditure control and by the further reduction in debt service costs. The rapid and strong recovery in the second half of 1999 allowed a rise in tax revenues. All these factors explain why the first estimates of the fiscal positions are better than the previous targets for all countries but Italy (whose government revised last May its target for 1999). European fiscal policies could be qualified as neutral, except in Denmark, Spain and Finland where restrictive fiscal policies have been implemented. The deficit level targets for 2000, presented in the first stability programmes, are therefore likely to have already been achieved at the end of 1999.

Table 3. Budget Balances, realisation, forecasts and 1999 SGP

% of GDP

	1997	1998	1999*	Stability Programme 1999	
				1999	2000
Belgium	– 1.8	– 1.0	– 1.0	– 1.3	– 1.0
Germany	– 2.6	– 1.7	– 1.6	– 2.0	– 2.0
Spain	– 3.1	– 2.3	– 1.4	– 1.6	– 1.0
France	– 3.0	– 2.7	– 2.1	– 2.3	– 2.0
Ireland	0.6	2.0	2.9	1.7	1.4
Italy	– 2.8	– 2.7	– 2.2	– 2.0	– 1.5
The Netherlands	– 1.2	– 0.8	– 0.4	– 1.3	– 1.2
Austria	– 1.9	– 2.4	– 2.2	– 2.0	– 1.7
Portugal	– 2.0	– 1.5	– 1.3	– 2.0	– 1.5
Finland	– 1.6	1.4	3.5	2.4	2.2
EUR – 11	**– 2.6**	**– 2.0**	**– 1.6**	**– 1.8**	**– 1.6**
Denmark	0.1	0.9	3.0	2.5	2.8
Greece	– 3.9	– 2.5	– 1.9	– 2.1	– 1.7
Sweden	– 2.0	2.3	1.9	0.3	1.6
United Kingdom	– 2.0	0.2	0.6	– 0.3	– 0.3
EUR – 15	**– 2.4**	**– 1.5**	**– 1.0**	**– 1.4**	**– 1.2**

* Estimation.

Source: European Commission.

At 1.2 per cent of GDP, the average EMU-deficit in the euro-zone for 1999 is 0.7 point of GDP lower than forecast last year and 0.1 point below the 1.3 per cent of GDP forecast in the updated stability programmes. Budgetary positions improved in every country. In 1999, Ireland, Luxembourg, the Netherlands and Finland show a budget surplus. As in 1998, Denmark, Sweden and the UK are the three other countries of the EU with a surplus. The debt ratio slowed down in 1999 at 72.2 per cent of GDP after 73.4 per cent in 1998. It slightly rose in Germany, Austria and Portugal. Eight member states still have a debt ratio above 60 per cent of GDP, and three of them (Belgium, Greece and Italy) above 100 per cent.

The updated *Stability programmes* (SP) presented in 2000 are somewhat more optimistic. They assume a robust economic growth, boosted by a recovering international economic environment. They are however based on a very prudent assessment of European growth prospects for the next three years. If we compare the global growth assumption of the central scenarios presented in the *SP* with the Observatoire Français des Conjonctures Economiques (OFCE) growth forecasting, the OFCE scenario is much more favourable (+ 0.75 point of GDP for 2000 and 2001 growth) than the cautious one chosen to build the *Stability*

programmes (see table 4). The budgetary positions are likely to be better than those described in the SP. OFCE notes for example that the French deficit for 1999 is now estimated at 1.8 per cent of GDP (0.3 point below the updated programme estimation).

Table 4. General government financial balance, debt and main indicators between 1998 and 2003, according to the Stability Programmes of 2000, as a percentage of GDP

Aggregate for the Euro –Zone

	1998	1999	2000	2001	2002	2003
GDP growth assumption	**2.8**	**2.2**	**2.8**	**2.5**	**2.5**	**2.5**
OFCE Forecast	***2.8***	***2.3***	***3.5***	***3.3***		
Financial Balance	– 1.9	– 1.3	– 1.1	– 0.8	– 0.5	– 0.1
Debt	72.4	72.3	71.1	69.7	67.9	66.0
General government revenue	43.3	43.7	43.4	43.1	42.7	42.5
General government expenditure	47.6	47.7	46.9	46.0	45.2	44.7

Most of the governments intend to run a budget close to balance at the end of the period. General government expenditure growth will be moderate. Each country announces a decline of the expenditure/GDP ratio, at different speeds. Public expenditure will therefore contract from 47.7 per cent of GDP in 1999 to 44.7 per cent of GDP in 2003. For a GDP growth of 2.6 per cent on average, public expenditures growth is planned to be only 0.9 per cent. General government revenue will decrease from 43.7 per cent to 42.5 per cent over the same period. Fiscal policies could be qualified as slightly restrictive, with the choice to reduce public expenditure to decrease taxes. The debt/GDP ratio is expected to fall to 66 per cent of GDP by 2003 from an estimated 72.2 per cent at end 1999 on an ESA95 basis. It should be close to 100 per cent of GDP in Belgium and Italy (see table 5).

The Stability programmes set out the main points of budgetary policy for the coming years. We can observe a convergence of the budgetary orientations. Most countries present a combination of deficit reduction and tax reduction. On the taxation side, each country has planned or pursued a reform of the tax system. It includes employment–incentives, a reduction of income tax or an improvement in tax recovery (particularly in Portugal and Italy). The pace of the privatisation programmes is expected to decelerate. The extended control of expenditures doesn't leave much room for manoeuvre. However, the priorities are similar from one country to another. Improving employment, education and training, social aid and health care are the main concerns of the Stability Programmes. The effects of the ageing of the population are essential for the long term forecasting of care expenditure. A reform of the pension system is often mentioned. Ecology is a matter of concern in the Northern European countries, whereas Spain, Ireland and Portugal emphasise public investment in infrastructure.

Table 5. General government financial balance, debt and main indicators between 1998 and 2003, according to the Stability Programmes of 2000, as a percentage of GDP

Euro–zone countries

		1998	1999	2000	2001	2002	2003
GDP -growth assumption	Belgium	2.8	1.7	2.5	2.5	2.3	2.3
	Finland	5.6	3.8	3.9	3.0	2.6	2.6
	France	3.4	2.8	3.0	2.5	2.5	2.5
	Germany	2.2	1.5	2.5	2.0	2.0	2.0
	Ireland	8.1	8.4	7.4	6.5	5.7	
	Italy	1.3	1.3	2.2	2.6	2.8	2.9
	Luxembourg	5.0	4.9	4.9	5.1	5.2	5.4
	Netherlands	3.7	2.8	2.5	2.0	2.0	
	Portugal	4.0	3.1	3.3	3.6	3.6	3.5
	Spain	4.0	3.7	3.7	3.2	3.2	3.2
Public balance	Belgium	– 1.0	– 1.1	– 1.0	– 0.6	– 0.1	0.4
	Finland	0.9	3.1	4.7	4.2	4.6	4.7
	France	– 2.7	– 2.1	– 1.7	– 1.1	– 0.7	– 0.3
	Germany	– 1.7	– 1.2	– 1.3	– 1.0	– 1.0	– 0.5
	Ireland	2.1	3.2	3.3	2.8	2.9	
	Italy	– 2.7	– 2.0	– 1.5	– 1.0	– 0.6	– 0.1
	Luxembourg	2.6	2.3	2.5	2.6	2.9	3.1
	Netherlands	– 0.8	– 0.6	– 0.6	– 1.3	– 1.1	
	Portugal	– 2.1	– 2.0	– 1.5	– 1.1	– 0.7	– 0.3
	Spain	– 2.3	– 1.3	– 0.8	– 0.4	0.1	0.2
Public debt	Belgium	116.2	114.9	112.4	108.9	105.2	101.2
	Finland	49.7	46.6	42.9	40.7	38.0	35.2
	France	60.3	60.3	59.4	59.0	58.4	57.7
	Germany	60.7	61.0	61.0	60.5	59.5	58.0
	Ireland	55.0	52.0	46.0	40.0	36.0	
	Italy	116.8	114.7	111.7	108.5	104.3	100.0
	Netherlands	66.6	64.3	62.3	61.8	61.0	
	Portugal	58.0	56.6	57.1	55.2	53.3	51.0
	Spain	64.8	63.5	62.8	60.6	58.1	55.8
General government expenditures	Belgium	39.9	40.2	39.8	39.4	39.1	38.8
	Finland	49.2	47.6	46.1	45.7	45.1	44.6
	France	54.2	53.9	53.0	52.2	51.7	51.1
	Germany	48.3	49.0	48.0	47.0	46.0	45.5
	Ireland	29.0	28.9	27.8	26.4	25.3	
	Italy	49.2	48.7	47.8	46.9	45.8	45.0
	Luxembourg	42.3	44.1	42.7	41.7	40.5	39.3
	Netherlands	39.3	40.1	39.8	39.2	38.7	
	Portugal	39.3	40.9	42.2	42.0	41.7	41.3
	Spain	42.2	41.3	40.8	40.4	39.8	39.5
General government revenues	Belgium	46.6	46.4	45.8	45.5	45.4	45.2
	Finland	51.2	51.2	51.4	50.4	49.9	49.3
	France	44.9	45.3	44.8	44.6	44.4	44.2
	Germany	42.3	43.0	42.5	42.5	42.0	42.0
	Ireland	34.5	34.1	33.7	32.8	32.6	
	Italy	46.5	46.7	46.3	45.8	45.3	44.9
	Luxembourg	44.9	46.4	45.2	44.3	43.4	42.4
	Netherlands	38.3	39.2	39.0	37.7	37.3	
	Portugal	40.4	43.0	44.7	44.8	44.9	45.0
	Spain	39.9	40.1	40.1	40.0	39.9	39.8
Public investment	Ireland	3.5	3.4	3.8	3.9	3.7	
	Portugal		4.0	4.0	4.0	4.0	4.0
	Spain	3.3	3.4	3.5	3.6	3.7	3.8

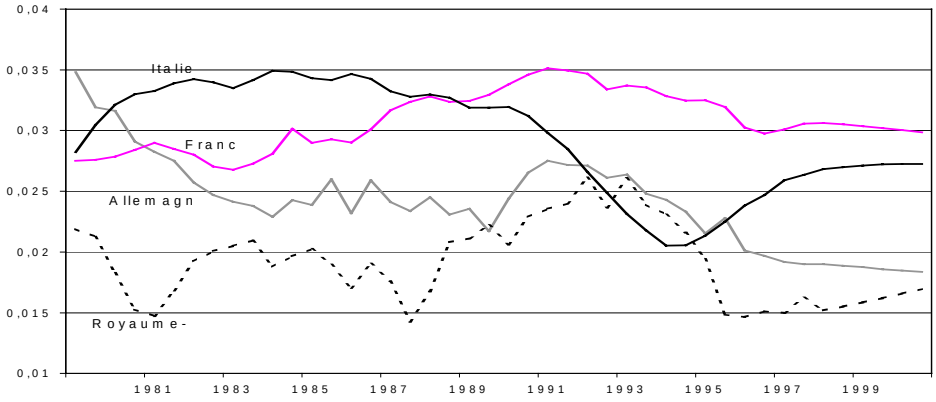
Historical Trends of Public Investment in Europe

It is quite difficult to draw comparisons over time and across countries as regards the evolution of public investment, because the definition and the structure of the public sector have considerably changed in the last decades, at a different pace in each country. We will here comment on OECD data when available as they offer a minimum homogeneity.

In the EU as a whole, general government fixed capital formation has increased from WWII to the mid 60s. This phase of expansion culminated in the late 60s and was followed by a downward trend. In most of the European countries, public investment was reduced in line with cuts in expenditure in order to improve fiscal balances, but also with the broad movement of privatisation in the 80s. Public sector investment was automatically reduced as the main spenders were privatised.

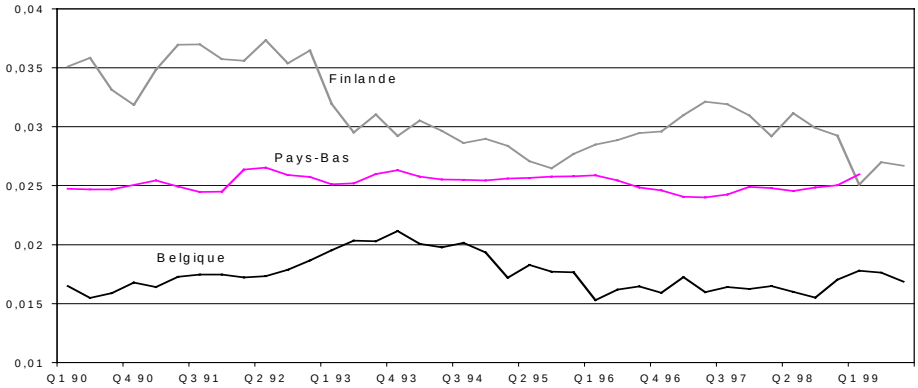
The short recovery of the beginning of the 90s was interrupted after the recession of 1993 and during the European convergence and fiscal consolidation process.

Graph 1. General government gross fixed capital formation (% GDP)



Source : OCDE.

Graph 2. General government gross fixed capital formation (% GDP)



Source : national statistics.

In the UK, whereas public sector investment is still falling, infrastructure investment has also been undertaken by the private sector and could consequently be maintained in the nineties

above the low level reached in the mid-eighties. As general government fixed capital formation has been slightly declining in the nineties, a recent public spending plan has announced the doubling of public capital investment from 1999 to 2002.

As a percentage of GDP, government investment has oscillated between 3 and 4 per cent in France over the last thirty years. This level is well above those observed in Germany or in the UK. Public investment seems to have recovered early in France in the mid 80s. It has gradually declined since 1991. Some investments may have been delayed in order to keep the budget deficit below 3 per cent. Beyond the state level, investments at the local level were also reduced, though the budgetary situation of local administrations improved during the 90s.

Public capital formation declined in Germany from 4 per cent of GDP in the late sixties to 2 per cent in 1988. Investment spending suffered from the global consensus on the reduction of government expenditure, current spending decreasing at a lower rate. German reunification explains the sharp rise to 2.5 per cent of GDP in 1991. Public investment has since then been once more downwards oriented in line with the tight fiscal stance of the government.

In Italy, public investment was an important part of the budget subject to drastic reductions from 1991 during the convergence process. While public investment weighed more in Italy than in the other European countries presented here in the mid 80s, it has been oscillating between 2 and 2.5 per cent of GDP for the last 5 years. This low level is considered insufficient. The need to invest more is particularly obvious in Italy.

Public investment has declined more rapidly in the Netherlands than in other European countries, notwithstanding starting from a relatively higher level. The government set up investment plans in the nineties, the low investment position reached in the late eighties being considered insufficient.

The gradual decline in public fixed capital formation seems to have come to an end. Public investment should increase in the coming years for some mechanical reasons:

- Most of the privatisation programmes have slowed down. Their contribution to the decline in public investment was indeed significant in the 80s and 90s.
- The level reached is considered to be insufficient in most countries. The sole effort to preserve the existing public services and infrastructures may require a sharp rise in expenditure.
- Many countries had delayed important projects in order to keep their budget deficit within the Maastricht guideline. These projects should rebound in 2000 or 2001.
- Public investment in Ireland, Spain, Portugal and Greece should catch up with the European infrastructure average level and should thus play a leading part in the global European public investment trend. Public investment in infrastructure is mentioned only in the 2000 Stability programmes of those four countries (public fixed capital formation is not cited as a priority in the other countries' Stability programmes). Their governments conduct multi-annual long-term plans such as the National Economic and Social Development Plan in Portugal or the National Development Plan in Ireland. They forecast a significant increase in public investment in the coming year.

Hence, we might expect a further increase in government fixed capital formation, as infrastructure expenditure were mentioned as one of the priorities in a number of stability and convergence programmes.

Several governments convey a very cautious stance and justify a gradual rise in public investment expenditure by its weakness during the last couple of years. This is typically the case for the German stability programme: a recovery in government capital formation has indeed been programmed as a counterpart to the strong reductions of the last period. In Austria, most of the infrastructure programmes were delayed until 1998. Their realisation may explain the recovery in public investment. A slight rise is also announced in Finland, in the UK and in Denmark after the drastic cuts during the 90s. The Belgian government has only mentioned the improvement in the quality of public services.

Italy has mentioned investment efforts and important expenditure in the most disadvantaged regions of the country. The Dutch programme has specified that the acceleration of public investment was mainly designed for social infrastructure (education, health).

In Ireland and in the southern European countries (Spain, Portugal), infrastructure investment is mentioned as a main priority, in order to reach a comparable level of infrastructure and public services to the other European countries. Only Greece has programmed further cuts in expenditure and restructuring in line with its convergence process.

2. The Trans-European Networks (TENs) Situation

Within the framework set by Title XV of the Treaty establishing the European Community concerning the development of infrastructure investment for Union integration, the European Growth Initiative has provided momentum in supporting infrastructure investment financing with the additional purpose of promoting economic recovery.

First-tier financing

Further impetus came from the 1993 White Paper on "Growth, Competitiveness and Employment" establishing an indicative list of 26 TEN projects in transports (for a total of 80 billion ECU) and a few other projects in the field of energy and telecommunications. At the 1994 Essen summit, 14 priority projects were selected among transport schemes aimed at replacing road transport and 10 priority projects in the energy sector. In 1995 the European Council determined the following general rules for granting financial participation of the European Commission in the field of Trans-European Networks:

- co–financing of preparatory, feasibility and evaluation studies related to projects (up to a maximum of 50 per cent of the total cost);
- subsidies (for a maximum duration of 5 years) on interests on loans granted by the EIB or other public or private financial bodies;
- contribution towards fees for loan guarantees of the European Investment Fund or other financial institutions;
- direct grants to investment in appropriately justified cases;
- when appropriate, a combination of the above mentioned forms of Community assistance.

The total amount of the Community assistance had not to exceed 10 per cent of the total investment cost and was set at 2345 billion ECU for the period 1995-1999.

In its 1996 and 1997 annual reports the European Commission noted the lack of a fixed timetable and the need for a financial plan for each of the 14 priority projects in transport as well as for an upward revision of its financial involvement in order to provide a credible financial structure. As a result, the 1998 report of the European Commission examined the

ongoing projects and, taking account of the implementation timetables and of future increase in activity, outlined future developments.

Of the 14 priority transport projects, 3 are being achieved, while most should be achieved by 2005. In the energy sector the 5 priority projects for natural gas have made good progress while the 5 priority projects for electricity have encountered problems of authorisation.

The 24 priority projects represent only a small part of total investment in Trans-European Networks (110 billion ECU for the 14 transport priority projects compared to 400 billion for the total transport network cost). The 14 priority transport projects mobilised only 13 billion ECU in the period 1993-1998, 3 billion of which came from EU level finance (EU TEN budget line, European Regional Development Fund and Cohesion Fund). Although partly relying on Community resources, funding from Member States' national budgets has made up a great part of the investment. Budgetary constraints owing to a general restrictive fiscal stance have slowed the rhythm of public disbursement for infrastructure and in particular for some of the priority projects. Private sector involvement has been a marginal although increasingly feature of these projects: the approach encouraging partnership between the private and public sectors has been implemented particularly in energy and telecommunications projects, the former generally entailing higher profitability and the latter ones involving more easily final users. The TEN projects present different conditions of operation and financing. Most of them, however, concern missing links in the network often characterised by a monopoly position. Strong government influence includes loan guarantees, fixing of tolls, financing to access infrastructures and bearing unexpected additional charges for coping with possible socially negative externalities. For transport infrastructure private-public partnership has focused on the role of European Investment Bank (EIB) and of the European Investment Fund (EIF) as catalysts for private capital. The EIB has proved to be the major financier of the 24 high priority Trans-European Network projects. Two thirds of EIB financing is devoted to investment promoting convergence in the Union and in this framework the bank provided a total of €56 billion in the period 1993-1998, including additional loans covering schemes linking the Union with partner countries. In 1997 intensification of its support for TEN projects came from the Amsterdam Special Action Programme allowing the Bank to reinforce its role as TEN financier and to total €8.2 billion funding since 1993.

Second-tier financing

In 1999 the European Parliament and the Council set the framework for the financing requirements for the period 2000-2006 and doubled financial assistance of the European Commission, with regard to the previous period, reaching a total of €4.6 billion for transport only. An amendment to the regulation allows for an increase in the Community intervention rate to 20 per cent of the total investment cost. The establishment of venture funds involving substantial private-sector investment has also been envisaged, in which risk-capital participation shall not exceed 1 per cent of the budgetary resources (eventually 2 per cent as from 2003). The objective is to foster the development of such funds and gain access to the long term financial resources of pension funds and insurance companies.

Table 6. Community Financing of the Tens

Sector	Type of Assistance	Instruments	1993 –1997 Millions ECU
Transports	Loans	▪ EIB	15 302
	Guarantees	▪ EIF	519
	Subsidies	▪ ERDF	4 165
		▪ Cohesion Fund	5 984
	Subsidies, contributions towards fees, loan guarantees, co-financing of studies	▪ EU TEN Budget	1 257
		of which	
		▪ 14 TEN Priority Projects	783
Energy	Loans	▪ EIB	3852
	Guarantees	▪ EIF	493
	Subsidies	▪ ERDF	2305
	Co –financing of studies	▪ EU TEN Budget	45
Telecommunications	Loans	▪ EIB	7800
	Guarantees	▪ EIF	460
	Subsidies	▪ ERDF	467
	Co –financing of studies and financial contributions	▪ EU TEN Budget	297

Table 7. Financing Scheme for the 14 priority Transport Ten Projects

					Sources					
Million ECU	Total cost *	Paid pre –98	Paid 98 –99	2000 and after	EU TEN Budget	ECF ***	ERDF ****	EIB	EIF	Private sector
High –Speed Train/Combined Transport North – South	15102	2505	1325	11245	152			350		
High –Speed Train PBKAL	17232	3728	4118	9386	392			1047	153	Revenues from Eurostar +private sector equity and debt
High –Speed Train South	14072	240	1375	11757	20	300				
High –Speed Train East	4777	59	170	3086	67					
Betuwe Line	4094	360	870	2864	39					Private sector involvement
High –Speed Train/Combined Transport France – Italy	18260	368	943	16949	95					Private –Public Partnership (PPP) with financial institutions (project finance)
Greek motorways	9242	2175	2351	4716	75	407	860	806	127	3 PPPs
Multimodal link Portugal –Spain – Central Europe	6200				10					Private sector involvement
Conventional rail in Ireland	357	328	29	0	0	54	55	4		
Malpensa 2000 Milano	1047	473	406	168	8			208	78	PPP and S.E.A. own resources
Øresund fixed rail/road link Denmark –Sweden	4158	2505	1377	276	88			801		
Nordic Triangle Multimodal corridor	10070		1260	3320	57			969		
Ireland /United Kingdom/Benelux Road Link	3629	679	370	2580	7	153	70	27		
West Coast Main Line	3000	287	532	2180	25					Privatisation of British Rail, franchisee Virgin Rail shares costs
TOTAL**	111240	13707	15126	68527	1025	914	985	4212 +non specified =8200	358	

* Disbursement until 1999 and planned for 2000 and after does not sum up to total investment cost.
** Information on Member States funding and on the amounts of private sector financing is not available. Therefore the amounts financed by the sources presented do not add up to the total investment cost.
*** European Cohesion Fund.
**** European Regional Development Fund.

With a subscribed capital of 100 billion euro and a statutory limit of outstanding loans of 250 per cent of its capital, there is ample room for the EIB to pursue the mission of strengthening the integration of physical infrastructure in the Union. In 1998, the resources raised by the EIB increased by 30 per cent on an annual basis, which reflected the acceleration of loan disbursements as well as the bank's position as a promoter of the new currency. This pro-active euro-strategy (half of the funds were raised through euro-denominated issues in 1998) aimed at creating a critical mass of debt in euro. It has contributed to the establishment of the only non-government yield curve in the Euro zone with seven liquid benchmarks totalling 24 billion euro on every point from 2003 to 2009. In many maturities EIB bonds represent the main liquid triple-A alternative to government bonds. TENs financing could then prove instrumental to the broader EIB strategy of supporting the development of a wide euro market. But EIB intervention could also serve the aim of attracting additional funds to the TENs projects by providing an instrument of portfolio diversification to investors.

In its short term implementation and in its initial rather negligible amount, the TEN initiative proved disappointing as an instrument of expansionary policy. The aim of the initiative was rather to develop the base for future growth by energy projects securing future energy supplies, transport and telecommunications projects fostering European integration and improving competitiveness by stimulating more efficient market functioning. However some medium-term effects in terms of direct job creation will appear in those sectors directly related to infrastructure building.

Public versus private financing

Since financial conditions applying to Member States do not differ from those applying to Community Institutions and the TEN initiative benefits largely state-owned companies, which could obtain the same conditions owing to the guarantees provided by national governments, what is the rationale for choosing the TENs financial scheme?

In the field of massive infrastructure investment, highly profitable projects are not the rule. However regulatory reform and increased competition have largely favoured private sector involvement in energy and telecommunications projects. Private sector participation in both the financing and operation of transport projects has also accelerated in the last fifteen years, owing to the advances in the legal and financial framework of project financing. Although the transportation network is almost complete and the more profitable central axes have been already built, private sector partial as well as total financing of missing links has unexpectedly accompanied and substituted for direct public support from budget resources. Peripheral axes are often evaluated and implemented on the basis of the socio-economic rate of return rather than simply at the financial rate of return, thus including the externalities generated by the project. If based only on future revenues financial profitability is insufficient and a complement of public financing is required in order to raise the rate of return of investment (ROI) to a level acceptable to a private investor.

In this situation, three factors can justify a partnership between private firm and governments:

- the fact than an equipment will be built or managed by a private firm may increase its profitability. For instance, the employers are not protected by costly status. Private firms can more easily establish tolls.
- to diversify their assets, private investors may prefer to hold specified bonds rather than public debts.
- governments may have some constraints on their total borrowing. In order to escape these limits, a way would be to guarantee private firm debts instead of issuing new public debts.

As previously noted governments with a sound financial situation can borrow at more advantageous conditions than the private sector. Therefore the aim of the financial package of the TENs (government budget, European Community subsidies and guarantees, EIB loans and private funds) is to call for public-private partnership by allowing private partners to benefit from lending conditions (triple-A rating of the EIB loans and EIF guarantees) which contributes to raising the profitability of their participation. Moreover EU co-financing with the private and public sector reinforces the credibility of the project funding thus improving the leverage on the public finance committed.

However, although the TEN funding framework may have substituted Community financing to projects that would have otherwise been implemented with resources from national budgets, it should rather be considered as a boost to public and private expenditure. This comprehensive approach should ensure a common effort towards infrastructure building and expansionary fiscal policy within the current targets for public sector deficit financing, by providing an access to other sources of risk capital finance so as to utilise EU financial and budgetary reserves in the most efficient manner possible.

Environmental issues

As a follow up to the Kyoto Protocol, the European Commission Agenda 2000 fully integrates the environmental issue in its policies. As far as project funding is concerned a scrutiny of the environmental impact is systematically introduced for projects over 50 million ECU. In cases where a project might have a significant environmental impact the promoter applying for EIB aid is also required to carry out an assessment in accordance with Community and national laws. The EIB internalises environmental costs and benefits and projects are expected to yield a satisfactory economic rate of return in order to generate sufficient real resources to replace those consumed, including environmental effects. The EIB promotes thus the use of tariffs based on the internalisation of costs and full costs recovery and, since service of loans is on non-concessionary terms, there is an incentive to pass on the costs of the environment related expenditure. Since any project with environmental content has “public good” characteristics the difference between the economic and the financial rate of return on investment is generally covered by the aid from the European Community through the Structural Funds and Cohesion Fund. Where environmental protection measures exceed those required by existing standards, the upper limit of EIB financing of the project is raised from 50 per cent to 60 per cent. EIB loans provided within the European Union for projects concerning the natural and urban environment amounted to €24 282 million in the period from 1994 to 1998.

Interest Rates on EU Bonds

Before the launch of the euro on January 1st 1999, many economists feared that there could be large spreads between national interest rates on public debts within Europe. The level of public debt in terms of GDP is high in some countries: 118 per cent in Italy and 116 per cent in Belgium whereas the average level stands around 60 per cent (like in France and Germany). So, there may be three arguments. Investors may favour public debt instruments whose market is more liquid, broader and deeper. With the liberalisation of capital markets, some investors may prefer to diversify their assets so as to own less public bonds of their own country; this effect may increase the interest rate on public debt in the highly indebted countries. The main argument is that these countries may have to pay higher interest rates because of some risk premium, which is not a depreciation risk, but a default risk: investors may think the probability exists, although it is very small, that after a shock the country would be unable to service its debt.

In case of a wide spread emerging between euro-labelled national public debts, we should look at the opportunity that a European organisation issues some euro debt to unify the market. Italy, for instance, would have to pay less interest rates for a loan by this organisation than by issuing public bonds. Thorny questions would be raised as this organisation would bear the debt crisis risk ; this would run against the no-bail – out Maastricht Treaty rule. Through this organisation, each EU country will be responsible for some parts of the public debt of all other EU countries.

In fact, since the beginning of 1999, spreads between the euro-area countries' long-term interest rates are very low: 0.2 or 0.3 point of percentage between Germany and Belgium or Italy (table 8, figure 3). It seems that in a large unified market, arbitragists prevent any unjustified discrepancies between national interest rates, which makes the asset diversification argument vanish. Furthermore, public finance trends in Belgium and Italy make incredible a debt crisis. These two countries have huge primary public surpluses (in 1999, 6.5 per cent of GDP in Belgium ; 5.7 in Italy) and their public debt is decreasing in terms of GDP. So, we can predict that, in the future, these spreads will continue to be very small. There will be no great advantage to issuing EU bonds.

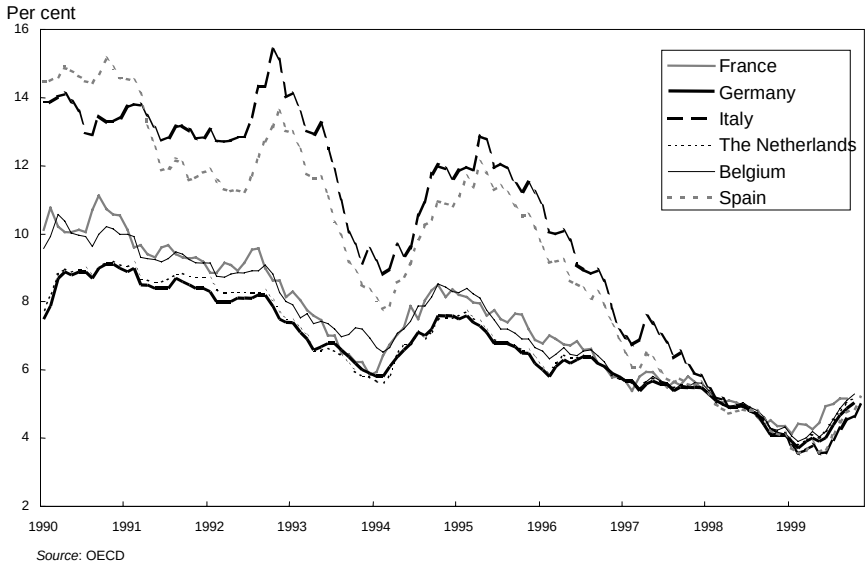
Table 8. Long run interest rates in 1999 Q3

Per cent

Austria	5.08
Belgium	5.10
France	5.20
Germany	4.90
Italy	5.12
Netherlands	5.02
Spain	4.71

Source: OECD – MEI.

Graph 3. Long-term nominal interest rates in Europe



In recent years, we have seen that private firms were able and willing to undertake the implementation of huge telecommunication networks; so the need for public investment in this domain becomes doubtful. With both privatisation and liberalisation of energy markets, the same argument can be raised in this sector. So, we may think of three types of projects.

First, there will be finance for transnational transport projects: e.g. railways and motorways. These projects can be profitable and cost-effective in the long-term.

Secondly, we can also envisage the financing of non-profitable transnational projects like, for instance, projects to induce freight rail transportation for ecological purposes. These projects may become profitable if taxes are introduced to reduce pollution effects or traffic congestion.

Thirdly, there might also be finance for some purely national public investments. For instance, Drèze, Malinvaud *et al* suggested financing accommodation for low-income families, urban renewal and urban public transport. These three areas have no transnational content. European financing would thus be first a way to undertake a co-ordinated fiscal policy, second a signal that European policy involves social targets.

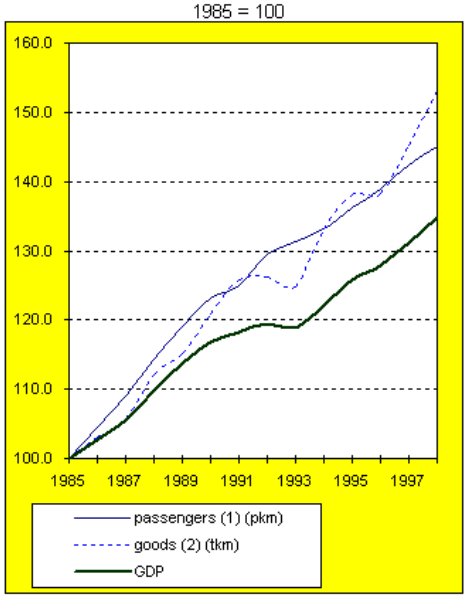
To be effective, such a programme must finance projects which would not be otherwise be funded by normal financial institutions. To reduce the impact on long-term interest rates, the programme must also finance projects that induce, in the long run, a positive effect on supply. These two prerequisites may be inconsistent.

Transport investment.

The rapid increase in freight transport (+ 2.4 per cent annual growth rate during the period 1990–1996) and its recent acceleration (+ 4.5 per cent 1997-1998) was accompanied by an even more rapid increase in real terms in transport infrastructure investment from 1990 to 1992 (+ 8 per cent). However the trend reversed in 1993 (+ 1.2 per cent until 1996) and investment has since then lagged behind demand. In 1996 transport investment amounted to 1.2 point of gross domestic product. The increasing gap between transport infrastructure demand and supply has raised the issue of strengthening efforts in infrastructure building at the Community level in order to support future economic growth and competitiveness.

Transport Growth EU 15 1.1

1985 = 100



Notes :
(1) : passenger cars, buses+coaches, tram+metro, railways, air
(2) : road, rail, inland waterways, pipelines, sea (intra-EU)

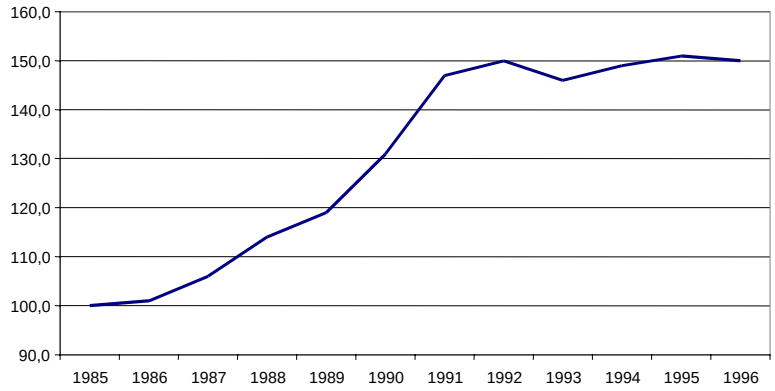
Annual Growth Rates EU 15

% change

	1980-90	1990-96	1997	1998
GDP	2.4	1.8	2.5	2.7
Industrial production	1.8	0.2	3.8	3.4
Passenger transport pkm (5 modes)	3.2	2.0	2.5	2.0
Freight transport tkm (5 modes)	1.9	2.4	5.0	4.0

Transport infrastructure investment EU 15

million ecu 1994 prices



Source : Eurostat

3. The Macroeconomic Impact

The public finance "golden rule" allows net public investment to be financed by public deficit. Thus net public investment could be taken into account when assessing the public finance situation. The medium-term target could be a public deficit equal to net public investment rather than a balanced budget. The difference is not very large (in France, 0.5 per cent of GDP), but it would presently favour this kind of expense.

The Stability pact tried to prepare the future policy mix in the EU. However, we may think that it is not explicit enough as regards the reaction of fiscal and monetary policies to specific shocks. For instance, were all EU countries to be hit by a negative demand shock (for instance, a cyclical downturn in the United States with a fall in the dollar value), the natural response would be a decrease in the ECB interest rate. This decrease might be insufficient either because there is a floor to a fall in interest rates or because the long-term interest rate would not decrease as much as the short one. In that case, a co-ordinated expansionary fiscal policy m help and European infrastructure spending is a way to implement it.

However, a Plan to finance large-scale investment cannot be seen as an instrument for stabilisation purposes. From this point of view, it has four shortcomings. Launching such projects takes a long time, as it requires a lot of preliminary studies; these delays are often unpredictable because of legal or environmental issues; these projects cannot be stopped without being achieved. So their timing is hardly compatible with stabilisation needs. The amounts involved are rather small. Their magnitude is about 10 billions euro per year, i.e. only 0.2 per cent of EU GDP. Most projects concern directly the construction sector, which is embarrassing if a global recovery is looked for or if this sector is in a particularly good situation.

So the best tools for short-term stabilisation purpose are first monetary policy, then a co-ordinated fiscal policy. Tax cuts, like for instance employees' social contributions, can give a faster impulse, more equally industry-wide distributed, easier to reverse. Large-scale public investment must be considered as a tool for structural purposes, to correct a general and durable shortage of investment or a specific shortage of investment in some sectors.

Three effects have to be taken into account. In the short run, the Plan will increase GDP and the output gap. We assume that the ECB fixes the short –term interest rate, r, according to the rule:

$$r = \pi + 0.5\,(\pi - 1.5) + 0.5\,ygap + re$$

where π is the inflation rate ; 1.5 is the ECB implicit target ; ygap : the output gap and re : the equilibrium real interest rate.

The expansionary effect will induce a rise in the short-term interest rate ; this rise will reduce the expansionary effect ; it will also induce a rise in the euro exchange rate which will lower its inflationary impact. But this rise is harmful because it will induce a decrease of private investment, which is not desirable. Can we avoid this interest rate rise? The Plan may also be financed through tax increases or cuts in other expenses. But, in these cases, it will not have any short-term effect, its only advantage may be some potential increase of supply in the long term.

Another development is conceivable if the Plan is implemented in a situation of falling private demand (for instance, after a bubble burst of high-tech stocks). In this case, it will only help to stabilise GDP, preventing its fall. As a result interest rates will not rise.

If we view the long-term interest rate as being the average of future expected short-term rates, the long-term interest rate will increase simultaneously with the short-term interest rate. If the Plan succeeds in increasing EU supply, the short run impact can be partly offset by the long-term one. The output gap will increase in the short-term (because demand is higher) and decrease in the long-term (because supply will be higher). So we may expect that such an induced recovery will have a smaller impact on the long-term interest rate. But it must be recalled that the effect depends more on how financial markets think the economy works than on how it actually works. It may well be hard to convince markets of the productive impact of such an increase in public deficits (as it goes a long way from the European Commission and the ECB's usual sayings).

A macroeconometric simulation

To assess the macroeconomic impact of the Plan, we use Mimosa, a macroeconometric model of the world economy, based on a neo-keynesian framework. The model incorporates an ECB reaction function, which is in fact a Taylor rule, for the short-term interest rate; the long-run interest rate is derived from the average of future short-run interest rates; the exchange rate results from the uncovered interest rates parity conditions.

We will study the effects of an increase in public investment of 1 per cent of GDP, which is more than the amounts currently advocated. In this first simulation, we make two crucial assumptions. First, half of the investment is financed by a public deficit increase (with no increase in taxes or decrease in other expenses), the other half is financed by private firms. For instance, investment in railway infrastructure can be financed by the railway firms. Second, this additional investment has no direct effect on supply.

The Plan induces a significant upsurge of activity (table 9). It improves public accounts because the GDP increase brings fiscal resources. So it is not useful to finance it by *ex ante* tax increases. But it has some inflationary effect, which induces a rise in interest rates, both short and long. In the long run, the euro depreciates because EU countries have more inflation; in the short run, it appreciates due to the rise of interest rates. The external balance deterioration, due to the activity rise, and the loss of competitiveness are reduced because the import content of public investment goods is less that the private one. In the short run (the first three years), GDP increases by 2.4 per cent and the inflation rate by 0,4 point. In the medium run (years 6 to10), the GDP increases by 1 point and the inflation rate by 0,65 point.

Table 9. A rise of 1 per cent of GDP in public investment in the EU

With no direct increase of supply

Year	1	3	5	10
GDP*	2.6	2.2	0.7	1.1
Unemployment rate**	– 0.8	– 1.3	– 0.6	– 0.8
Consumption price*	0.0	1.2	2.7	5.9
Public balance***	0.4	0.5	– 0.3	– 0.1
External balance***	– 0.4	– 0.5	– 0.2	– 0.3
Short – term interest rate**	0.3	1.7	1.1	1.7
Long – term interest rate**	1.0	1.5	1.4	1.8
Euro exchange rate****	– 1.0	– 1.6	0.5	2.3

*Difference from baseline in per cent; ** Difference from baseline in percentage point; *** Difference from baseline in percent of GDP. **** A sign + means a depreciation of the euro vis–à–vis the dollar. Source: Mimosa – OFCE.*

Table 10. A rise of 1 per cent of GDP in public investment in the EU

With direct increase of supply

Year	1	3	5	10
GDP*	2.6	2.6	1,6	3,0
Unemployment rate**	– 0.8	– 1.5	– 1.4	– 2.1
Consumption price*	0.0	1.4	3.5	9.4
Public balance***	0.4	0.6	0.1	0.8
External balance***	– 0.4	– 0.7	– 0.5	– 0.9
Short – term interest rate**	0.3	1.9	1.8	2.7
Long – term interest rate**	1.3	2.1	2.2	2.7
Euro exchange rate****	– 2.1	– 2.4	0.2	2.4

** Difference from baseline in per cent; ** Difference from baseline in percentage point ; *** Difference from baseline in percent of GDP ; **** A sign + means a depreciation of the euro vis-à-vis the dollar Source: Mimosa – OFCE.*

If we assume that public investment has some impact on the capacity of production (in fact, we postulate that it has half the impact of private investment), the impact on GDP is more lasting (table 10). But, due to the decrease of the unemployment rate, the inflation rate is also higher. In the medium run (years 6 to10), the GDP increases by 2,2 points and the inflation rate by 1,2 point. So the EU economy cannot avoid some increase of its interest rates.

Conclusion.

In the present state of EU economic situation, a boost of infrastructure projects is not really needed. It is hard to suggest preparing a list of projects, which could be set in application if the economic situation deteriorates, according to the delay in this type of expenses. But the EU strategy in the transport field requires some co-ordinated projects, which must take into consideration ecological preoccupations.

Annex: Some Remarks on the European Commission's Report: "European Economy: 1999 Review"

1. **The chapter on "Current budgetary developments and prospects"** begins by recalling the *credo* on fiscal policy. Some issues may however be raised:

a) A medium-term budget close to balance means in the long-term that public debt is equal to zero. Is it a realistic target if individuals wish to own public debt, for instance to have safe savings in view of old age retirement? If a net public debt of 50 percent of GDP is needed for this purpose, the medium-term deficit target can be 2 per cent of GDP (with a growth rate of nominal GDP of 4 per cent).

b) If the ECB fixes the interest rate at a low level and if a country has a low inflation rate together with an large negative output gap, does the country have to implement a restrictive fiscal policy?

c) Is it appropriate to split the future in two periods: until 2002, fiscal policy is entirely devoted to public finance adjustment; afterwards, it could be used for stabilisation purposes?

d) Can we call for a general rule for "expenditure restraint to finance reductions in tax burdens" without accounting for the utility of public expenditure and the redistributive target of our tax systems? From 1990 to 1993 swelling ratios of government spending to in GDP mostly resulted from shrinking activity, not from deliberate increases. So if the EU enjoys in the future a growth of 3 per cent per year, we will get automatically a relative reduction in the share of public expenditure.

e) Can we call for a general rule for "reductions in current expenditures to finance physical and human capital investments"? Can we build schools without teachers, hospitals without drugs, nurses and doctors?

f) How can the authors be sure that the reform of "pension and health care systems" is a real priority? Where is the evidence that there is some waste in these domains?

g) The authors ask national governments to be more ambitious in budget targets. But if we are in a period where the output gap is negative, with low inflation, and with the need to end a long mass unemployment period, there is no reason why fiscal policy should be too restrictive. It is for growth targets that the ECB and governments have to be more ambitious. Indeed, according to the Commission projections, the primary structural budget balance will stay at 3 per cent of GDP for the euro area from 1997 to 2001, which means that fiscal policy will be neutral.

2. Study 2 recalls the **structure of taxation in EU countries**. We regret that the counterpart of this taxation is not discussed. Continental European workers pay certainly more taxes and more social contributions than American or British. But they benefit from public retirement pensions, free education for their children, social security, family and unemployment benefits and so on. These elements must be taken into account when comparing the relationship in each country between the labour costs of workers and their standards of living.

The French experience seems to show that in a context of mass unemployment "inactivity traps" are not as huge as may be feared: private firms and public services have no difficulty in finding people ready to work part-time with the minimum wage, which does not give them an income much higher than the Minimum income allowance (the *RMI*). French governments have introduced a system of low social contribution rates for low wages which reduces their

level of social contributions but increases their marginal tax rate. This measure triggers low wage job creation, but makes wage increases costly (table 3 of Study 2). It is impossible to have a system with low social contribution rates for low wages, without having a high marginal tax rate in some places of the wages hierarchy.

We do not think it is advisable to cut unemployment benefits when there are not enough jobs for every one who wants to work. Europeans want the European social model to be preserved, namely the minimum income system, universal social security, and unemployment benefits. Any project for reform must take this choice into consideration. We do not think that the Commission can only advocate cuts in unemployment benefits, public expenses and taxation.

3. Study 3 about "**budgetary implication of ageing population**" is rather confusing. There is no relationship between the Stability Pact, monetary policy and the choice each country will make for its retirement pension system. Everyone knows that if a country wants to maintain its system, it will have to finance it by an increase in wage social contributions ; no one wants to finance it by an increase in public deficits; so the Stability Pact is not affected. Everyone knows that we have a trade-off between contribution rates and retirement pensions; it is only in a full-employment situation than we have also the opportunity to postpone the retirement age.

The simulations with the Quest model are highly questionable. Where is the empirical evidence showing that a decrease in retirement pensions will induce an increase in growth rate? It is a purely arbitrary assumption. Which labour market reforms would increase by 10 percentage points the rate of labour market participation? Where is the evidence that structural reforms would boost productivity growth rates? What is the link between the ageing of population and these two alleged reforms? In this study, the use of the Quest model does not appear very professional or ethical.

4. Study 5 points out the risks induced by **the overvaluation of equity markets**. It may be feared that the decrease in nominal interest rates, the upsurge of economic growth and the prospects of a *New economy* have induced a financial bubble where the increase in stock valuation gives rise to too optimistic a view on equity returns. If the bubble bursts in the United States, the consequences will be a fall in the United States private demand and a fall in the dollar exchange rate. The EU will have to face a fall in its exports, a deterioration of its competitiveness and probably a fall in its equity market. However, this situation will bring a decrease in long-term interest rates. The Fed and the ECB will cut their interest rates. But it may prove insufficient. A more expansionary fiscal policy may be useful. It could be undertaken at a national level; but there are some advantages to a European "package", which could be better understood by the ECB and by the financial markets. In that context, European infrastructure investments could be useful.

Part III: THE EMPLOYMENT CONTENT OF GROWTH IN THE EU, US AND JAPAN

"The Community shall have as its task, by establishing a common market and an economic and monetary union and by implementing common policies or activities [..] to promote throughout the Community a harmonious, balanced and sustainable development of economic activities, a high level of employment and of social protection, equality between men and women, sustainable and non-inflationary growth, a high degree of competitiveness and convergence of economic performance, a high level of protection and improvement of the quality of the environment, the raising of the standard of living and quality of life, and economic and social cohesion and solidarity among Member States." [Amsterdam Treaty on the European Union, Article 2]

1 Introduction

1.1 The employment challenge

The dominant feature of the European Union, in the stability-oriented framework of EMU, is the *mediocrity of its employment growth and level*. This is true whatever viewpoint is chosen: either considering levels of employment, unemployment and activity rates registered by the most recent statistics, or considering employment dynamics over the past decade; both comparing these with the EU experience over a decade such as the 1960s, or comparing it with the experience in the US or Japan.

The essential elements of the employment situation in the Union and in the major four countries are described in table 1, while table 2 presents the latest statistical evidence for a comparison with the US and Japan. The EU employment situation, as it comes out from these tables, is quite serious, and raises issues concerning both interpretation and policy.

The social costs of high unemployment are unquestionable. The huge welfare losses are also to be stressed: a simple arithmetical computation, rounding the numbers and assuming constant returns to scale, shows that if the EU had an employment rate similar to the one prevailing in the US and in Japan, namely around 75%, instead of the now prevailing level of about 61% , per capita GDP would be 23% higher than it is now, leaving ample room for a more than full solution to problems such as budget deficits or the sustainability of present pension schemes.

Table 1: EU - Labour market situation

	D*	F	I	UK	EU
a) Non activity rate, as % of population 15-64 years (a=100-b)					
1990	30.7	31.1	40.9	22.2	32.2
1993	30.5	31.6	41.2	23.6	32.3
1996	31.1	31.1	41.6	24.0	32.3
1997	31.1	31.3	41.6	23.8	32.2
1998	31.8	31.2	41.1	23.8	32.0
b) Activity rate, as % of population 15-64 years (b=c+d)					
1990	69.3	68.9	59.1	77.8	67.8
1993	69.5	68.4	58.8	76.4	67.7
1996	68.9	68.9	58.4	76.0	67.7
1997	68.9	68.7	58.4	76.2	67.8
1998	68.2	68.8	58.9	76.2	68.0
c) Employment rate, benchmark series, % of population 15-64 years (1)					
1990	65.9	62.9	53.6	72.4	62.6
1993	64.0	60.4	52.7	68.5	60.4
1996	62.5	60.4	51.4	69.8	60.3
1997	61.8	60.3	51.3	70.8	60.5
1998	61.5	60.8	51.7	71.4	61.1
d) Unemployment rate , as % of population 15-64 years (d=b-c)					
1990	3.4	6.0	5.5	5.4	5.2
1993	5.5	8.0	6.1	7.9	7.3
1996	6.4	8.5	7.0	6.2	7.4
1997	7.1	8.4	7.1	5.4	7.3
1998	6.7	8.0	7.2	4.8	6.9
e) Unemployment rate , as % of civilian labour force (2)					
1990	4.8	8.9	9.1	7.0	7.7
1993	7.9	11.7	10.3	10.4	10.7
1996	8.8	12.4	12.0	8.2	10.9
1997	9.7	12.5	12.1	7.1	10.7
1998	9.8	11.9	12.0	6.5	10.2

Notes: Variables *c* and *e* are original input. Other variables are derived from these. * Prior to 1991, data refer to Western Germany.

(1) Employment figures derive from the EUROSTAT benchmark series, which have been compiled to include those series which statisticians in each Member State regard as the most satisfactory national employment indicator.

(2) EUROSTAT definition ('standardised unemployment rate')

Source: European Commission services

Table 2: Growth, employment and productivity trends (EU, US, Japan)

	1961-73	1974-85	1986-90	1991-99	2000-01
			Real GDP		
EU	4.7	2.0	3.2	1.8	3.0
US	4.4	2.8	3.3	3.2	2.6
Japan	9.4	3.4	4.6	1.3	1.9
			Labour supply		
EU	0.4	0.7	0.9	0.1	….
USA	1.9	2.2	1.7	1.2	1.3
Japan	1.2	0.9	1.4	0.7	0.5
			Employment		
EU	0.3	0.0	1.4	0.2	1.1
US	2.1	1.8	2.1	1.5	1.1
Japan	1.3	0.7	1.0	0.4	0.6
			Labour productivity (1)		
EU	4.4	2.0	1.8	1.6	1.8
US	2.4	1.0	1.1	1.6	1.6
Japan	7.9	2.7	3.6	0.9	1.2
			Total factor productivity (2)		
EU	2.9	1.0	1.5	1.1	….
US	1.9	0.5	0.6	0.9	….
Japan	6.3	1.1	2.3	-0.5	….

(1) Real GDP per employed person.

(2) Average of capital and labour productivity, weighted by factor income shares in GDP.

Source: European Commission services

1.2 Main steps of the analysis

In analysing the employment issue, this study is confronted with two well-known but occasionally forgotten facts:

- In trying to explain the employment situation in the EU, both in absolute terms and in comparison with US and Japan, it is simply impossible to avoid the issue of which theoretical explanation should be chosen for employment performance. If the choice is incorrect, a misleading interpretation of the situation inevitably follows, and the policy recipes are likely to be biased if not decidedly harmful.
- To achieve a high employment rate in the EU it is crucial to generate, over an extended period of time, economic growth well above the rate coming from increases in labour productivity in the overall economy, whatever the pace of the latter might be. In particular, since technological progress is the main source of wealth and improvement in the quality of living standards over the long run, policies should be directed at

maintaining, and even accelerating, the pace of technological change, bearing in mind the implications of the connected organisational changes and labour modifications.

Bearing this in mind, the analysis follows a path - partly theoretical and partly empirical - over the following chapters. In Chapter 2, we discuss the variant of the 'mainstream consensus' illustrated in Study 1 ("European Unemployment: Origins and Challenges") annexed to the Commission's *European Economy: 1999 Review* and we present an alternative approach to explaining the employment content of EU growth, based on a Keynesian viewpoint. In Chapter 3, we check the employability of the EU workforce in the light of the relationship between technology, productivity and job creation and the emergence of the knowledge-based economy. In Chapter 4, we study recent trends in the skill distribution of employment and wages, and analyse the role that technological change (and knowledge) might have in explaining the dynamics of employment by skill. Finally, in Chapter 5, we discuss policy implications of our approach and sketch some conclusions.

2. Which theory for explaining unemployment?

2.1 The need to look at the theoretical foundations

In trying to explain the mediocrity of the employment situation in the EU it is simply impossible to avoid a basic underlying issue: which theoretical explanation should be adopted for explaining employment and unemployment levels? Whenever this issue is not explicitly tackled, some implicit choice has anyhow to be made. If the choice is incorrect, a misleading interpretation of any real-world situation we may be confronted with inevitably follows, and the policy recipes are likely to be biased if not decidedly harmful.

The issue is more complex than it is usually considered. Indeed, the idea of a 'mainstream consensus' often suggested by macroeconomics textbooks is a too simplistic representation of the current theoretical debate, where differences are wide indeed and where the 'mainstream consensus' has been the object of devastating critiques.

2.2 The neo-classical synthesis' underlying an interpretation of European unemployment

The Study 1 on "European Unemployment: Origins and Challenges" interprets high and persistent unemployment in Europe 'as the result of the interaction of a series of adverse aggregate supply and demand shocks with labour market institutions and product market regulations proving insufficiently capable to adjust swiftly to changes in economic conditions' (European Commission 1999, p. 125).

Two sets of causes are thus invoked for explaining European unemployment: first, short-run disturbances (shocks) leading the economy away from its long-run equilibrium; second, market imperfections making for long adjustment lags and for a long-run equilibrium different from the competitive one, more precisely with a higher natural rate of unemployment. It is thus assumed that in a fully competitive market economy, and in the absence of adverse shocks, an optimal long-run equilibrium would prevail, characterised by full employment of available resources.

This view is known in the macroeconomics literature as the 'neo-classical synthesis'; its simplest versions were developed already in the 1940s in order to provide some room for activist Keynesian (demand-side) policies without renouncing the basic tenet of traditional marginalist theory, namely the long-run tendency of a fully competitive market economy to a full-employment equilibrium.

Remaining within the boundaries drawn by the 'neo-classical synthesis', much of the macroeconomics debate in the past fifty years has revolved around two groups of issues.

On the one side, the nature and effects of the short-run disturbances have been discussed, together with the dynamics set in motion by demand-management policies. Thus, for instance, in the 1960s the idea of 'fine tuning' prevailed, according to which demand management policies could ensure a smoothing of the cycle countering short-period demand failures and avoiding the associated unemployment costs. In the 1970s, the 'monetarist counterrevolution' focused attention on the difficulties of fine-tuning and on the inflationary costs of policies aimed at reducing the unemployment rate below its 'natural' level, higher than zero because of labour market imperfections. Subsequently, in the 1980s the 'rational expectations' school has maintained that only unforeseen shocks can have (temporary) real effects, and that only unforeseen, one-shot policies may improve the employment situation, but temporarily and with non-negligible costs (in terms, e.g., of inflationary outbursts).

On the other side, in the attempt to explain a 'natural rate of unemployment' significantly different from zero, a number of 'supply side' elements have been invoked as distorting competition and the market-adjustment mechanisms in the labour market, and then also in commodity markets. The debate is wide-ranging, with many interesting real-world issues drawn into the picture (such as, for instance, the mismatch between the workers' qualifications and those requested by employers, or the difficulties of the job-search process under conditions of asymmetric information on the characteristics of both workers and jobs). However, all this is by no means the end of the story. Side by side with the 'neo-classical synthesis', other approaches have been present in the debate; also, basic criticisms have been advanced against the very foundations of the 'neo-classical synthesis' itself. These aspects will now be considered.

2.3 The idea of a long-run competitive full employment equilibrium and its critique

The marginalist tradition on which the 'neo-classical synthesis' relies is characterised by a basic tenet: the idea of long-run employment equilibrium. Such equilibrium is determined by the intersection of the schedule of labour supply with the schedule representing the demand for labour.

The former schedule (supply) is in general assumed to be a non-negative function of the real wage rate, often for simplicity a vertical schedule (i.e., it is assumed that labour supply is given and unresponsive to changes in real wage rates). The latter schedule (demand) is derived from the principle of profit maximisation applied to the production function. The postulate of decreasing marginal productivity, applied to labour as to any other factor of production, implies that the demand for labour be a negative function of the real wage rate. This is a necessary condition for the stability of full employment equilibrium under competitive conditions. (At first sight, it might seem that this is not necessary, since a horizontal or increasing labour demand curve would anyhow meet a vertical supply curve; but this means leaving aside the microeconomic requirements for competitive equilibrium: any competitive firm is by definition confronted with a horizontal demand curve for its product, and with a horizontal cost curve situated 'not above' the demand curve, the size of the firm would grow *ad infinitum*, contradicting the assumption of competition.)

The traditional tenet of a competitive full employment equilibrium between demand for and supply of labour is paralleled by the tenet of a demand-and-supply equilibrium in the market for capitals. This second tenet is based on the idea of a savings supply schedule as a positive function of the (real) rate of interest and of a loan demand schedule as a negative function of the same variable.

In both cases, for the labour market as for the capital market, destructive criticisms have been proposed against the representation sketched above.

In the long run, the neo-classical mechanism ensuring equilibrium of labour demand and supply is the flexibility of the capital-labour ratio, considered as an increasing function of the (real) wage rate: whenever there is unemployment in a competitive labour market, wages should decline, and employers should find it convenient to substitute labour for capital. This mechanism, however, has been shown to hold only for one-commodity models: in models with two or more basic commodities, as Sraffa (1960) and the ensuing debate in capital theory[16] have shown, the relationship between capital intensity of production processes and real wage rate can take any form, increasing or decreasing, and phenomena such as 'capital reversal' or 're-switching' cannot be discarded.

In the short period, as Keynes (1936, ch. 19) stressed, if unemployment provokes a reduction in money wage rates, this may well be accompanied by a parallel reduction in prices, and even if the real wage falls, this is more likely to provoke a worsening of entrepreneurial expectations, and hence a decrease in investments and in production levels, than the opposite.

Moreover, as far as the rate of interest is concerned, it is not determined by demand for loans and supply of savings. As a matter of fact, savings depend mainly on income, while the sign of their relationship to the interest rate is dubious. As far as investments, and hence the demand for loans, are concerned, these variables mainly depend on such factors as the current and expected rate of utilisation of available productive capacity and in general on entrepreneurial expectations more than on the current interest rate. Thus, as Keynes maintained, interest rates are more often determined in the financial market by the agents' preferences for liquidity, i.e. by their preferences for different kinds of financial assets such as bank accounts, bills, bonds, and shares.

All these critiques concern the theoretical foundations of the traditional view: the idea of a long run tendency to full employment equilibrium in competitive market economies has to be abandoned. As a consequence, there is no need to bring in market frictions and supply or demand shocks in order to explain persistent unemployment: this can well be the 'normal' outcome of the working of a market economy, even a fully competitive one.

2.4 Shifting labour market equilibria as a variety of the 'neo-classical synthesis'

The Study on "European Unemployment: Origins and Challenges" provides (pp. 136-8) a synthetic representation of "shifting labour market equilibria", drawing on a line of research originally proposed by authors such as Nickell and Layard, Blanchard and Fitoussi among others. It is impossible here to enter into the details of this approach. Suffice it to say that it can be considered as a modified version of the standard 'neo-classical synthesis' approach.

It is based, in fact, on the comparison of (i) a long-run competitive equilibrium determined by the intersection of a (vertical) labour supply schedule with a (horizontal) long-run labour demand schedule, where full employment should prevail, with (ii) a (short run) equilibrium determined by the intersection of an upward sloping 'wage-setting curve', representing 'the real wage claims of labour that emerge, at any given level of (un)employment, from wage bargaining or the operation of efficiency wage mechanisms', with a downward sloping short run labour demand schedule.

Thus unemployment – implicitly reduced to a short run phenomenon – derives, according to this view, from non-competitive behaviour on the part of labour (trade unions) insisting on wage claims above the competitive, full-employment, wage rate. This basic picture is then

[16] Cf. Harcourt (1972) for a survey of the debate.

made more complex by the addition of shocks inducing shifts in both supply and demand schedules; but the idea of competitive full employment equilibrium remains as the central pillar of the analytical construct.

However, as we hinted above, the theories of employment based on the idea of a long-run tendency to full employment equilibrium in competitive markets are devoid of solid analytical foundations. It should be stressed, though, that these critiques do not by themselves imply the abandonment of the policy recipes traditionally associated with these views: some demand-management policy plus some supply policy aiming at a more 'flexible' labour market. What changes, as we shall see below, is possibly the relative importance attributed to the two sides of the recipe (the 'demand' side acquires greater importance, compared to the 'supply' side), and perhaps the specific meaning attributed to the notion of 'flexibility'. But in order to evaluate these aspects, some hints at least have first to be given about an alternative 'Keynesian' approach.

2.5 An alternative approach to employment (and unemployment) theory

If we accept the idea that competitive market economies are not endowed with mechanisms ensuring an automatic tendency to full employment equilibrium, then employment levels depend on the situation inherited from the past and the factors inducing changes in such a situation. Attention is thus focused on entrepreneurial expectations and entrepreneurs' decisions on production levels (Keynes's notion of 'effective demand').

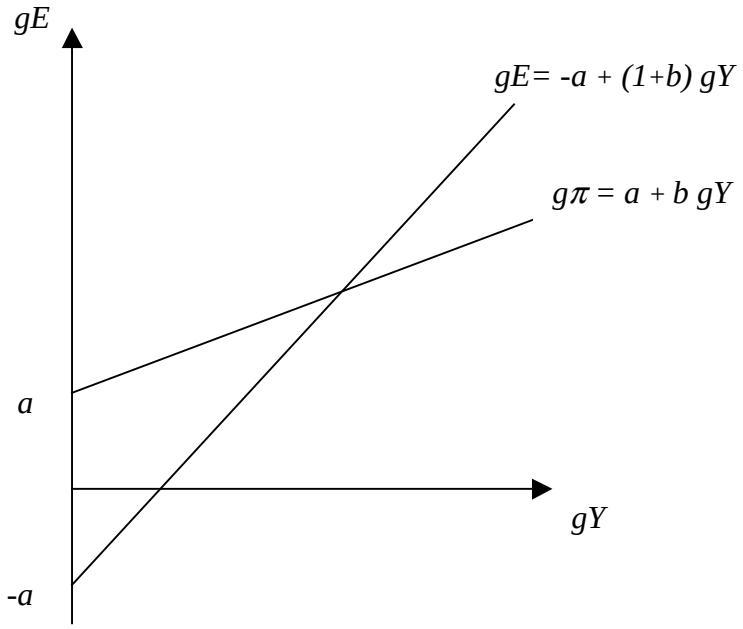
The very notion of 'unemployment', traditionally interpreted as the difference between the full-employment level and the currently prevailing employment level, loses its theoretical meaning; participation rates and their changes over time become a necessary complement to the unemployment rate for an evaluation of the employment situation.

The problem of aggregate demand failures is no longer relegated to the short run, nor to (unforeseen, temporary) shocks: in the absence of any mechanism ensuring a growth of aggregate demand parallel to the growth of productivity and labour force (i.e. to the growth of 'potential output'), cumulative processes may set in, widening the gap between actual production and employment on the one hand and supply potential on the other hand. In fact, over a sufficiently long interval of time a short-run deficiency of aggregate demand may get translated, through reduced investment activity, into a situation of 'Classical' unemployment characterised by productive capacity insufficient for employing all the available labour force.

What has been said above can be represented by figure 1, where *Y* stands for income, *E* for employment and π for productivity, and the *g* prefixed to these variables indicates annual rates of change.

The idea depicted in this figure is an economic accounting truism ($gE = gY - g\pi$), often repeated *inter alia* in the Commission's documents: employment growth requires that the growth of income surpass the growth of productivity. What the figure adds is some structure to this idea, adding to it the hypothesis of a positive relationship between the rate of growth of productivity and the rate of growth of income. (This relationship is assumed to be linear in the figure only for simplicity's sake.) This relationship is well known in the economics literature, and has variously been interpreted as the manifestation of learning-by doing phenomena or as the consequence of phenomena of labour hoarding during cyclical downturns. It adds weight to the idea that a substantial rate of growth of income is necessary, if the employment situation is to be improved. Moreover, it fits well into the 'Keynesian' representation of the working of the economy sketched out above, where the path followed by income and productivity over time determines the path followed by employment and modifies the historically given employment situation.

Figure 1: The Income-Employment-Productivity growth relationship



2.6 The issue of technical unemployment

A 'Luddite' policy attitude might be derived from the above representation: if, *ceteris paribus*, a higher rate of growth of productivity implies a symmetric negative effect on the rate of growth of employment (which may well turn out to be negative), then the 'defence' of employment might imply measures aimed at hindering technical progress. This attitude has appeared countless times in history, and corporatist defensive measures against technical change have repeatedly been adopted.

The fixity of production techniques, specified in detail in the statutes, was indeed a basic characteristic of medieval corporations. During the industrial revolution, Luddite uprisings against the introduction of new machinery in manufacturing were also common. It should not come as a surprise, then, that such a mental attitude reappears in the contemporary environment, though under modified forms.

The 'Luddite' attitude, however, assumes away two basic elements.

- First, technical progress is the foundation of what Adam Smith called the wealth of nations, namely the well being of the citizens. In fact, if we accept per-capita income as a first rough measure of well-being, then we may recall that, quite simply, it depends on two elements: the per capita product of employed workers, and the ratio of employed

workers to total population. [17] Hence productivity growth and higher employment rates are, together , the two crucial elements determining the wealth of nations.[18]

- Second, the *ceteris paribus* clause does not hold: it is quite obvious that the rate of growth of national income is not independent from the rate of growth of productivity. Between these variables there are in fact impulses going both ways: side by side with the impact of income growth on productivity growth recalled in the previous section, there are, for example, the effects of a higher rate of technical progress on international competitivity, hence on exports, hence on internal production levels.

  Among the mechanisms through which technical progress may stimulate growth we may also recall the stimuli to consumption stemming from the availability of new goods and services, or from the increase in real incomes deriving from the fall of prices induced under competitive conditions by the decrease in production costs provoked by higher productivity.

  Besides, there is the relationship between technical progress and the development of what has been variously called 'new economy' or 'knowledge economy', with the idea that a shift to a path of economic growth less based on material inputs and more on 'knowledge' is more sustainable in the long run, not only from the environmental point of view, but also because of the possibility of avoiding the inflationary pressures that in the past usually arose in primary commodities markets under the impulse of an increased demand caused by increasing input requirements; but this aspect clearly deserves a wider, separate treatment.

All this leads us to conclude that technical progress should not be constrained by policy interventions. However, this does not rule out the possibility of measures directed to inducing appropriate 'biases' in the direction of technical progress: for instance, in the direction of 'environment-saving' and-or 'primary input saving' rather than in the direction of labour-saving.

This can easily be done by recourse to appropriate stimuli; for instance, so-called carbon taxes, by increasing the cost of environment-damaging energy sources, may induce not only – and in all likelihood not mainly – static substitution effects, but also and possibly more importantly investments in research and development focused on new environmentally safer technologies. If carbon taxes are paralleled by a compensating reduction in taxes on labour, the employment effects can be increased.

In fact, technical progress should not be considered solely as an aggregate variable connecting income and employment growth. The relationship recalled in figure 1 is, in a sense, a national accounting identity; but technical progress is also, and mainly, a complex, multifaceted phenomenon constituting the main determinant of economic evolution – as distinct from simple quantitative growth – of the economy over time. This notion of technical progress, obviously deserving a distinct analysis, should be kept well present when discussing economic policies.

2.7 Inflation

One of the many reasons why technical progress is a basic constitutive element of a sustainable growth path is that it allows for a bettering of workers' conditions stemming from

[17] From $Y = \pi E$, which is a truism since $\pi = Y/E$ by definition, we obtain $y = Y/Pop = \pi E/Pop$, where as above Y is national income and π the average productivity of employed workers, while E is the number of employed workers, y is per capita income and Pop is the size of the population.

[18] Cf. von Tunzelmann (1995).

an increase in the national dividend rather than from a distributive conflict over income shares commonly implying inflationary pressures. This opens another basic issue, that of inflation.

Here again there is a 'mainstream consensus', connecting inflation to some sort of demand pressures, within a general demand-and-supply equilibrium framework. But inflation too is a complex phenomenon: while it is certain that demand pressures may cause price rises, especially in world-wide competitive markets such as those for primary commodities,[19] it is also certain that more general social elements should be taken into account as well. These aspects are obscured when the analysis is focused on the unemployment-inflation trade-off.

It should also be recalled, in this respect, that the so-called Phillips curve, representing the inverse relationship between unemployment and money wage growth, is open to at least two interpretations. In fact, side by side with the traditional interpretation based on feebler or stronger demand pressures in the labour market, there is an interpretation (reminiscent of the ideas of both Adam Smith and Karl Marx) stressing the greater or lesser bargaining power of the contendants, employers and employees; and bargaining power is connected not only to the comparison between labour demand and supply in a given moment of time, but also and possibly mainly to political elements in the wider sense of the term. From this point of view, the social structure of the country, which cannot be reduced to the economic structure, is important. Think for instance of such an 'intangible' variable as 'social cohesion' and the role this may have in bringing about some sort of 'social pact', namely the acceptance of a moderate pace of increase of money wage rates on the side of trade unions in exchange, e.g., for policies directed to increasing employment, or to fiscal policies directed to reduce the weight of taxation on dependent labour.

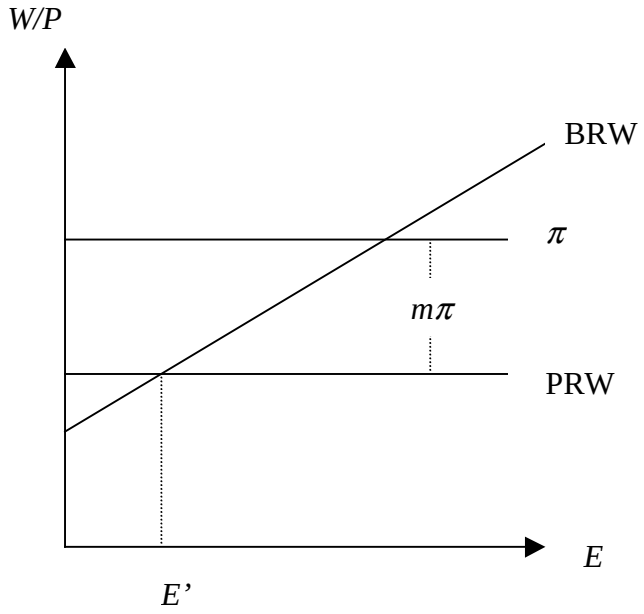
Furthermore, the transfer on prices of the growth of money wages is not automatic: here too there is some room for flexibility in the relationship connecting prices to money wages. A noticeable instance of this is provided by Italy's experience with a policy of increased competition in the retail business, adopted as part of a crash anti-inflationary policy after the 1992 devaluation of the lira; such a policy was mainly based on a 'social pact' between government, trade unions and the entrepreneurs' confederation, and the reduction in the mark-up in retail commerce was very helpful to this by making given real labour costs compatible with higher purchasing power for workers.[20] In synthesis, following appropriate policies, commonly involving collaboration with trade unions but more generally directed at establishing a co-operative industrial relations environment and enhancing social cohesion, it is possible to loosen (i.e., to shift towards the origin of the Cartesian axes) the inverse relationship between unemployment and the rate of growth of money wages.

All this amounts to say that the relationships connecting price increases to money wage increases, and these to unemployment rates, are not mechanical ones: there is wide room, at each step, for anti-inflationary policy measures that do not necessarily have costs in terms of higher unemployment.

[19] However the requirement of competition does not apply to a basic commodity such as oil; cf. Roncaglia (1985).

[20] The latitude of the possibilities for policies of this kind is enormous; for a still useful survey of the varied experience of European countries in this respect, see Flanagan-Soskice-Ulman (1983).

Figure 2: The basic NAIRU model



It may be useful to stress that such a conclusion applies not only to the simpler models based on the 'Phillips curve', but also to the more complex variants such as the NAIRU (non-accelerating-inflation rate of unemployment).

In synthesis, the notion of NAIRU is based on the idea that, on the one side, unions' requests for money wage increases depend on their expectations of price increases and on their bargaining power, while on the other side firms set the prices of their products on the basis of increases in unit labour costs – for a given productivity level – and of their market power. Thus NAIRU is determined as the point of intersection of two schedules connecting real wages to employment: a 'bargained real wage' schedule (BRW) representing the viewpoint of workers' unions, and a 'price-determined real wage' schedule (PRW) representing the viewpoint of firms.

- The first schedule is upward sloping, since the bargaining power of unions is an increasing function of employment.
- The second schedule is a horizontal line, since the mark-up that firms apply to unit costs in order to arrive at prices is considered independent from employment levels and since productivity is assumed as given.

Therefore, there is a unique NAIRU, i.e. a unique level of employment (unemployment) compatible with a constant inflation rate; under plausible behavioural assumptions, it can be shown that for employment levels higher than NAIRU inflation will accelerate, while for lower employment levels inflation will decelerate.

This model (or, better, group of models) has obvious policy implications. NAIRU can be shifted to the right (that is, the result of stationary inflation can be reached at a higher rate of employment) either by shifting upward the 'price-determined real wage' schedule, i.e. by reducing the market power of firms (reducing their mark-ups) or by increasing productivity, or by shifting to the right the 'bargained real wage' schedule, i.e. reducing the bargaining power of trade unions for any given level of employment or inducing them to moderate their wage claims through some sort of 'social pact'. Once again, we are confronted with a trade-off between inflation and unemployment, and once again the trade-off can be improved by a

move towards increased competition both in the labour market and in the products market, that is by reducing the market power of both trade unions and firms.

These conclusions, it should be stressed, do not depend on the idea of a full employment equilibrium or of a 'natural' rate of unemployment that dominated within the 'neo-classical synthesis'. Also, the scheme is open – through shifts in the two schedules – to the consideration of elements, such as those recalled in the previous section, usually left aside in the theories (and policies) based on the Phillips curve, namely on the simplest possible representation of the inflation-unemployment trade-off.

2.8 Technical change and the evolution of social structure

Technical change has a crucial role in increasing the welfare of the population – the 'wealth of nations', in Adam Smith's terminology. It has also important effects on employment and, by reducing costs, on inflation. All these aspects have already been considered above. An aspect which has only been hinted at is the impact of technical change on the social structure. Technical change is a single term for designating different tendencies. Here we will focus on two opposite effects, which have been christened 'Babbage's laws'.[21]

First, the division of labour consists in the separation of tasks. This allows the entrepreneur to minimise labour costs, since the skill content of each task considered in isolation is obviously far inferior to the skill content of the whole set of tasks, and the wage for the worker accomplishing a specific task can be correspondingly lower. A house-painter or a carpenter are generally paid less than a plumber, who in turn is generally paid less than an architect; but if in house-building there were not a division of labour, all the labour employed in building a house would have to be paid to a single worker endowed with a multiplicity of skills – carpenter plus house-painter plus plumber plus architect etc. – and the wage would have to be very high indeed. 'Babbage's first law' thus states that the division of labour minimises wage costs. Marx's notion of 'a tendency to proletarisation in capitalism' is derived from this idea: the division of labour, or in other terms technical change, by splitting the working process into separate tasks, progressively reduces the skill content required for each worker; the share of unskilled workers (common labour) continuously increases.

However, there is a 'Babbage's second law'. It says that the division of the working process into separate tasks favours the substitution of the simplest tasks with machinery. This is also a common-experience aspect of technical change; its effects on the social structure however go in the opposite direction to those of Babbage's first law. In fact, if machinery substitutes common labour, clearly the share of unskilled workers decreases and it is the share of skilled workers that increases.

We cannot certainly assume that two opposite effects should counterbalance each other exactly and continuously. What happens is that in certain periods it is the first effect that dominates, while in other periods the second effect takes the lead. For instance, when computers were first introduced, a computer operator had to accomplish a multitude of tasks that were subsequently separated. Then, in a successive stage, some of the simplest tasks were transferred to the computer itself. All this however takes place in the context of a growing complexity of the technologies in use, and of growing 'basic skills' requirements.

Thus, the process of technical change implies a basic trend to higher general education, and a complex path of, on the one side, creation of complex new jobs with high skill requirements and, on the other side, decomposition of the complex jobs into simpler tasks. When the pace of technical progress accelerates, the educational system acquires a crucial importance: it must provide a good and enhanced basic education and, more than specific skills that are

[21] Cf. Corsi (1984 and 1991).

liable to become obsolete, the capacity to acquire new skills easily – hence an attitude of curiosity towards new knowledge and experiences, and a solid background in different fields.

2.9 Which flexibility for the labour market?

What has been said in the previous section has implications for the thesis according to which increased flexibility of the labour market should be a crucial policy target. This is certainly true from the dynamic perspective illustrated above: flexibility, in the sense of capability and willingness on the part of workers to adapt to new technologies, is essential for a more speedy and easy diffusion of technical progress. Flexibility is also essential when confronted with a changing economic environment, for instance increased competition from developing countries that compels advanced economies to withdraw from sectors characterised by the employment of less qualified labourers and to expand instead new lines of production characterised by sophisticated skill requirements. But all this does not necessarily mean flexibility in the sense of complete subjugation of employees to employers, or in the sense of complete uncertainty of job tenure. Policies directed to easing the passage of workers from one job, made obsolete by technical change or by changes in the international division of labour, to a new one, do not necessarily coincide with full freedom to fire or with the dominant adoption of temporary labour contracts.

Sylos Labini (1999) distinguishes between different types of flexibility in the labour market: 'in wages, in conditions concerning the firing of workers, in the duration of contracts and in the use of part-time workers'. These different types of flexibility have different effects, both positive and negative. For instance, if we focus on wage flexibility,[22] as Sylos Labini notes'the high level of flexibility is by no means an unmixed blessing': 'when the labour market is too rigid there are troubles, but troubles of a different kind can arise when flexibility is unlimited' (p. 263).

Labour market flexibility, in the sense of easing the passage of workers from one work to another, is also increased by housing and other policies directed at easing territorial mobility, by retraining schemes, by the diffusion among the population at large of an open culture favourable to change. While these policies are usually not a cause of social tensions, such tensions are likely to arise as a consequence of other institutional changes, such as the abolition of constraints to firings. In order to minimise the social tensions connected to changes of this kind, it may be preferable to defer them to a period of lower unemployment. From this point of view, an expansionary demand policy may be considered as a precondition for the adoption of (at least certain types of) supply-side measures.

The unclear meaning of 'flexibility' may contribute to explaining the diffidence towards labour market reforms on the part of trade unions. It must be recognised that occasionally these reforms have been mainly directed at 'increasing competition' in the sense of reducing the bargaining power of unions. Conversely, it must be recognised that the rigidities hindering the diffusion of technical progress are a backward looking strategy, reminding us of the policies of medieval corporations. Thus, each specific measure of labour market reform has to be analysed in itself, considering the whole range of its effects – the dynamic ones concerning the diffusion of technical progress or repositioning in the international division of labour, those concerning bargaining power and income distribution, those concerning the system of industrial relations and more generally the social system and the rights of citizens to a decent life, including their working life.

[22] A comparison between USA and Italy, 1970-1996, shows that a lower growth of real wages in the USA – in fact, a 13% decrease versus a 50% increase in Italy, over the 26-year time span – is accompanied by a more or less equal increase in industrial output but with a much higher growth of employment (+21%, against a 14% decrease) with a correspondingly lower rate of increase in productivity.

3 Employability of the EU workforce

3.1 Introduction

The labour reserve associated with EU non-employment represents a very important growth potential which should be properly exploited. With this aim, two conditions must be met: firstly, the existing work-force must be *employable* and, secondly, must meet the changing *skill requirements* of the economy.

Indeed, the effects of globalisation and the permanent introduction of new technologies are raising the skill-requirements for jobs. That is why, training policies (broadly defined) should provide the environment needed for the improvement in human capital which remains a major economic and social goal. However, it should be kept in mind that in order to produce their full return, training policies must go together with a strong creation of working posts in the economy so that people going through these retraining efforts do actually find a job afterwards. If this is not the case, the full potential of these costly efforts cannot be realised.

3.2 The knowledge-based economy

It is increasingly recognised that *knowledge* is central to the process of growth and job creation.[23] Technological change not only stimulates investment in physical capital but also leads to knowledge accumulation: human skills are required to implement, maintain, adapt and use technologies embodied in physical capital. The codification of knowledge, i.e. its transformation into *information*, makes it more accessible to all economic sectors and agents linked to information networks or able to access them. However, it is important to realise that this does not necessarily reduce the importance of tacit knowledge in the form of skills, competencies, etc. Easier and less expensive access to information makes skills and competencies related to selecting and efficiently using information even more crucial than before.[24]

Many features of the knowledge-based economy are based on the increasing use of information and communication technologies (ICT), that radically changes the conditions for the production and distribution of knowledge as well as its coupling to the production system.[25]

[23] Cf. OECD (1996a).

[24] Cf. OECD (1996b).

[25] Cf. OECD (1996a).

Table 3: Main science and technology indicators (EU, US, Japan)

1997	EU	US	Japan
GERD/GDP %	1.8	2.7	2.9
BERD/GDP %	1.1	2.0	2.1
ICT/GDP %	5.9	7.8	7.4
Dependency ratio	7.7	0.9	0.2
Inventiveness coefficient	2.5	4.5	27.7
Rate of diffusion	10.6	14.8	1.1

Notes: GERD= Gross Domestic Expenditure on R&D; BERD= Business Enterprise Expenditure on R&D; ICT= Information and Communication Technologies expenditure; Dependency ratio= non resident/resident patent applications; Inventiveness coefficient= resident patent applications/10.000 population; Rate of diffusion= external over resident patent applications.

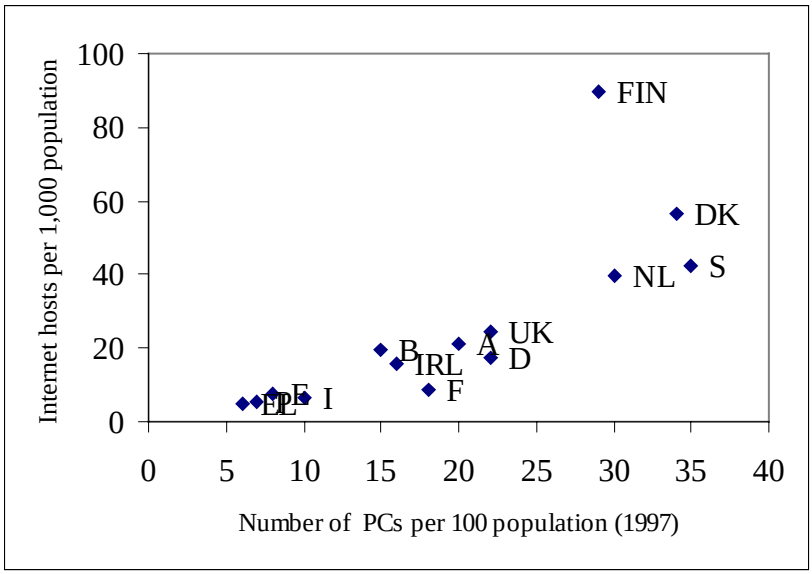
Source: OECD

As a whole, the effects of ICT concern the realisation of a new potential for productivity gains in the process of generation, distribution and exploitation of knowledge. This evolution can be seen as following three long-term paths: (i) the increasing speed and decreasing costs of developing tools and instruments for basic research and R&D; (ii) the increasing ability to generate technological options; (iii) the extending power of electronic networks as research tools.[26]

Along these paths, ICT increases the pace of innovation in terms of new product and process development. First, by testing through simulation rather than through practice, research is more quickly focused on new prototypes; thus products and processes become more differentiated and may be renewed more quickly, accelerating the speed of the product cycle and the rate of technical obsolescence. Second, the new R&D methods (based on simulation) allow a large spectrum of technological variants to be continually explored without sacrificing the benefits derived from economies of scale and from intensive learning about a technical option. Third, ICT connects a vast array of publicly available information sources and private information resources into a network that is shared by researchers; thus it creates a knowledge sphere extending beyond the spatial limits of the laboratory or research facility.

[26] Cf. Foray - Lundvall (1996)

Figure 3: EU - IT penetration



Note: An Internet host is any computer connected to the *net* via full- or part-time, direct or dial-up connection (Network Wizards: www.nw.com).

Source: EITO

The US economy is investing heavily in telecommunications, IT hardware and software: latest statistical evidence shows that almost 8% of GDP was spent on ICT in 1997, up from 7% in 1992. ICT intensity (measured by ICT expenditure as a percentage of GDP) in the US is still 2 percentage points higher than in the European Union; by contrast, it has risen strongly in Japan, where it is close to that of the United States.

In particular, IT penetration in the EU economy is much slower than in Japan and the US, with high variations across countries. As figure 3 shows, the Nordic countries and the UK have absorbed new information technologies much more than Mediterranean and Central European countries, both in terms of computer penetration among households and Internet connections. The Internet is a key driver of ICT with more and more households and companies connecting up and using it; the Nordic countries are among the most "wired" with between seven and eleven Internet hosts per 100 inhabitants, compared to an overall OECD average of less than four. The price of accessing the Internet has dropped significantly over the last years, owing to technical change and growing competition in the telecommunications industry. However, high prices remain a barrier to more widespread use in countries such as Austria and Belgium, where Internet access costs are more than three times what they are in Finland, the country with the lowest costs. [27]

3.3 Technology and labour productivity

At the outset, the relationship between technology, productivity and job creation, while controversial and the subject of intense debate over the last two centuries, appears straightforward at least from the macroeconomic perspective. Either the introduction of new technologies leads to more efficient production processes, reducing costs by saving on labour, capital, materials, energy, or any other factor of production, or it leads directly to the development of new products that generate new demand. In either case, more welfare is

[27] Cf. OECD (1999).

created: in the first, through more efficient production combinations that liberate input resources; in the second, by satisfying new wants.

The extent to which this higher welfare or increased productivity feeds back into job creation depends on the extent to which firms translate productivity gains into lower prices and new investment, and consumers respond to lower prices in terms of greater demand. The job losses that often follow the introduction of new labour-saving processes, for example, may be compensated by the job creation associated with the output growth following the decline in prices, by additional job creation in other sectors, particularly the new technology-supplying sector, and by the possible substitution of labour by capital following the consequent downward labour costs adjustment.

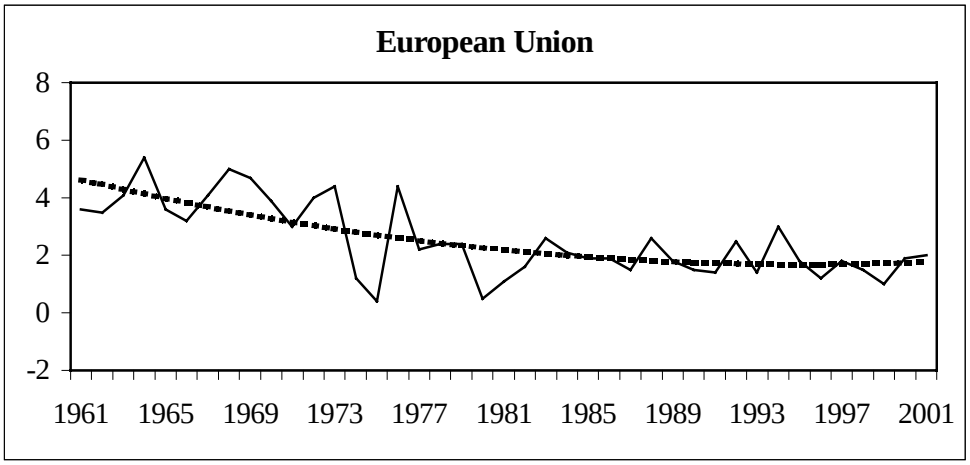
As figure 4 shows, over the last two decades, overall labour productivity has increased at a stable rate of 2% per year on average in the Union.

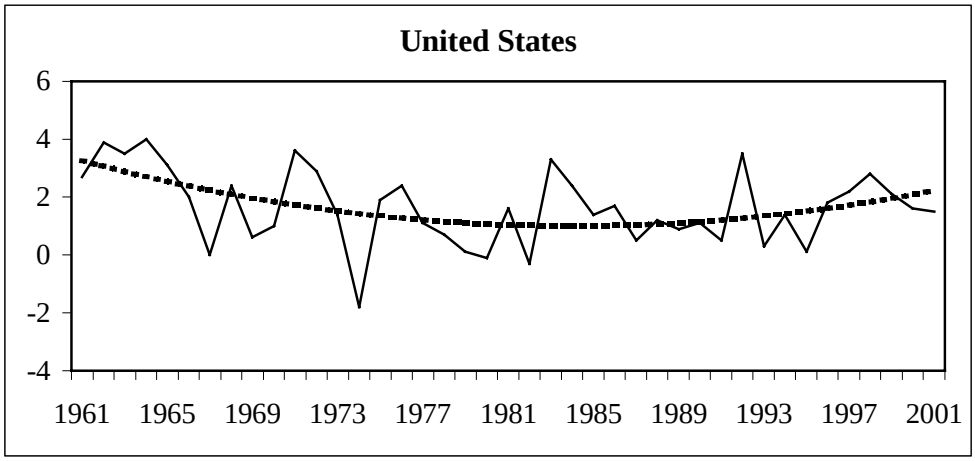
As is known, productivity growth rates began to slow in the 1960s in some EU countries (notably Italy and France) as well as in Japan and the US; for most countries, however, the first oil crisis is taken as the starting point of a gradual declining trend that continued during the 1980s. The rebound of productivity growth during the 1990s has been lower in the Union compared to the US; this is due partly to a weaker incorporation of technological progress and partly to a greater substitution of labour by capital at macroeconomic level.[28]

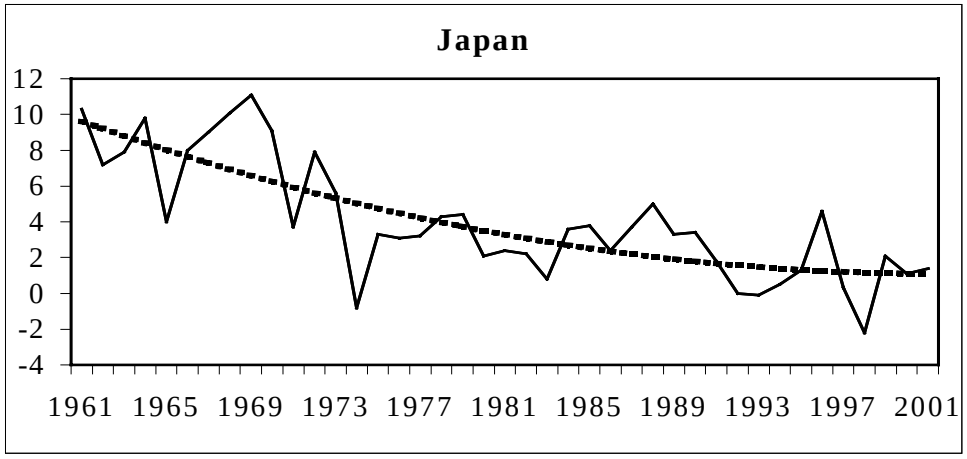
Research and development expenditures, and innovation more generally, are by no means the only factors affecting productivity. The accumulation of capital, demographic change, changes in the quality of labour, organisational change, technological catch-up factors such as the introduction and imitation of advanced foreign technologies and the degree of competition, all influence medium-term productivity growth.

[28] For a detailed analysis, cf. European Commission (1997).

Figure 4: Labour productivity* growth (EU, US and Japan)





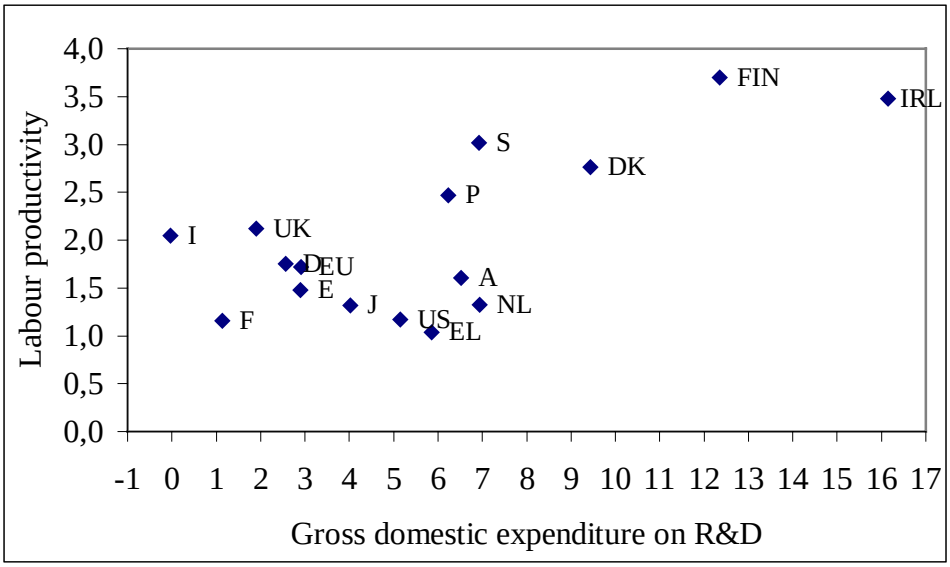


Notes: *Annual percentage change of real GDP per person employed at 1995 prices.

Source: European Commission services

Figure 5: R&D and labour productivity

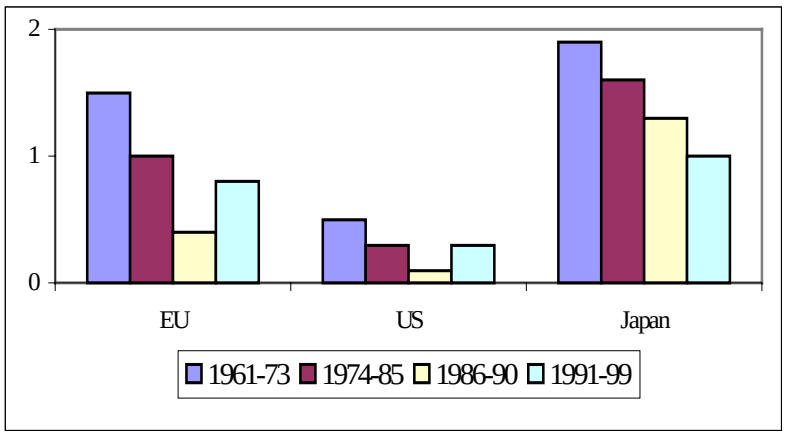
*(average growth rate, 1992-97)**



*Notes: * For Greece and Sweden 1993-97.Source: OECD and European Commission services*

However, a growing number of empirical studies point to the importance of both innovation and technology diffusion for productivity growth.[29] This evidence sheds some light on the so-called 'productivity paradox', where what is perceived as a rapid rate of technical change is accompanied by a slow rise in productivity. While the productivity slowdown in OECD countries cannot be explained by technology alone, improved methodologies for capturing the impact of technological progress show that it has in fact affected productivity: indeed, the slowdown would have been worse without new technologies. [30]

Figure 6: Labour to capital substitution (EU, US, Japan)



Source: European Commission services

[29] For instance, see Wilson (1995).

[30] Cf. OECD (1996b).

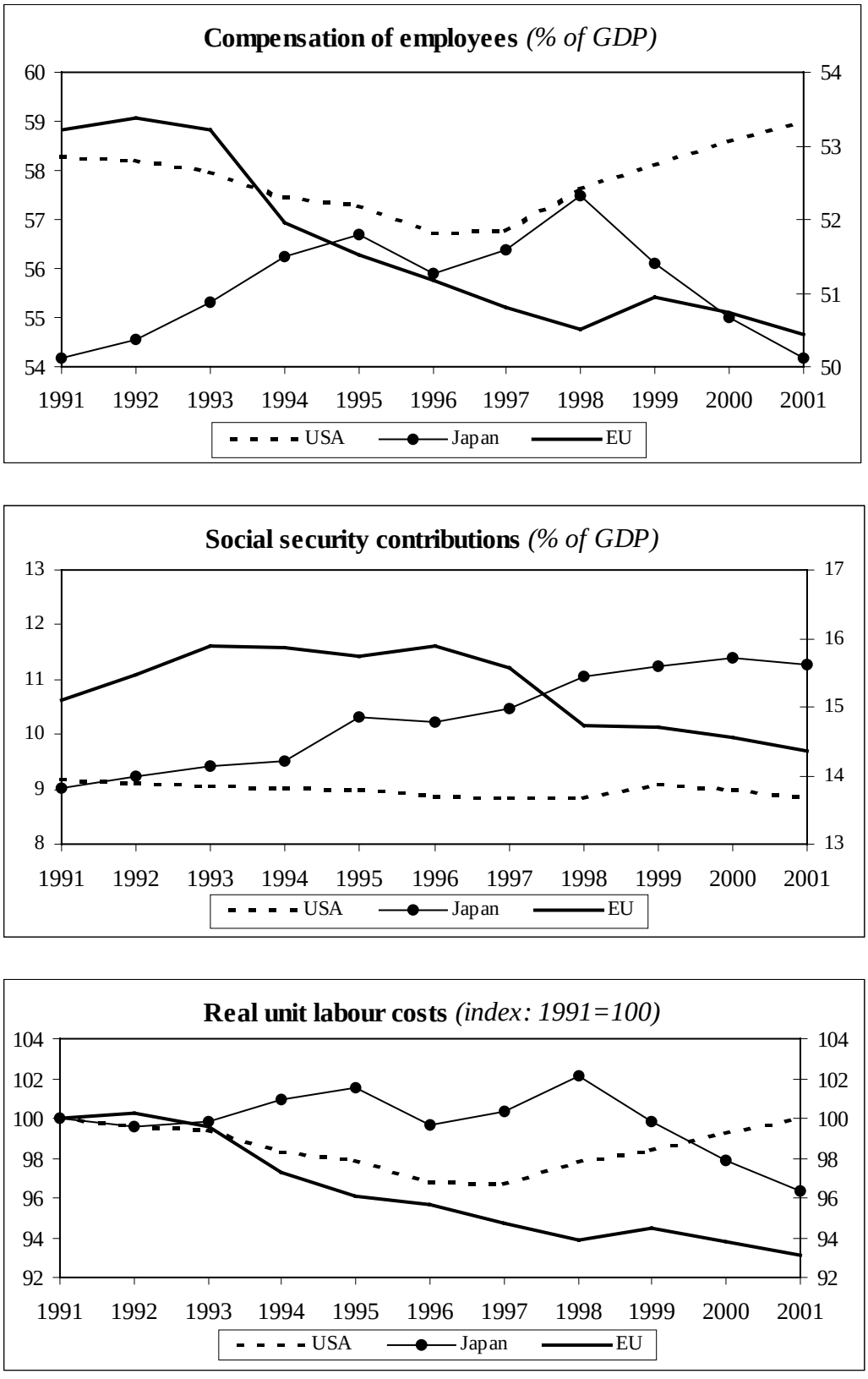
As figure 5 shows, EU countries characterised by heavily growing investment in R&D have registered a significant growth of labour productivity over the 1990s. Ireland is a prominent example of a country that has benefited from investment in science and technology; its very high productivity growth rate (3.5% against the average EU rate of 1.7%) is largely explained by the remarkable increase in R&D expenditure over the observed period (16.1% *vs.* 2.9% in the Union, 5.1% in the US and 4% in Japan).[31] Similar considerations are valid for Nordic countries, especially for Finland.

With respect to the substitution of capital for labour, the Union's economy has traditionally been characterised by a comparatively strong degree of substitution, implying a stronger increase in the capital intensity of its production process than, for instance, in the United States (see fig.6). However, the experience of the 1986-90 period shows that the combination of wage moderation (hence, profitability increases) with good demand prospects and strong growth in capacity-expanding investment may reduce significantly the rate of labour to capital substitution. Thus, if the evolution of wages continues to be appropriate (see fig.7), a further slowing-down of this substitution process is to be expected. Simultaneously, through increased profitability, it reinforces the foundations for higher, investment-supported, economic growth as demand prospects brighten. By incorporating new technologies, the new investment will contribute to sustaining productivity growth and, to the extent that it is capacity widening, slow down the substitution process.[32]

[31] It relies to some degree on imports of science and technology. Cf. OECD (1999).

[32] The experience of Ireland seems to bear this out in an even clearer way. In Ireland, macroeconomic wage moderation since the mid-1980s has been much stronger than in the Union on average (e.g. over the period 1992-97, in Ireland real wages grew by 1.5 percentage points less than the labour productivity trend of 4% p.a. whereas in the EU they rose by 1.1 percentage points less than the labour productivity trend of 2% p.a.). This has resulted in a significant slowing down of labour to capital substitution, but the growth of labour productivity has been maintained, helped by higher capacity-widening investment which incorporated technical progress. Simultaneously, in Ireland, economic activity and employment grew at a strong pace (average annual rate of growth of 6.5 and 2.5 %, respectively). On the other hand, in the Netherlands wage moderation in combination with labour market reforms (especially part-time work) since 1983 has led to a slowdown in labour to capital substitution but also in apparent labour productivity growth. Cf. European Commission (1998).

Figure 7: Wages and non-wage labour costs (EU, US, Japan)



Source: European Commission services

3.4 Organisational change and flexibility

Technology provides new opportunities for expanding the range of goods and services, increasing productivity, and increasing employment; but the organisation of firms and the institutional context for the introduction of organisational change determines the effectiveness and impact of the adoption of new technologies.

Indeed, a new organisation of work is complementary to the adoption of ICT in seeking greater functional and numerical flexibility (see Box 1). The so-called 'flexible' or 'high-performance' work practices generally involve changes in the design of jobs towards greater complexity, higher skill levels and greater use of team-working, as well as increased delegation of responsibility to lower level staff and improved communications throughout the company.

Table 4: Contribution of part-time and full-time employment to overall employment change, 1987-97

(% of total employment in initial year)

	Total	**Part-time**			**Full-time**		
	All	*All*	*M*	*F*	*All*	*M*	*F*
Belgium	0.44	0.41	0.02	0.39	0.03	-0.30	0.33
Denmark	0.43	-0.20	0.14	-0.34	0.63	0.17	0.46
France	0.26	0.29	0.03	0.26	-0.03	-0.21	0.18
Germany	0.56	0.68	0.13	0.55	-0.12	-0.02	-0.10
Greece	0.68	0.23	0.09	0.14	0.45	0.11	0.34
Ireland	2.32	0.95	0.24	0.71	1.37	0.51	0.86
Italy	-0.06	0.31	0.08	0.23	-0.37	-0.40	0.03
Luxembourg	0.76	0.36	0.04	0.32	0.40	0.21	0.19
Netherlands	1.99	0.84	0.00	0.84	1.15	0.69	0.46
Portugal	0.92	0.45	0.14	0.31	0.47	0.01	0.46
Spain	1.22	0.37	0.08	0.29	0.85	0.20	0.65
United Kingdom	0.66	0.35	0.17	0.18	0.31	-0.04	0.35
EUR 12	0.85	0.42	0.10	0.32	0.43	0.08	0.35
United States	1.42	0.12	0.03	0.09	1.30	0.60	0.70
Japan	1.07	0.76	0.33	0.43	0.31	0.24	0.07

Notes: Total employment is defined as the sum of part-time and full-time employment. Part-time employment is defined as work with usual hours less than 30, except for Japan where it is actual hours less than 35 per week.

Source: OECD

BOX 1: Functional and numerical flexibility

Much of the literature on organisational change opposes two different kinds of flexibility (see OECD 1996a).

- *Functional flexibility* usually involves high skill and collaborative approaches to work based on high quality labour inputs. Its most common features are: shifting job design and job boundaries away from traditional narrow ones, mobility across tasks, multi-skilling and wide-skilling, extensive training and retraining. Autonomous self-managed multi-functional team work is an indicator of this kind of flexibility.
- *Numerical flexibility* usually involves changing a quantity of labour input. These quantitative changes include, for example, numbers of employees, hours of work, use of part-time employees, use of temporary employees whose contracts can be terminated, making use of liberal provisions on hiring and firing.

There is also a spatial dimension to adjustment.

- *Internal flexibility* refers to operations carried out within the enterprise or performed within the existing contract structure of the enterprise.
- *External flexibility* involves interaction in markets, generally outside of the firm; it usually involves changing the nature and type of contracts.

There has been much overlap between internal and functional flexibility, and external and numerical flexibility.

Enterprises pursuing more adaptable organisation and production can shift the mix of functional and numerical flexibility in order to adjust labour use. Beyond that, they can also shift the locus of adjustment, moving it outside if they have traditionally relied on internal mechanisms for adjustment, and vice versa.

Firms can rely on (internal) variations in working hours instead of (external) hiring and firing to achieve numerical flexibility, for example, and on outsourcing of certain activities, instead of internal occupational restructuring, to acquire certain specialised competencies. Thus, countries that typically have greater recourse to external markets and strategies that depend largely on numerical flexibility have shown greater interest in making more functional and numerical adjustments within the firm. Interest in the 'flexible' work practices in countries like the US and the United Kingdom is largely about how to build functional flexibility and improve the quality of labour and other inputs. In the more protected European setting, the shift has been towards greater use of numerical flexibility and external functional adjustments.

In the flexible firm, employment flexibility is achieved via two strategies. It may be achieved 'internally' through multi-skilling, increased horizontal communication, use of better-trained and more responsive employees, etc., or 'externally' by making employment contracts more flexible, for example by employing more workers on 'non-standard' contracts. In what follows, our analysis focuses on 'external' flexibility, not least because it has provoked debate about the social desirability of the increase of 'precarious' jobs.

Non-standard forms of employment (e.g., part-time employment) are often considered to be an indicator of 'external' labour market flexibility, since, compared to the norm of full-time employment, they imply weaker employment contracts, in terms of the greater ease of varying hours worked and terminating the contract.

Various demand-side motivations are commonly invoked for using these forms of employment. One is the lower overhead costs than those incurred for regular employees, because various non-wage labour costs are avoided. Second, greater flexibility reduces costs by providing a closer match between the required use and the workers employed. Third, these forms of employment may also be used as mechanisms for screening employees.

On the supply side, engagement in non-standard employment contracts may be seen as either 'voluntary', if the contract accords well with the employee's preferences,[33] or 'involuntary', if the employee has taken the contract owing to a lack of preferred alternatives.

Latest statistical evidence shows that part-time working has been increasing over the past few years, sometimes at a rapid rate.[34] Its contribution to job creation has been important for the OECD area as a whole, for some EU countries and for Japan. As table 4 shows, over the past decade the contribution of part-time working to the growth of total employment in Europe was as important as full-time employment. For the EUR12 countries the average annual growth rate of total employment over this period was the same for the two types of employment, at just over 0.4 per cent. Part-time employment growth was particularly important in a number of countries where total employment growth was comparatively slow, such as France and Germany, and often less important, in relative terms, where total employment growth was rapid (e.g., Ireland and the Netherlands). It was also responsible for the bulk of the average 1.1 per cent employment growth in Japan. By contrast, in the US part-time employment fell slightly.

One of the distinguishing features of part-time employment, as opposed to other forms of non-standard employment (e.g., shift-working), is the strongly favourable attitude of many employees towards it. This applies both to those who already work part-time and, in many cases, also to those who work full-time.

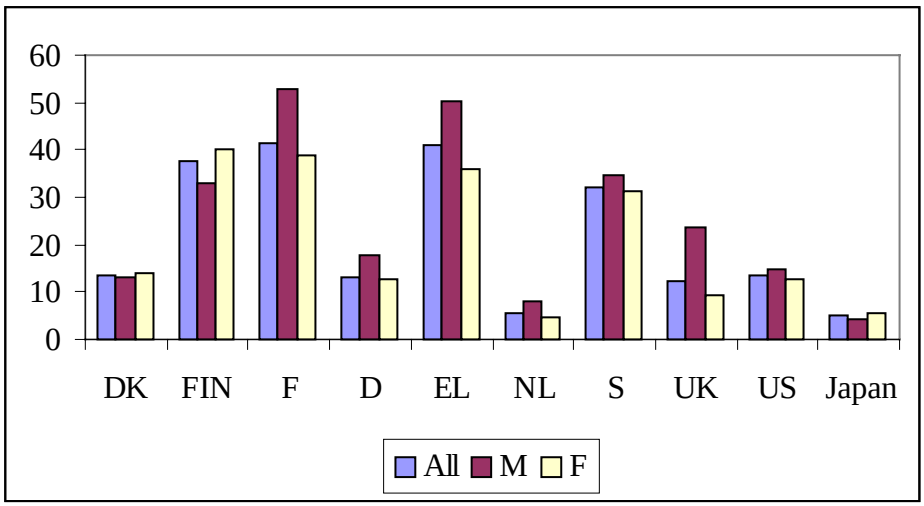
A wide range of national information is available from statistics which attempt to measure the incidence of so-called 'involuntary part-time working'. This information is produced by questions asking part-time workers why they are working part-time, taking involuntary part-time workers to be those who reply that they have been unable to find full-time work. As figure 8 shows, the proportion of involuntary part-time workers in Europe is much higher than in the US and Japan (with the exception of the Netherlands). Moreover, figures for men are usually higher than those for women (except in Finland and slightly in Denmark): as a general rule, the higher the proportion of women working part-time in a given country, the lower tends to be the proportion of involuntary part-timers among women working part-time.

[33] For example, it is commonly suggested that a powerful influence on the incidence of part-time work is women's preference for it, which in itself may be driven by other factors, such as the availability of child care.

[34] For a detailed description of temporary work trends in the EU countries, see European Commission (1999).

Figure 8: Share of involuntary part-time employment, by gender

(% of total part-time employment, 1997)



Source: OECD

3.5 Provisional conclusions

There is no simple political solution for such complex problems as those which arise from the interaction between technology and employment in an ever-more global and knowledge-based economy. There must be a good chance of institutional innovation and a widening of the action horizons – compared with the traditional objectives of competitiveness and cost reduction – for there to be any possibility of developing employment-friendly technology policies. In this direction, the following two broad trends emerge.

1. *Innovation and structural change policies*. Until now, these policies have mostly provided incentives to labour-saving initiatives, which companies would have applied in any case. From here on, efforts will have to be concentrated on innovating the *contents* of production (in industry and the service sector) so that new companies are set up and the economy moves to a structure with more job-creating sectors. An important consideration in this respect will be the development of new forms of financing for innovations practised by small and medium-sized firms, who find it difficult to measure up to the current credit requirements.
2. *Learning policies*. The full recognition of the central role of knowledge and the learning process in an advanced economy must lead to a re-consideration of education and training policies, of the transfer of *know-how*, seen as a knowledge-producing and spreading system. In particular, incentives (taxes, wages, etc.) for companies and individuals who invest in learning could be increased. For example, investment in human capital could be treated in the same way as investment in plants and machinery.[35]

[35] One of the most important targets of learning policies should be the re-organisation of the use of time. A transfer from study to work, over a lifetime, or from work to rest, on a day-to-day scale, must give way to a new, more flexible division of the average working-time. By this way, there could be opportunities for greatly reducing the number of hours worked during a week, a year, or a lifetime as a means for re-distributing the earnings from technological change and making learning processes possible. Moreover, the reduction of working hours could be important in stimulating the demand for new services, especially those tied up with learning, which require large time inputs from users. Cf. Petit (1995).

Along these lines of action the employability of the EU work-force might grow. However , economic policy must follow the same path as economic change, tied up with the increase in ICT, working therefore with education and learning, bridging the reduction and redistribution of working times with research into new, publicly financed resources capable of redistributing the benefits promised by technological change around the whole of society.

4 Skill requirements in the knowledge-based economy

4.1 The relationship between technology and skills

Technological change may greatly alter the demand for worker skills. As ICT become more widespread, certain skills may be less in demand - because many tasks once carried out manually are now performed by automated equipment - while the demand for workers able to maintain, program, and develop these sophisticated technologies rise. There is therefore concern that technological change may increase the polarisation of society by widening the gap in income and employment opportunities between those whose skills have been displaced by new technology and those who create and use it.

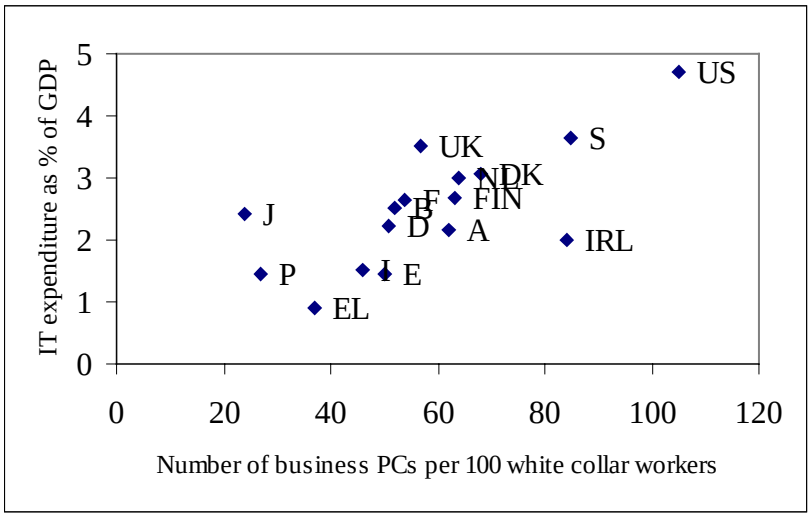
When new technologies are introduced into production processes, it is generally thought that, overall, they reduce the demand for low-skilled workers and increase the demand for high-skilled workers. This complementarity between technology and high-skilled workers at the level of the firm can be explained by reference to three intuitive arguments. The first is that high-skilled workers adapt more easily to technological change than low-skilled workers. The second is based on the observation that many new technologies perform repetitive tasks previously carried out by low-skilled labour, or workers without extensive training, such as routine assembly operations. The third is that computer technologies increase the productivity of high-skilled workers more than low-skilled workers, so that firms match high-skilled workers with new technology.

At the same time, and in addition to this ‘upskilling’, technology can also have a ‘deskilling’ effect, in the sense that it will lower the skills required for a certain task, so that as new technologies perform a greater variety of tasks, the skills required for certain occupations may be reduced. For instance, the operator of a numerically controlled machine tool may primarily be an observer, whereas his predecessor may have been a craftsman. There is also some early evidence that information technology is reducing middle-management jobs, traditionally thought of as skilled. With the development of ‘intelligent’ software able to perform a variety of functions, information technology can now be used to perform many information gathering tasks and analyses in addition to simple computations.[36]

The complementarity between technology and skills which is evident at the microeconomic level is often extrapolated to the level of the economy as a whole and is commonly referred to as ‘skill-biased technical change’. From a theoretical point of view, however, micro-level complementarities between skills and technology do not necessarily translate into macro-level relationships. Indeed, it is difficult to separate the effects of technological change in terms of skill-bias from a wide array of other forces and factors. In particular, differences in labour market institutions have an impact on the equilibrating mechanisms of the labour market and influence which technologies are developed and adopted, and consequently, how they affect demand for different skills.

[36] Cf. OECD (1996b).

Figure 9: Use of IT at work



Source: EITO

As a matter of fact, firms choose new process technologies in light of the skill levels of their work force and the relative costs of upgrading these skills levels. In countries with strong external labour markets, such as the US and UK, firms have more flexibility for adopting technologies and seeking workers with the appropriate skills across the entire labour market. In countries that rely more on internal labour markets, such as most EU countries, where the costs of hiring and firing workers are greater, firms choose technology mainly with an eye to the skills and abilities of their workers and to how easily they can adapt those skills to complement the new technology successfully.

4.2 The changing skills profile of employment

The 1990s saw an up-skilling in the labour force, as demonstrated by changes in employment by occupation. Table 5 shows the latest statistical evidence about the occupational distribution of employment in the EU, Japan and the US: white-collar workers dominate overall employment, especially in the US, and most of them perform high-skilled jobs (except in Japan).

In more detail, a large share of employment is concentrated in an array of occupations directly related to the use of new technologies, that may be grouped in two categories: *data workers*, those who handle and diffuse information as rooted in and emanating from routine activities, and *knowledge workers*, those in charge of the production of new knowledge or of the handling and distribution of information (see Box 2). *Data workers* and *knowledge workers* may be classified all together as *knowledge and data workers* (KIW): this bunch of categories represents 49% of total employment in the Union and the share is even higher for female employees (57.8% against 58.6% in the US). Countries in the EU with high employment rates - e.g., UK and the Netherlands - have higher shares of *knowledge and information workers* than the US – 55.4% in the UK and 59.2% in the Netherlands. Since the US has a higher employment rate overall, this implies that it is managing to create more jobs for the low-skilled than in Europe: in fact, the US employs many more white collar workers with low levels of skill (around 40% of total employment against 27% in EU).

Table 5: Employment by occupation (EU, US and Japan)

1997	EU	US	Japan
Blue collar workers	37.6	27.8	40.2
White collar workers	62.4	72.2	59.8
Highly skilled	35.2	32.3	16.1
With low skills	27.3	39.9	43.7
Knowledge & Information workers	49.0	46.5	35.6
Knowledge workers	20.8	--	--
Data workers	28.2	--	--
Total	100	100	100

Notes: Total employment is defined as the sum of blue-collars and white-collars.

Source: EUROSTAT, ILO.

BOX 2: Skills and how to measure them

The occupational data used in this chapter are based on the International Standard Classification of Occupations of the International Labour Office (ILO). Where data were available in ISCO88 format (most EU countries), occupations were aggregated in the following ways.

- ***High-skilled workers*** = legislators and managers, professionals and technicians (groups 1, 2, and 3);
- ***Low-skilled workers*** = craft and related trade workers, plant and machine operators, elementary occupations (groups 7, 8 and 9). [37]
- ***White-collar workers*** = legislators and managers, professionals, technicians, clerks, service and sales workers (groups 1, 2, 3, 4 and 5);
- ***Blue-collar workers*** = agricultural workers, craft and related trade workers, plant and machine operators, elementary occupations (groups 6,7, 8 and 9).
- ***Knowledge workers*** = legislators and managers, professionals (groups 1, 2);
- ***Information workers*** = technicians and clerks (groups 3, 4).

Where data were available in ISCO68 format (US, Japan, Finland and Sweden), occupations were aggregated in the following ways.

- ***High-skilled workers*** = professional and technical workers, administrative and managerial workers (groups 0/1 and 2);
- ***Low-skilled workers*** = transport/production workers, labourers (group 7/8/ 9).
- ***White-collar workers*** = professionals, technicians, managers, clerks, service and sales workers (groups 0/1, 2, 3, 4 and 5);
- ***Blue-collar workers*** = agricultural workers, transport/production workers, labourers (groups 6, and 7/8/ 9).
- ***Knowledge and information workers =*** professionals, technicians, managers, clerks and sales workers (groups 0/1, 2, 3 and 4)

[37] European Commission (1999b) adopts a more detailed skill classification:
High-skilled non manual = managers, professionals and technicians (groups 1, 2 and 3);
Medium-skilled non manual = clerks and office workers (group 4);
Lower skilled non manual = sales and service workers (group 5);
Skilled manual = agricultural workers (group 6), crafts and related workers (group 7), plant and machine operators (group 8);
Unskilled manual = elementary workers (but also the armed forces –group 0 – are here included 'for sake of completeness').
However, the differences in classification which still exist both among the US, Japan and EU and within the EU Member States should warn against a too detailed comparison between occupational groups; that is why we preferred to focus on broader occupational groups.

Upskilling trend in the EU can be seen also by looking at the growth of KIW, as described in table 6. The Union, as a whole, saw these occupations growing in the late '90s at a much higher rate than overall employment (1.7% *vs.* 0.4%), with the largest increases in countries characterised by high rates of employment growth.

Table 6: EU - Knowledge and Information Workers

(1996-97 growth rate)

	Knowledge workers			**Information workers**			**KIW**		
	Total	*M*	*F*	*Total*	*M*	*F*	*Total*	*M*	*F*
France	0.33	1.14	-1.11	0.03	-0.11	0.12	0.14	0.50	-0.19
Germany	2.00	2.47	1.05	0.24	0.81	-0.11	0.86	1.62	0.15
Italy	2.40	3.46	1.36	2.30	2.74	1.72	2.33	2.92	1.61
Netherlands	5.10	3.95	7.54	3.88	1.47	5.82	4.48	2.95	6.44
UK	1.77	1.89	1.59	3.86	3.66	3.98	2.71	2.47	2.93
EUR12	1.87	1.98	1.68	1.63	1.53	1.70	1.73	1.76	1.69

Source: EUROSTAT, ILO.

4.3 The decrease in demand for low-skilled workers

4.3.1 The principal reason for the increased concern over how technological change is altering the demand for various skills is the sharp decline in the demand for low-skilled workers. From a theoretical point of view the question is complex and requires analysis in a framework that can account for all factors that affect the demand for and the supply of workers with different skills.

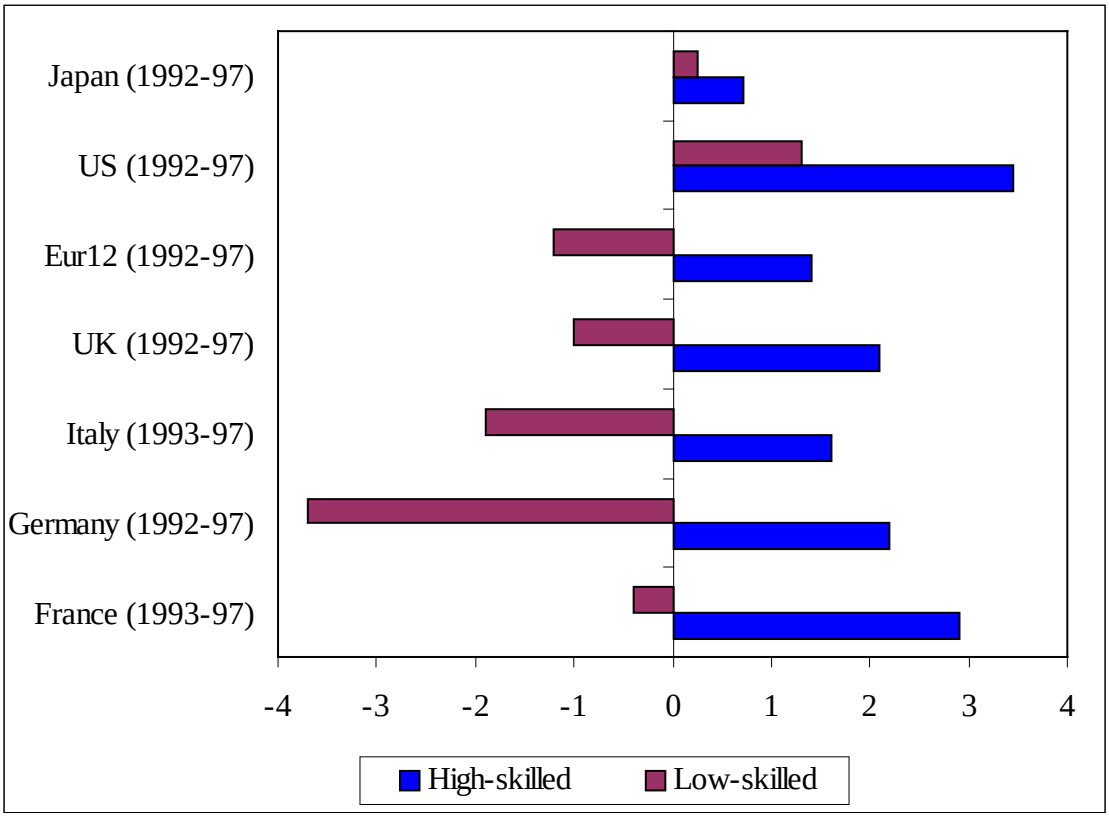
Although a consensus has been reached that technology and skills are complementary, there remains considerable debate over how much of the general decrease in demand for low-skilled workers is due to technological change. At least two main issues must be discussed: the impact of organisational change in terms of 'upskilling' and the effect of wage dispersion on low-skilled employment.

4.3.2 In the context of the organisational changes described in chapter 3, upskilling may be seen as part of the drive towards a more effective and flexible work force; in terms of aggregate labour market data, evidence of this process would appear in a shift from low-skill to higher-skill occupations.

Latest statistical evidence seems to suggest that where employment has risen employment growth has been greatest in high-skilled occupations. As figure 10 shows, high-skilled jobs have been the main source of employment growth, during the 1990s, in most EU countries (with the main exception of the Netherlands), in the US and in Japan. However, a corresponding growth of low-skilled jobs is recorded in the US, while at least a positive growth rate is registered in Japan. The explanation for the growth of low-skilled employment,

especially in the US, has mainly referred to the impact of technological change in terms of wage dispersion. [38]

Figure 10: Employment by skill (average annual growth rates)



Source: EUROSTAT, ILO.

4.3.3 By affecting the employment composition by skill, technological changes can exert an impact on the existing earnings structure. The increased demand for high skilled workers can indeed raise significantly the corresponding wages with respect to the low-skilled workers, thus leading to an overall widening of the earnings distribution.

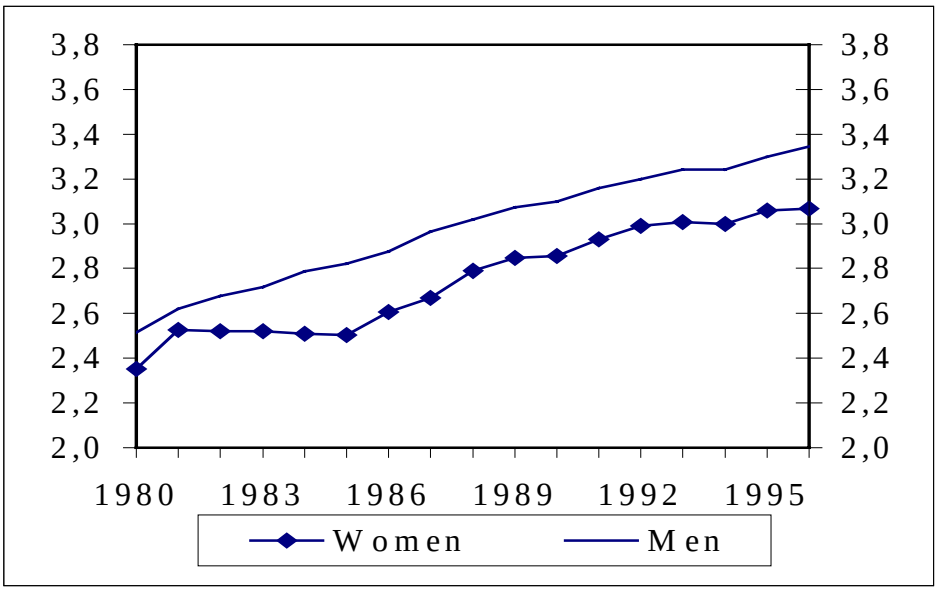
A trend towards wage dispersion has been recorded in the OECD area over the last twenty years. According to it, during the 1980s increases in wage dispersion were generally small except for the United States and the United Kingdom. Starting with the mid-1980s a tendency towards rising wage inequality has also been recorded in France and Japan, while the first half of the 1990s saw a sharp rise in wage dispersion in Italy, whose earnings distribution had been very stable or even declining in the previous years. As in the case of the United States and the United Kingdom, the phenomenon generally hit both male and female workers. An exception in the European area is represented by Germany, where wage inequality kept declining over the whole period considered. However, compared with most continental European countries, the United States and the United Kingdom stand out as the only

[38] This view has been expressed in several studies, which have explained the comparatively worse performance of continental Europe with the lack of wage flexibility, mainly due to institutional rigidities. See, for instance, Bertola, G. - Ichino A. (1995).

countries where the rise in earnings inequality was significantly pronounced and this tendency continued also in the first half of the 1990s (see fig. 11).

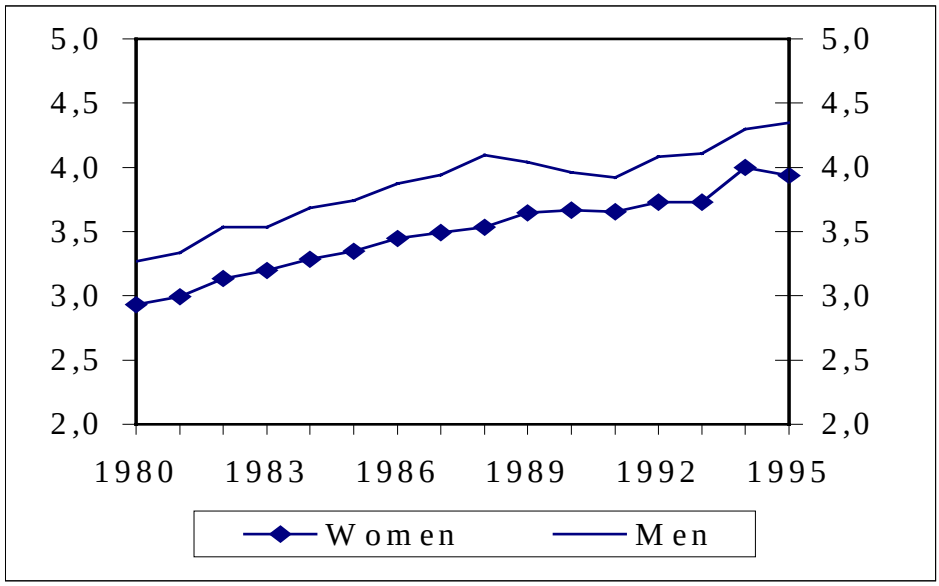
The observed rise in earnings inequality has been accompanied by different outcomes in terms of the real wage growth for high-paid and low-paid workers. As Figure 12 shows, starting from the early 1980s in the United States low-paid workers at the bottom of the earnings distribution saw their real wages decline not only in relative but also in absolute terms. This is particularly true for male workers, whose real wages in the first half of the 1990s were more than 20 per cent lower than in the early 1980s (for female workers the decline has been almost 5 per cent). This phenomenon did not affect the United Kingdom despite the sharp increase in wage inequality. As in the other European countries (and in Japan), real wage gains have taken place in the UK both at the top and at the bottom of the earnings distribution – although at different growth rates - and for both men and women.

Figure 11a: Trends in overall earnings dispersion (United Kingdom)



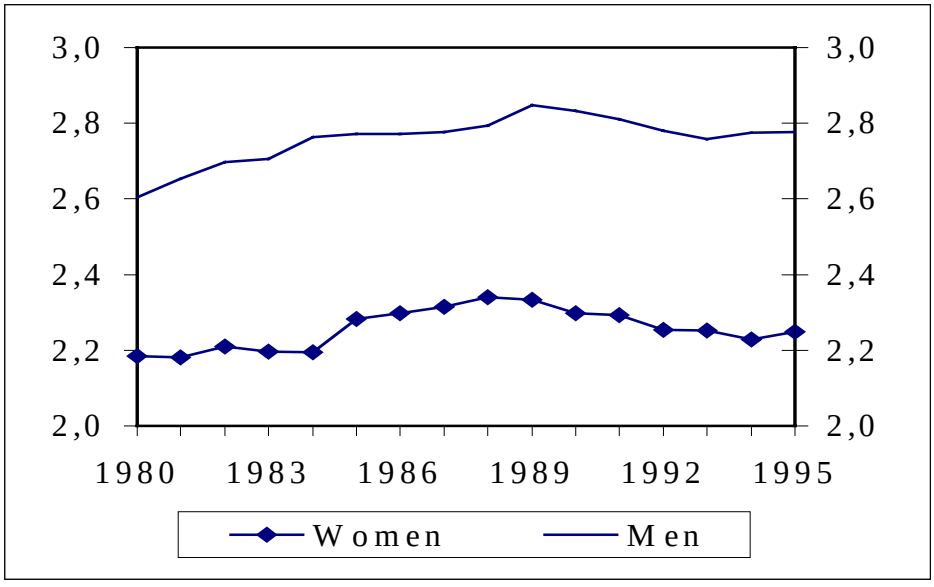
Source: OECD

Figure 11b: Trends in overall earnings dispersion (United States)



Source: OECD

Figure 11c: Trends in overall earnings dispersion (Japan)



Source: OECD

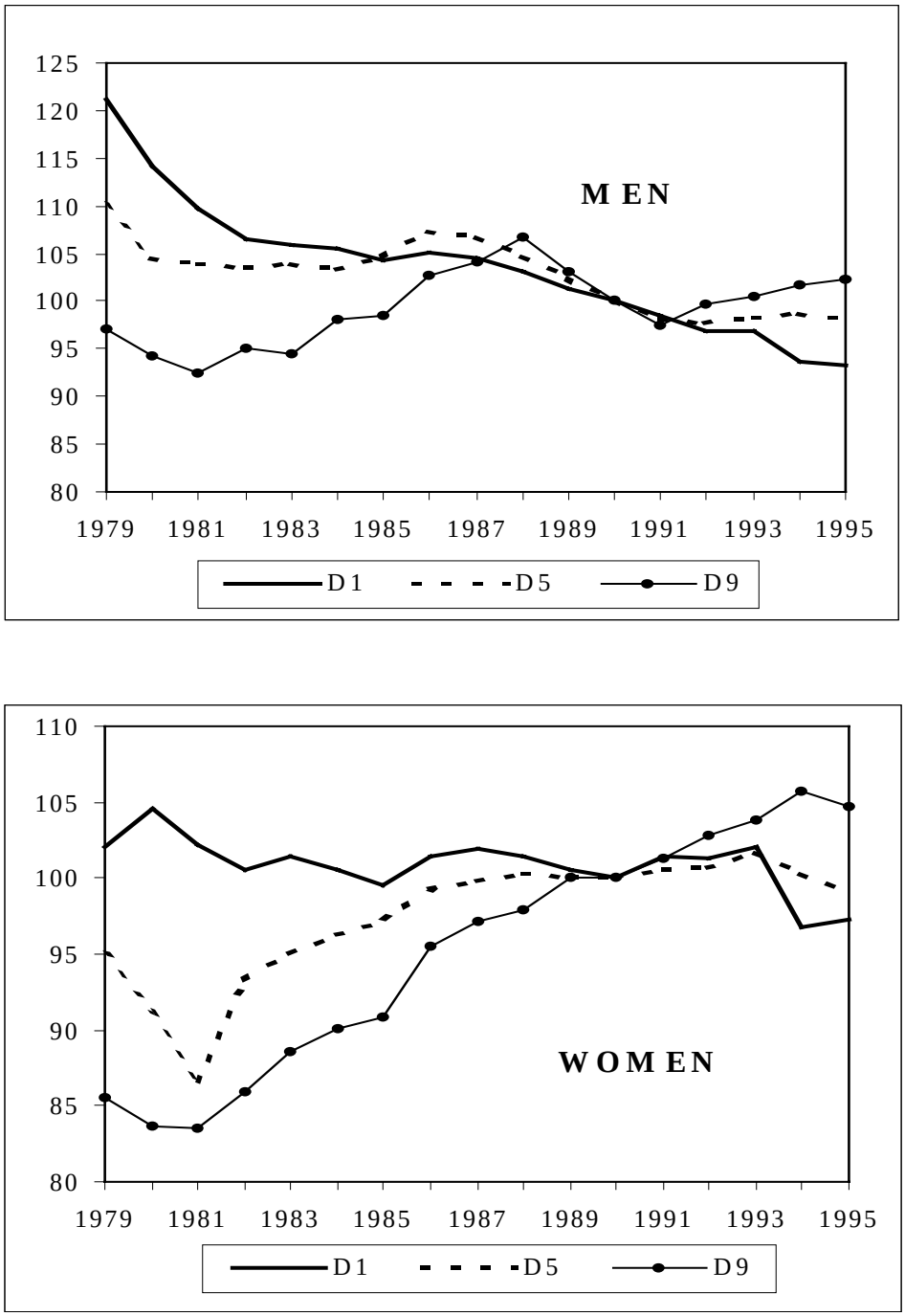
The observed trend towards wage dispersion has raised questions both about the functioning of the labour market and the quality of employment opportunities.

On the one hand, it has generally been claimed[39] that the widening of the earnings distribution, by allowing relative wages to go more in line with the corresponding productivity levels, has played a significant role in boosting employment growth, especially among the low-skilled, in the countries where wage inequality increased.

On the other hand, rising earnings inequality has raised concerns on the potential deterioration of the economic position of low-paid workers, whose earnings – which, as we saw for the US, tended to decline in absolute terms - could even fall below the poverty threshold thus giving rise to a 'working poor' phenomenon.

[39] Cf. OECD (1994).

Figure 12: Trends in real earnings deciles (US)

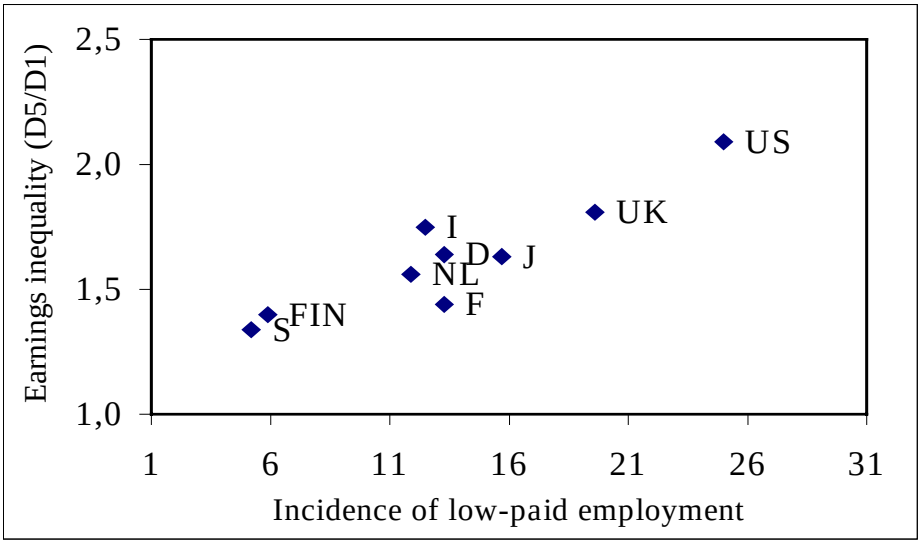


Source: OECD

Figure 13 shows that the overall incidence of low-paid employment (defined as the percentage of full-time workers who earn less than two-thirds of median earnings) turns out to be significantly higher for the US and UK (25% and 19,6% respectively) with respect to the other countries considered (between 13 and 16%). It also illustrates the trend in low-paid earnings dispersion as measured by the ratio of the fifth (median) to the first decile (D5/D1) for each country in the selected year thus showing the existence of a correlation between the

degree of low-paid earnings dispersion and the incidence of low-paid employment: countries characterised by strong earnings inequality also display a high incidence of low-paid jobs.[40]

Figure 13: Earnings inequality and the incidence of low-paid employment



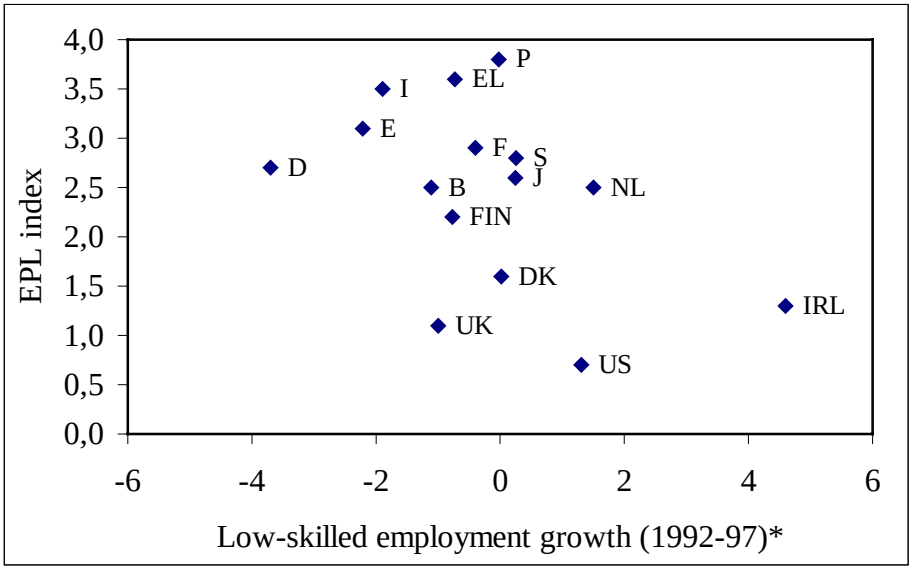
Source: OECD

The incidence of low-paid employment varies across countries according to some workers' characteristics. Low-paid employment mainly affects young and female workers in all the countries considered, but the United States stand out for a youth low-paid employment rate of 63%. As regards the incidence of low-paid employment by type of occupation it turns out that both in the US and the UK a big proportion of low-paid workers are engaged in white-collar activities (e.g., clerical workers).[41]

[40] However, correlation is not strong enough to prove the existence of a one-way causality link. Causality can go both ways: higher low-paid earnings dispersion can lead to higher incidence of low-paid employment; higher incidence of low-paid jobs can lead to additional earnings dispersion.

[41] Cf. OECD (1998)

Figure 14: Employment protection and low-skilled employment



Notes: EPL index = Weighted average of indicators for regular contracts, temporary contracts and collective dismissals. (*) 1993-97 for France and Italy, 1992-96 for Finland and 1993-96 for Sweden.

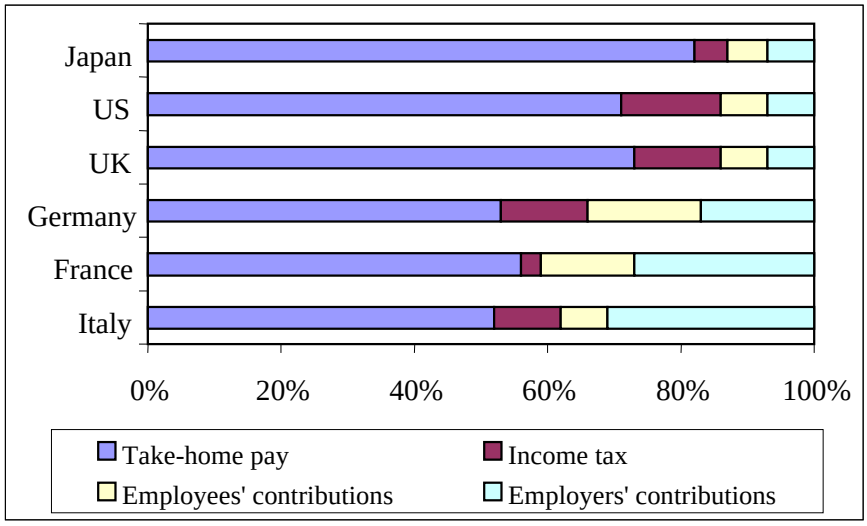
Source: EUROSTAT, OECD.

On the supply side, a 'discouraged worker effect' seems to arise among low-paid workers: falling wages for workers at the bottom of the earnings distribution may indeed lead them to drop out of the labour force, thereby originating social exclusion. As figure 14 shows, this is particularly true in those countries where employment protection is relatively high, namely most continental European countries, and could partly explain the observed reduction of low-skilled jobs in the European countries (with the exception of Ireland and the Netherlands), which contrasts with the opposite trend recorded in the United States where social protection is much lower than in Europe.

In the analysis of low-paid employment, another relevant aspect that must be taken into account, on the supply side, is the tax system. By reducing the return from work, taxes can indeed represent a strong disincentive to enter the labour market for those workers who are at the lower end of the wage distribution. As Figure 15 shows, in continental Europe low-paid workers receive less than 60% of the original wage, while in the US and UK this share is more than 70%. Therefore, fiscal reforms aiming at reducing the tax burden of the low-paid could help boost a corresponding employment growth.

Figure 15: Taxes on low-paid employment

(% of total costs of employing a low-wage worker, 1996)



Source: OECD

5 Policy implications and conclusions

5.1 Multi-faceted policies for a multi-sided problem

The mediocre employment situation in the EU discussed in the previous chapters calls for policy intervention. But this intervention takes place in a complex economic environment, characterised by technical progress and a changing job structure. Our analysis suggests that a simple, mono-dimensional policy will not do. What is required is a complex mixture of demand-side and supply-side policies, framed in such a way as not to hinder technical progress but rather to favour it, and to encourage the continuous adaptation of the economy to the changing technologies. In the following sections we will consider separately the different aspects of a suitable policy package; but it is important to keep well in mind that each policy line, if realised in isolation, is likely to be much less effective, if not useless or even damaging, than the policy-mix in its entirety. We should add, as a note of caution, that the fully-fledged delineation of the appropriate policy-mix falls outside the scope of this part of the report: our purpose in this respect is simply to give a few hints on the most appropriate lines of intervention.

5.2 Demand-side policies

If we cannot rely on an automatic tendency to a full employment equilibrium in competitive market economies, then clearly demand-side policies have a crucial role in bringing the economy to higher employment levels, whenever there is room for increasing them (that is, not only in the presence of unemployment but also of relatively low employment rates). This conclusion is strengthened if we consider 'hysteresis' effects, namely the fact that if the economy follows a path characterised by persistent unemployment, the expectations, habits and behaviour of economic agents become easily adapted to such a situation, making any move in the direction of higher employment rates increasingly difficult (and costly, for example in terms of higher inflation). In a dynamic context, it should also be recalled that

production levels below those corresponding to full employment and to a 'normal' degree of utilisation of available productive capacity imply less investments, and hence a slower pace of technical progress; over time, the loss of competitiveness in international markets that this implies may lead to loss of market shares, hence to balance-of-payments difficulties and to new, stricter constraints on output growth.

From what we have seen in Chapter 2, it follows that the inflation-unemployment trade-off should not be considered as a strictly binding constraint: policies can be adopted for rendering lower unemployment rates compatible with a given 'acceptable' inflation rate. However, this implies that not all demand-side policies can be considered equally valid: a given effect on income and employment may be accompanied by differentiated effects on other variables, specifically on the inflation-unemployment trade-off. This runs counter to a simplistic, textbook representation of Keynes' views on aggregate demand management; but Keynes himself, in his numerous applied policy papers, was ready to recognise the point. In fact, his main policy proposals for supporting aggregate demand consisted in requesting that public administrations have ready to hand a set of investment projects characterised by possibly low but lasting returns, hence such as not to be of interest to private entrepreneurs: mainly investments in infrastructures, capable of increasing economy-wide efficiency and of guaranteeing the recovery of costs, including financing costs when computed at moderate interest rates. By improving the economy's competitiveness, these investments would set in motion potentially important cumulative effects (for instance higher exports and hence higher production levels and, through learning-by-doing or other forms of increasing returns to scale, still higher productivity levels). It is in such a vein that, for instance, Sylos Labini (1999) proposes to focus attention on investment in infrastructures directed to support the development of industrial districts. It is quite clear that such policies cannot be put on the same plane with short-run demand management policies directed to stimulating private consumption.

It is also clear that in a situation of persistent unemployment (and employment rates lower than those easily reached and maintained in other regions of the world), demand support policies cannot be criticised on the basis of assumed 'crowding out' effects, that is, by maintaining that the increased production in some sector of the economy induced by the stimuli to demand will necessarily be counterbalanced by decreased production in other parts of the economy, commonly by reduced private investments. This effect can only manifest itself in a situation of full employment; whenever we are confronted with unemployment and unused productive capacity, there is room for production increases, in answer to increased demand, without negative repercussions in other parts of the economy. On the contrary, if – as it is likely – an increased degree of utilisation of available productive capacity stimulates investments, then stimuli to demand favour increases in potential output and demand pressures are thereby averted.

5.3 Supply-side policies as a complement, not an alternative, to demand-side policies

The distinction between different kinds of demand management policies according to their effects on the inflation-unemployment trade-off, and the very existence of such a trade-off (though to be interpreted, as stressed above, as a flexible relationship), show that there is room for supply-side policies even if we renounce the idea of an automatic tendency to a full employment equilibrium. Supply-side policies are in fact an essential counterpart of demand-side policies: the former are useful, indeed necessary, for ensuring the sustainability of the latter, that is for keeping at bay their potential inflationary side effects; but their role is not limited to this.

Traditionally, supply-side policies are seen as directed at increasing potential output: namely, at increasing the endowments of the factors of production and the efficiency of their use. Such policies retain their validity in the perspective adopted here, but the emphasis is somewhat modified. When we abandon the traditional static environment and adopt a dynamic perspective, there is a crucial role for supply-side policies in fostering economy-wide efficiency. This means two main things: first, favouring a speedy and easy diffusion of technical progress; second, inducing appropriate biases in the direction of technical change so as to favour sustainable development, from both an environmental and a social point of view.

These 'dynamic' targets are of far greater importance than the domain traditionally assigned to supply-side policies. Within the 'neo-classical synthesis', these policies are directed at increasing competition in the labour and goods markets (since, as we saw above, it is precisely to less than full competition that the 'mainstream view' attributes any persistent deviation from the full employment level). In our perspective, the usefulness of increased competition is recognised because of general efficiency considerations, but also for shifting the inflation-unemployment trade-off. In this respect, the search for increased competition in the labour market is qualified by considerations of equity (that is, any policy having a differentiated impact on the market power of employers and employees modifies income distribution and relative bargaining power, and these effects have to be taken into account) and by considerations concerning the structure of industrial relations (for instance, any measure disrupting a 'social pact' adopted as part of an anti-inflationary policy may prove to have overall negative effects, if it shifts perversely the inflation-unemployment trade-off). In other terms, policies concerning the labour market should be framed with greater caution, taking into account their general social impact and recognising that labour is a rather special sort of commodity.

5.4. A stimulating labour market framework

5.4.1 Answers to the problem of integrating technology and employment in the context of a knowledge-based economy are greatly conditioned by improvements in the functioning of the labour market, especially with regard to flexibility of working time and to wage and labour costs, to provisions for employment security, and to unemployment and related benefits. Such improvements are necessary at a time when technical change and globalisation modify productivity patterns and help diffuse organisational changes. As a result, labour demand becomes more sensitive to labour costs; this increases the welfare costs of labour-market rigidities. However, more efficient market allocation and pricing of labour do not, in themselves, guarantee that the investment in human capital will suffice to meet the long-term job creating needs of knowledge-based growth. Labour market deregulation may reduce the incentive to invest in training and compensatory action may have to be taken to consolidate learning processes within and outside firms.

5.4.2 The question of flexibility is a rather complex one: in recent years, debate has long been about the need to increase wages flexibility, improve labour mobility, spread the use of *flexi-time* and of non-standard work contracts. It must be noted, however, that such *deregulation* does not of itself ensure other types of flexibility, which are necessary for the *performance* of new organisations based on ICT, such as multi-skilling, labour adaptability, and life-long learning. In this second meaning, flexibility is closely linked to the growing demand for high-skilled workers, which in turn requires two pre-conditions: a congruent education system, and an industrial relations model with incentives for the learning of intellectual skills and the involvement of workers in systematic learning processes.

As far as the first aspect is concerned, investment in training has a fundamental role in facilitating market-place reconciliation between demand for and supply of skilled work. If

understood in its most radical sense, the growth of the knowledge base produces more negative long-term effects than a mere decline in the demand for unskilled labour. It means the casting out of a large number of workers, whether *unskilled* or *wrongly skilled* and incapable of re-qualifying themselves. The consequence of all this is the strategic centrality of a *generalised* basic education effort, with the adaptation of a whole education system to the new technological style. A comparison might be made with the effort required in the past during mass literacy campaigns, if not more so.[42]

As for the second aspect, the means of organising work and providing incentives for the training of a core workforce with *continuous learning* and *problem-solving* skills show diversity rooted in the institutional inertia of labour market attitudes. These means range from the 'freer' forms mostly seen in English speaking countries, with a high level of external mobility and wage competition, to a more 'corporate' type, such as those based on company negotiations (Japan) or collective bargaining (Germany and Nordic countries).

Although they follow a tendency towards labour market dualism, the various institutional attitudes favour different skill set-ups. The first type tends to a more *industry-specific* vocation, whereas the second is more *culture*- and *company structure-specific* (and more multifunctional).[43]

This variety in background conditions influences the direction and efficiency of the reciprocal relationship between technology and organisation.[44] To be more specific, this means that the requisites for a company to meet certification criteria are conditioned. Japanese – and, to some extent, European - firms can cope better with internal adjustments, using worker re-training and incentives for greater work flexibility, whereas companies in English-speaking countries have a greater *hiring and firing flexibility*, which means they turn to the market to look for qualified workers.

Although there are signs of greater convergence between - and more hybrid forms of - the approaches used in various countries (which follows from global competition and experience exchange between companies and institutions), the characteristics of each individual market remain to a large extent country-specific and inertia-led.[45]

5.4 Conclusions

In discussing the mediocrity of the employment situation in the EU countries, this part of the report has focused on the relationship between technology and job creation in the context of a knowledge-based economy.

At first (chapter 2), we have considered the 'mainstream' interpretation of such a situation, showing that it relies on a theoretical approach – the 'neo-classical synthesis' – based on the idea of an automatic tendency in competitive market economies to a full employment situation. A critique of this approach has been followed by a brief outline of an alternative, 'Keynesian', approach, whereby the possibility of persistent unemployment is recognised; employment levels are 'path-dependent', dependent as they are on employers' decisions based on expectations of profitable saleability of their products. Thus 'effective demand' plays a crucial role in determining employment levels, and an expansionary demand policy is an essential component of any policy package aimed at increasing employment.

[42] Cf. Freeman *et al.* (1995).

[43] Cf. Aoki (1990).

[44] Cf. Sestito - Trento (1997).

[45] Cf. Mariotti (1997).

Secondly, we have concentrated our attention on the issue of EU work-force employability, starting from considering lags in technology performance and the inherent skill-bias impact of new technologies (chapters 3 and 4). In this respect, the EU recent situation seems to be characterised, on average, by a weaker adoption of new technologies and a consequent weaker impact of technological and organisational changes in terms of job creation and wage dispersion, with respect to the US and Japan.

Several considerations, about country-specific orientations and the complexity of the relationship between technology, productivity and job creation, have brought us, eventually, to discuss different aspects of a suitable policy package (chapter 5). Such a policy mix includes a number of components. First, an expansionary demand-side policy may prove essential; however, it must not consist in support to consumption expenditure, be it private or public; it should rather rely on public, possibly European Community, investments in infrastructures, on the lines already indicated in a number of Community documents such as the Commission's *White Paper on Growth, Competitiveness and Employment* and already partly experienced with the Community infrastructures programme. Second, supply-side policies are also necessary, but must be seen as complementary to demand-side interventions rather than alternative to it. Specifically, increased flexibility is necessary both in the labour market and in the economy as a whole, confronted as we are with a continuously changing technical, economic and social environment. This implies a wide set of interventions, ranging from flexibility in the utilisation of the workforce within any given productive unit, to easier territorial mobility. Due to the continuously changing and – in the context of the 'knowledge economy' – increasing skill requirements, a most important component of this set of interventions concerns the educational system: investments are necessary for improving its efficiency and for expanding it, both in the area of basic education and in that of specialised knowledge; and it must be stressed, in this respect, that specialised knowledge does not mean specific working skills directed to specific jobs, but rather 'basic' specialised knowledge in the various sciences, including, together with natural sciences, the ability to communicate with others and to understand them (i.e., history, and more generally 'culture').

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