

Cahiers Papers

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Employment in Europe



BANQUE EUROPEENNE D'INVESTISSEMENT
EUROPEAN INVESTMENT BANK

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Preface



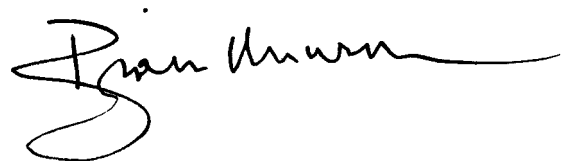
Sir Brian Unwin
President

The European Union has achieved a remarkable degree of fiscal and monetary convergence in the run-up to EMU but it still faces an unacceptably high level of unemployment. In response to this, the June 1997 European Council, in its Amsterdam Resolution on Growth and Employment, asked the EIB to accept a mandate to "create employment through investment opportunities in Europe". The Bank has responded to this request by creating the three-year "Amsterdam Special Action Programme" (ASAP), which involves a broadening of the EIB's activities in terms of novel sectors and financial instruments. ASAP includes the provision of risk capital for high-technology projects of small- and medium-sized enterprises, through the intermediation of the European Investment Fund (EIF) and other financial institutions, and backed by up to ECU one billion from the Bank's surpluses; intervention through long-term loans in the areas of education, health, urban environment and environmental protection; and intensification of the Bank's support for large infrastructure networks. Overall, the Bank expects additional lending under ASAP to amount to some ECU two billion to ECU three billion per year over the next three years, financing investment of two to three times that amount.

The new direct association of the EIB with employment creation, as well as the high visibility of ASAP, requires a thorough investigation of the direct and indirect job creation potential of the European economy. In order to assist the Bank in focusing its activities, a high-level conference with some of the leading European academic experts on employment issues was recently held under the Bank's auspices. This group was supplemented by staff from the Bank's own Economic's Directorate as well as the European Commission and the OECD. The contributions are now being published in this special edition of the

EIB Papers on employment in the European Union. The wide range of specialists in terms of areas of expertise and their geographical origins ensured a comprehensive coverage of the different national experiences of the European employment potential.

The conference not only addressed the overall question of employment creation, but in particular those issues that are relevant to the future operations of the Bank under this remit. This will help the Bank in further defining the framework, priorities and feasible options for ASAP. As the papers show, several authorities believe that investment stimulation is a critical issue, and I am particularly grateful for Professor Drèze's thought-provoking proposals on how this could be achieved. However, it must be recognised that, in the face of the persistent structural problems at the national level, the EIB's investment support can only make a limited contribution to eradicating the unemployment problem in Europe. The Bank is still on the learning curve in this respect, but it will do all it can to maximise its support for the creation of sustainable employment in the European Union.

A handwritten signature in black ink, appearing to read 'Jean Aron', with a long horizontal flourish extending to the right.

A conference on employment at the EIB



The conference, **Employment in Europe**, was held at the EIB on 15 January 1998. The conference covered recent trends in European unemployment, the possible impacts of future changes to the economic environment (such as EMU and EU enlargement), investment and its employment impact, and policy issues related to investment stimulation.

Speakers and session chairmen included:

Professor **Michael Artis**,
of the European University Institute,
Florence

Professor **Charles Bean**,
of the London School
of Economics

Professor **Guiseppe Bertola**,
of the European University Institute,
Florence

Professor **Michael Burda**,
of Humboldt Universität,
Berlin

Marco Buti,
of the European Commission (DG II),
Brussels

Professor **Jacques Drèze**,
of the Université Catholique
de Louvain

Jørgen Elmeskov,
of the OECD, Paris

Juan Jimeno,
FEDEA, Madrid

Professor **Marco Pagano**,
of the Università di Salerno

Professor **Gilles Saint-Paul**,
of the Universitat Pompeu Fabra,
Barcelona

Professor **Henri Sneessens**,
of the Université Catholique
de Louvain

Alfred Steinherr,
Chief Economist of the EIB

Sir Brian Unwin,
President of the EIB

Pascale Viala,
of the EIB.

Other participants included representatives from the Social Development Fund of the Council of Europe, the European Commission, EUROSTAT, the European Investment Fund, INSEAD and UNIDO.

Employment in Europe

A discussion of the papers and an overview of the role of investment.



Christopher Hurst
Editor

The problem

Unemployment in the EU now stands at about eleven percent, meaning that there are roughly 19 million people looking for work. In fact, unemployment has remained at unacceptably high levels since the large surge that took place during the early-1980s.

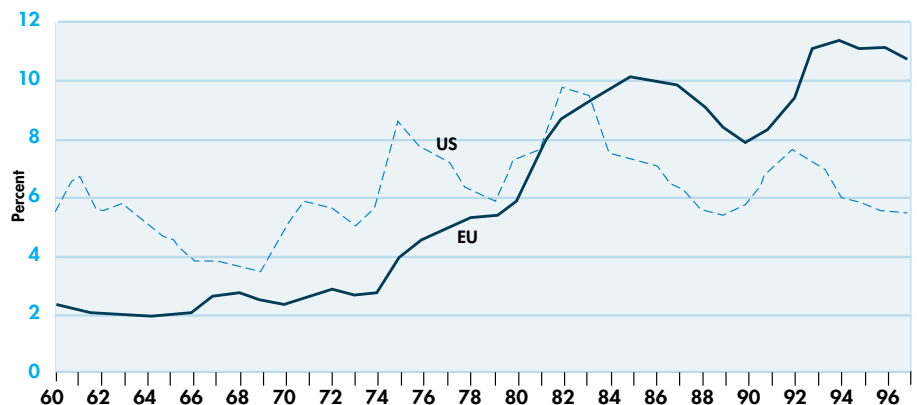
The causes of unemployment in Europe are complex and no one theory is fully convincing. In the EU it does appear that there is a ratchet phenomenon - unemployment goes up in a recession, but it does not go back down again once the economy recovers. Because of this "hysteresis", long-term unemployment has risen to about one-half of the total.

The unemployment picture in the US is strikingly different. While US unemploy-

ment has oscillated over the last four decades, there has been no apparent upward trend (see Figure 1). Thus, while the risk of losing one's job is actually higher in the US than in Europe, the North American unemployed have a much bigger chance of finding new work within a relatively short period.

The disparity between economies at creating jobs is worse than the unemployment figures suggest, since the percentage of the work-age population either in work or looking for a job is linked to the unemployment rate. Typically this "participation rate" is lower when the unemployment rate is higher, because workers become discouraged by long-term unemployment. They get used to their new lifestyles, or start work in the informal sector, and so drop out of

Figure 1. Unemployment rates in the EU-15 and the US, 1960-1997, in percent



Source: European Commission.

Thanks are due to Ole Rummel for his assistance. The views expressed in this article are personal and do not necessarily reflect those of the EIB.

the official labour market. The relatively stable level for US unemployment seen above has been achieved even though the workforce has grown rapidly (see Table 1).

Table 1. Total population and workforce (in million)

	Total population		Total workforce	
	EU-15	US	EU-15	US
1960	299	181	137	67
1995	372	263	148	125
Average annual growth rate	0.6%	1.1%	0.2%	1.8%

Source: European Commission.

There is, however, one similarity: more favourable employment prospects for men between the ages of 25 and 55 years. Typically, about 85 percent of European men in this age range have a job, almost the same figure as in the US (1). This means that other groups, such as women, the young, and the aged, are particularly hurt by unemployment. In the past, having the traditional "bread-winner" in work may have ensured a uniform distribution of employment across households. But the growth of single-parent households, coupled with high youth unemployment, risks creating permanent social exclusion for some sectors of the population.

Another similarity is the important regional dimension to unemployment within countries. Indeed, recent theories from economic geography have emphasised the tendency for growth to be concentrated in certain areas, possibly leaving permanent pockets of high unemployment in regions facing industrial restructuring. The result is that unemployment in the worst zones of any country may be double or even triple that in the best region. It is also interesting to note that migration is low in Europe, and

people do not move in response to these unemployment differentials. This is true not only for migration between countries where cultural and language barriers exist, but also within countries. This can be due to lack of information of job availability elsewhere in the country (job offices usually have a regional focus), but also the cost of housing in economically successful regions and other moving expenses. This regional dimension reinforces the risk of long-term social problems resulting from unemployment.

The policy response

In the influential "OECD Jobs Study" of 1994, a range of policies to deal with unemployment were examined in detail, and a number of specific measures proposed. The paper by **Jørgen Elmeskov** (OECD) looks at the experience of tackling unemployment over the last few years, to see whether any new lessons have emerged in the interim.

In broad-brush terms, the measures proposed to deal with unemployment can be put into two main categories:

- On the supply-side: Make labour markets more flexible so that there is a greater chance of markets clearing at low unemployment. There are complex models of why labour markets may not clear (e.g. too high unemployment benefits meaning that people prefer to stay unemployed, high hiring and firing costs blocking unemployment at an undesirable level, trade unions pushing up the wage of those that have a job at the expense of job seekers, inefficiencies in matching job searchers with vacancies, ...).
- On the demand-side: Pursue macroeconomic stability in order to reduce interest rates, and thus make investment easier, both in physical

1) Not all of the remainder are in the workforce. The unemployment rate for this group in the 1990s has been some eight percent in the EU-15 and five percent in the US.

and human capital. Liberalisation of product markets supports this by introducing greater competition, making industry more dynamic, and encouraging entrepreneurial activity.

The main message from Elmeskov's study is that unemployment can be lowered in a durable way. There have been encouraging developments in Denmark and the Netherlands where the rate of structural unemployment is on a downward path. Looking at the first half of the 1990s, the main successes have been in the UK and New Zealand (where structural unemployment has fallen by more than one percent), with Ireland as the star performer (with structural unemployment down by three percent).

In all cases, success appears built upon a comprehensive set of reforms, ranging from macro-economic stability, to the liberalisation of product markets and measures to improve the efficiency of labour markets. Thus, there are important synergies between the different areas of policy intervention. Indeed, the interaction of labour market institutions with each other, and the problem of mutually supporting rigidities in product and labour markets has also been emphasised by Buti et al. (2).

However, optimism must be somewhat muted, as it may take some considerable time for policies to begin to have the desired effect. The successful countries often started their reforms many years ago, well before the OECD made its policy prescriptions.

Some country specific factors behind the success stories

Of the European success stories, Britain has introduced the most far reaching reforms,

including legislation restricting strikes and secondary picketing, decentralising wage bargaining, liberalising hiring and firing regulations, and reducing the duration of unemployment benefits. Inequality of earnings increased substantially (3). These policy changes have not been accompanied by changes to the tax or welfare systems to address the distributional consequences of the reforms.

Both Ireland and the Netherlands have developed reform programmes with the participation of social partners (employers, trade unions), rather than the employer-employee conflicts that seem integral to the Anglo-Saxon model. In these cases there are a number of country specific factors that are worth recalling.

Though structural employment has been lowered in Ireland in recent years, the Irish participation rate is still among the lowest in Europe (it is 64 percent compared with the EU average of 67 percent, 77 percent in the UK, and a high of 80 percent in Denmark). Ireland also started from a situation of very high unemployment and, at twelve percent, the unemployment rate is still above the EU average. In particular, employment opportunities for women and young people appear limited.

The Irish manufacturing industry has escaped the shake-out that occurred elsewhere during the early-1990s. Indeed, manufacturing employment, supported by foreign direct investment in high-tech sectors, has grown strongly in recent years (the only EU country where this has happened). Service sector employment has also grown particularly rapidly, with the increase of managerial, professional, and skilled sections of the workforce. The expansion of education over the last few

2) Marco Buti, Lucio Pensch and Paolo Sestito of the European Commission prepared a comprehensive study on European labour markets for the conference. It has been published by the EIB as Economic and Financial Report 98/01, "European unemployment: Contending theories and institutional complexities". See the inside back cover for details.

3) The ratio of male wages at the bottom decile of the earnings distribution to those at the top decile dropped from some 40 percent in 1980, to 30 percent a decade later.

decades has certainly supported this, but there have been increasing pressures on the low-skilled, and, at close to one-fifth, the rate of low-skilled unemployment is amongst the highest in Europe. Net migration from Ireland between 1980 and 1993 totalled over 200,000, a very large figure when compared to a labour force of about 1.3 million (4). Though job creation has been strong, emigration has provided an important safety valve for the labour market.

Economic growth in Ireland over the last decade has been several percentage points above the EU average. Paradoxically investment in Ireland is low, at only some 1.5-1.6 per cent of GDP over the last few years. One theory is that knowledge gained by the workforce from investment by foreign companies has been a major factor in supporting general productivity growth. Though measures have been taken to lower marginal tax rates and to reduce the generosity of unemployment benefits, economic growth is an important lubricant to labour markets. The social partnership over reform may not have been so easy to obtain if real wages had not been growing due to productivity gains.

The Netherlands also deserves a closer look. Not only is Dutch unemployment low (6.7 per cent), but structural unemployment has been reduced further in the past few years. This is a significant achievement. However, these statistics hide a specific feature - the withdrawal of a large number of people from the workforce over the last few decades (see Figure 2). Participation rates (at 67 per cent) are close to the EU average, but the increase in skilled workers has been matched by large number of low-skilled people leaving the workforce due to early retirement and disability. In fact, there are more people on disability schemes in the Netherlands than there are officially unemployed.

Reductions to structural unemployment have taken place recently, while the major increase of the "disabled" took place during the 1970s and 1980s, so there has still been real progress. However, recent wage moderation through centralised bargaining, coupled with restrictions on social transfers and a reduction in minimum wages, took place against the back-drop of major government expenditures to support those out of work.

Though there are special features in Ireland and the Netherlands that inflate the results, the overall conclusion remains that a sustained commitment to economic stability and efficiency, coupled with broad-ranging labour market reform, does pay dividends over the long-term. Clearly, this should be pursued. However, by the time unemployment is reduced to acceptable levels in many countries, demographics will have converted at least part of the unemployment problem into a pension problem. The question remains: Is there nothing that can be done to produce results in the more immediate future?

The role of technology and training

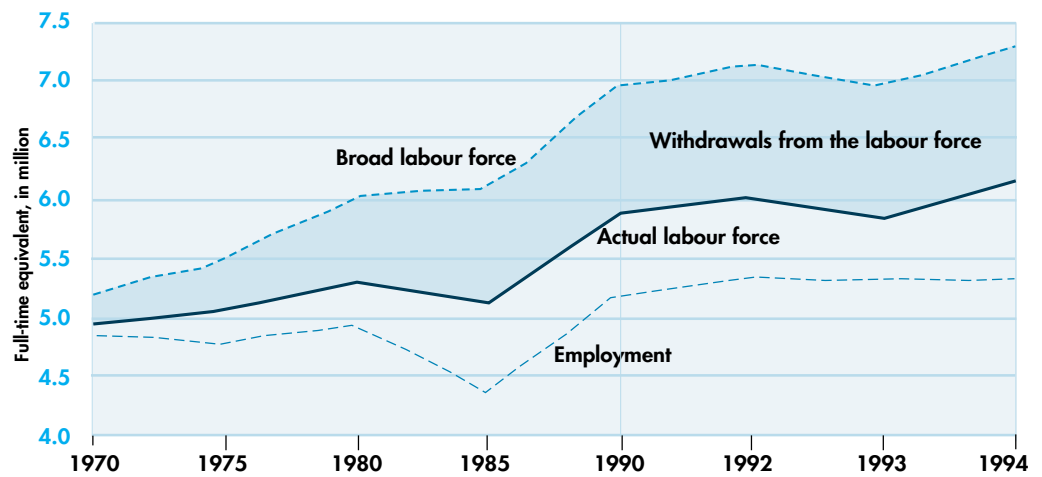
A common feature of the long-term unemployed is their low skill level. This has led some commentators to blame technological advances for the unemployment problem.

Gilles Saint-Paul (Universitat Pompeu Fabra) examines this topic in more detail. He argues that from a macroeconomic view-point there is little reason why technical progress should cause unemployment. Rather the effect should be neutral, since technology affects wage aspirations and productivity equally.

Indeed, there should be a negative relation between growth and unemployment. This is because faster growth reduces the time needed to recover investment costs, including the decision to "invest" in new workers.

4) Ireland is unique in its high level of emigration, no doubt due to the large Irish communities that exist outside the country.

Figure 2. Overview of the Dutch labour market: Labour force and employment



Source: OECD.

Consequently, the incentives to advertise vacancies are greater, which leads to a lower level of equilibrium unemployment. Modelling technological shocks for a range of countries, Saint-Paul finds that positive shocks actually reduce unemployment. This effect disappears over time (completely in the case of the US and UK) as labour markets adjust.

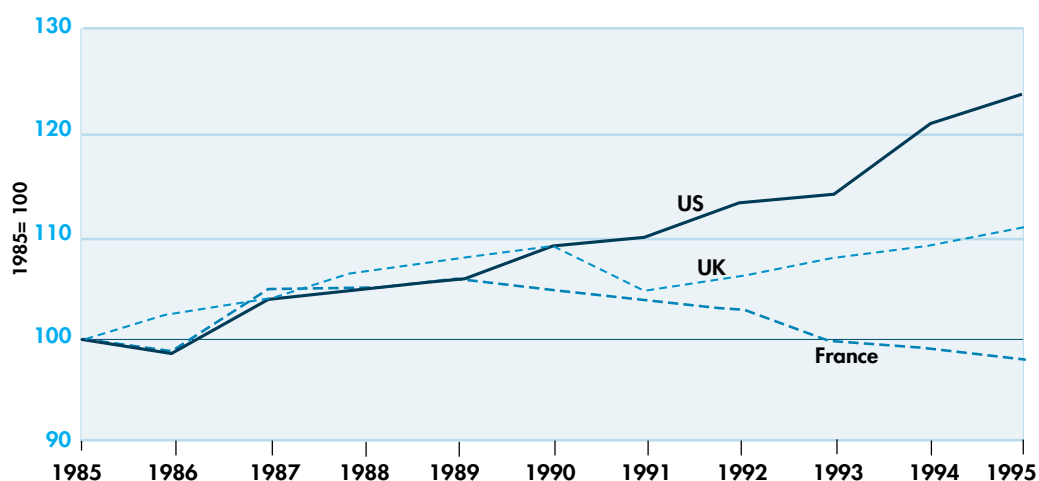
There are sectoral issues to add to the picture. A technical improvement may lower prices and destroy jobs in the sector where it occurs. However, it should generate jobs elsewhere. The drop in prices in the sector concerned means that consumers will be able to purchase more goods from other sectors. The workers who are displaced should end up better off, once a reallocation of resources has taken place, and wages have increased economy-wide.

Problems could occur if wages were above market clearing levels in the sector where the technical change occurred (for example, through a lack of competition in that sector). Thus, displaced workers may find themselves with lower salaries in their new occupations.

This could be exacerbated if technical progress increases the demand for skills at the expense of unskilled workers. Computers are sometimes thought to have been particularly pernicious in this regard. Superficial evidence comes from looking at the forecast evolution of employment by the US Bureau of Labor Statistics (which produces regular projections of employment growth). It shows that the occupations in the US with the fastest job growth will be computer related with more than one million net new jobs over the next decade.

The fact that many of the long-term unemployed have low skills would seem to confirm this hypothesis. However, there are well-known "ladder" and "ranking" effects that mean that the low-skilled are more likely to have problems in finding a job, even for tasks that do not have high-skill requirements. Thus, an increase in unskilled unemployment is likely even when there is an unbiased decline in the aggregate demand for labour.

Figure 3. Earnings gap in index form



Ratio of earnings of high-skilled workers (college degree and above) to low-skilled workers (secondary education and below).

Source: OECD.

Dealing with the problem of the working poor

Whatever the reason for unskilled unemployment, it is hard to avoid the fact that wages for this group are too high for markets to clear. Thus, increased "flexibility" in Europe could also mean declining wages and the creation of a working poor as seen in the US - essentially new employment would be generated in low-pay, dead-end, "Mc Jobs". Indeed, over the past two decades there has been an increase in wage inequality in the US, while average real earnings have stagnated. The result has been a major drop in the real wage for the low-skilled. A similar widening gap, though to a lesser extent, has been seen in the UK during the 1980s. However, in the rest of Europe real wage growth has usually been coupled with a relatively static wage distribution, and increasing unemployment (see Figure 3).

Elmeskov also touches on this topic in his paper. He notes that there may be mobility of individuals over time, so that a low paid job may be the stepping-stone for better employment in the future. This is particularly the case

for young people. For example, in the UK a recent study has found that only eight percent of young men in the lowest fifth of the earnings distribution were still in that category eight years later. Hence the problem of low-pay may be less acute than it appears at first sight. One approach to this issue is to try to bring productivity in line with the desired wage structure through upgrading the unskilled with training schemes. For example, at the beginning of the 1990s the real wage of a person in the bottom decile of the male earnings distribution in Germany was over twice that in the US (on a PPP basis). Yet unskilled unemployment was much the same in the two countries. One explanation could be that the growth of the skilled labour force slowed down in the US, but did not do so in Germany. In other words, the evolution of wage disparities also depends upon the relative supply of skills.

The fact that skill acquisition has slowed in the US could be due to high turnover of workers in that country, since this could reduce investment by the private sector in training. The risk that workers will leave for other employers once

trained is reduced by developing those skills that are firm-specific. The loss due to a departure can be limited by requiring trainees to accept lower pay during the training period. However, firm-specific training is often targeted at the more qualified sections of the workforce (i.e. adapting skills already acquired to the firm's needs). The use of apprenticeships also requires a recognised certification of the skills acquired to make it worthwhile for workers to share the costs of training. In many countries these work-based qualifications may be under-developed for lower skill occupations.

There could, therefore, be a role for the state in providing the unemployed with some basic skills. The difficulty with government training schemes is that they must be standardised, while the needs of business are very varied. It is difficult to assess the effectiveness of such programmes. In general only the cost and the short-term financial effects on the persons that have enrolled are known, and there is great difficulty in assessing the long-term economic benefits. However, the evaluation results that are available do tend to raise questions over the cost-effectiveness of government training. In addition, part of this spending may substitute for private investment in education.

An alternative is to compensate the required drop in wages for the unskilled through labour subsidies of some kind. There are a number of advocates of such schemes, with Edmund Phelps of Columbia University at the forefront. The US government has followed a slightly different approach. It offers a rebate to payroll taxes through the Earned Income Tax Credit -

a negative income tax for low earnings. This approach has a number of drawbacks. Since it is based upon total income during the fiscal year, it does not discriminate between full-time low pay, and part-time high pay. The compensation for work also comes after a considerable delay, possibly diminishing the incentive for the unemployed to take low-paid work.

Labour subsidies would also have to be carefully designed to minimise their inefficiencies (5). The main proposal by Phelps is for a system of graduated subsidies where the hourly subsidy would taper-off as the wage level increases. It would cost between 1½-2 percent of GDP (6). A similar figure could be foreseen for the EU. Though the net effect on the budget will be less as savings will be made on other social expenditures, this is clearly a significant sum.

Future challenges: enlargement of the Union

With the current unemployment problem, how well is the EU placed to face the challenges of the coming years? Looking to the future, two major changes to the economic environment loom on the horizon: the accession of the countries of Central and Eastern Europe (CEE), and EMU.

One of the alarming features of economic convergence between CEE and the EU is the parallel rise of unemployment rates to EU levels of between ten and eleven percent. So, looking at the wider Europe, there are another five million people who are looking for work.

5) These include dead-weight losses, as some people would have been employed anyway; displacement, as subsidised recruits replace incumbent employees; and, substitution, as firms without subsidised workers are forced to close by competition from subsidised firms. The possible problems can be demonstrated with the simple example (admittedly a "straw man"), where the state makes up the difference between the wage paid by employers and the minimum wage. This would be unworkable, since companies would have an incentive to drop the wages they pay to workers presently at the minimum wage. Workers would be indifferent to this since their take-home pay, supplemented by government subsidies, would be unchanged.

6) Drawn from figures presented by Edmund Phelps in his article in *Unemployment Policy*, edited by D.J. Snower and G. de la Dehesa, CEPR and Cambridge University Press, 1997.

The geographic expansion of the Union could affect unemployment through increased competition. Indeed, some commentators have blamed unemployment on greater trade with low-wage countries in general (or "globalisation" as it is often called). Most recent studies have come to the conclusion that trade has played a very small role in the increase of unskilled unemployment (or lower wages in the US). For example, the relative price of low-skilled products has not fallen as would be expected by this theory. Nonetheless, it is true that trade can accelerate technical change with the sectoral problems discussed before.

Enlargement could also affect supply and demand in the labour market through increased migration. It is very difficult to put a figure on the number of people who may leave the CEE for the EU-15. Total EU nationals living in other EU countries average about 1½ percent of the population. The figure ranges from 5½ percent in Belgium to less than ½ percent in Spain (7). Of course, a relatively larger emigration from the CEE to the EU-15 is possible due to the larger income differentials that exist. The Cohesion countries could provide a benchmark, since significant income differentials also existed for these countries. Some nine percent of Portuguese, four percent of Greeks, and 1½ percent of Spaniards live in other EU countries. However, large regional differences in unemployment already exist within CEE countries without stimulating a major internal movement of people. Though this may be due to particularly bad job information systems, poor transport, and acute housing problems, it might also be that comparisons with Southern Europe during the post-war decades would overstate the issue.

To illustrate the case, assume that, over a number of years, several million Eastern workers (out of a total population of some 100 million) migrate Westwards. Given an EU-15 population of 375 million, such a level of migration would be unlikely to cause problems, particularly since migrants will move to economically prosperous areas in search of work, rather than to areas with employment difficulties. For example, the US absorbed as many as five million immigrants over the five years from 1991 to 1996. Most studies in the US have found that the impact of the arrival of immigrants on the wages and unemployment of natives is small and short lived (8).

A different question is the likely impact of EU membership on the new member countries themselves. This is the subject of the paper by **Michael Burda** (Humboldt Universität zu Berlin).

Unemployment is to be expected in a period of technical change, and transition can be seen exactly as a period of rapid technical adjustment. During this period there should be an acceleration in the number of new businesses being created and of old inefficient companies closing down. Other things being equal, a greater turnover of the labour force between companies would be expected to push up unemployment (since there is always some frictional unemployment when there is turnover in the job market). However, a number of alarming features are emerging in CEE: long-term unemployment has risen to about 45 percent and youth unemployment is very high (typically between ¼ and ⅓, though it is as much as ½ in Romania).

7) The consequences of migration for social security systems is discussed by Martin Kolmar in EIB Papers, Vol. 2, No. 2, 1997. See the inside back cover for details.

8) An extreme case is that of Cuban migration to Florida. On April 20, 1980, Fidel Castro announced that Cuban nationals wishing to move to the US could leave freely by the port of Mariel. By September 1980, about 125,000 Cubans, mostly unskilled workers, had migrated. The Mariel exodus increased Miami's labour force by seven percent, though with no apparent effect on the trend in wages and employment opportunities for Miami's workers.

Burda notes that periods of long unemployment appear to have discouraged many CEE workers, and participation rates have dropped dramatically. Women's participation in the work force has been particularly hit, though it still remains above the EU average. Overall, employment rates are now much more similar to countries of the same per capita income.

An important observation is that most job vacancies in Eastern Europe are filled by job-to-job moves. It seems that being unemployed gives employers a negative signal regarding worker quality, whether merited or not. Therefore, high unemployment does not appear to be a major contributor to restructuring, and we cannot argue that it brings economic side-benefits through accelerating the restructuring process.

The "return to Europe" of CEE countries also has the connotation for many of the adoption of a social market economy. The problem has been that state transfers to the disadvantaged were financed with payroll taxes, as these were easier to collect than VAT or income taxes. As unemployment increased, and the workforce declined, labour taxes had to be increased substantially.

To escape worker protection regulations and high taxes, many small companies have simply gone underground. Indeed, the drop in the size of the workforce noted above is partially the result of significant employment in the informal sector. For example, it has been reported that as many as 30 percent of Poles work illegally. Again, this has shrunk the tax base. Though unemployment benefits have been reduced throughout CEE in recent years, payroll taxes are of the order of 50 percent in many countries. Thus, another EU-like distortion to the labour market has appeared in CEE.

Burda emphasises that EU membership could have a deleterious impact on labour market performance. Looking at past enlargements of the Union, he notes that application to join and accession has been associated with a statistically significant increase in unemployment. Application for membership is the more important event for increasing unemployment than the accession itself, perhaps because restructuring begins at that time.

Of course, the problem with such an analysis is the high probability of establishing a spurious relationship. For example, the two oil shocks happened to coincide with previous enlargements of the Union. Moreover, the liberalisation of product markets, the main restructuring needed for membership, is also a desirable step in its own right. In this sense, the increase in unemployment would have been inevitable, even if the EU had not been a catalyst for change. What is clear, however, is that the implementation of strong social legislation along EU lines could condemn the people losing their jobs as a result of restructuring to long, if not permanent, periods of unemployment.

The consequences of Economic and Monetary Union

A number of commentators have argued that with the launch of Economic and Monetary Union (EMU), policy makers will lose one important tool to deal with unemployment: monetary policy and its effect on the exchange rate.

If a country is hit by a shock that causes a loss of international competitiveness, then domestic prices will have to be adjusted downwards relative to the rest of the world. If wages are not flexible in nominal terms, a simple way to achieve this is with a devaluation of the currency. When this option is removed, and wages do not adjust accordingly, then increased unemployment is likely. This problem can be attenu-

ated for a short period through fiscal measures, but if wage costs do not adapt to the new reality, sooner or later there will be an increase in unemployment. In this case, an asymmetric or idiosyncratic shock to an EMU member country could spell disaster.

Of course, this would be of no concern if such asymmetric shocks did not exist. This would be the case if shocks are sufficiently large and widespread that the European Central Bank eases monetary policy sufficiently that the Euro devalues against foreign currencies. This could happen if several European countries faced the same shock, or if a large country, say Germany, was hit. With economic integration there has been the increased synchronisation of business cycles, and the number of factors that could cause a shock specific to one country has been reduced (9). The biggest risk is for smaller countries with unique industrial structures or trade patterns (10). Looking at the longer term, this problem could be exacerbated if increased competition in the Single Market (a process that will be reinforced by EMU as national price differentials become transparent) were to produce a greater degree of regional specialisation.

The possible impact of EMU on unemployment is examined by **José Viñals** (Banco de España) and **Juan Jimeno** (FEDEA, Madrid). They start with a vector autoregressive (VAR) model that breaks down unemployment into a common EU component, and a national component. The results for nearly all countries show that most of the variance in national unemployment

rates is explained by changes at the EU level, and this is true even in the short-run. In other words there do not appear to be asymmetric national shocks that explain unemployment.

Viñals and Jimeno repeat the exercise at the regional level for those countries where data is available. The results show that regional shocks explain most regional unemployment, followed by EU-level shocks, and finally those at a national level. This confirms the view that moving from a national currency to EMU should not cause additional problems.

Viñals and Jimeno then examine wage rigidity in Europe, again with a VAR (econometric) model. They find a high degree of real wage rigidity. This means that even if nominal wages are lowered with an exchange rate devaluation, the effect will only be temporary. Wages will adjust upwards to the old levels in real terms. While this would mean that there is little cost from entering EMU, another way to put it is that European labour markets are so rigid that the situation is hopeless - nothing can be done to change wage levels.

This may be true today, though the experience of Italy and Britain upon leaving the ERM in 1992 would appear to provide counter examples (11). Consider the case when the path of labour market reform passes from real wage rigidity, to nominal wage rigidity, before finally arriving at greater flexibility. This could be quite likely, since a first step is to eliminate wage indexation. Then, the existence of EMU could mean that there is no advantage to having nominal wage rigidity during the interim

9) Most studies find that only a core of EU countries would be an optimal currency area. However, analysis based on historical data may be misleading if economic transmission mechanisms have changed due to greater integration. This is discussed in more detail in the EIB Papers, Special Issue on EMU, Vol. 1, No. 1, 1996.

10) The inability of Texas to devalue its currency following the collapse in oil prices in the mid-1980s is one example. However, smaller countries also gain most from a single currency (e.g. trade is more important, so the transaction costs of having a national currency are relatively higher). Indeed, such countries often choose to maintain a fixed exchange rate parity with respect to a larger country. The loss in credibility following a devaluation in these circumstances may also have high economic costs.

11) Recent Dutch experience at cutting unemployment has also been attributed to a real devaluation of the Guilder which boosted employment in the tradeables sector.

phase. Indeed, people appear to strongly resist pay cuts in terms of the money of the day, so such nominal wage inflexibility is likely to persist for some time.

Viñals and Jimeno conclude with a discussion of macroeconomic policy in EMU. They argue that the process of fiscal consolidation should actually help employment prospects by creating a more stable environment characterised by lower and less volatile interest rates. This is very much in line with Elmeskov's reasoning.

Too little aggregate demand?

Though most economists would agree that there will be long-run benefits of fiscal consolidation, some would argue that the departure for this goal has been mis-timed. It is true that a few countries have managed substantial fiscal convergence during the 1990s with little impact on unemployment. The example of Portugal is noteworthy. The strong commitment of the Portuguese government to meet EMU convergence criteria has permitted the country

to enter into a virtuous cycle, where falling interest rates have lowered debt service requirements, which has made fiscal consolidation more credible, and interest rates have been further reduced. As a result this country has been able to achieve rapid fiscal improvement at little cost (interest payments on public debt dropped from 8½ percent of GDP in 1991 to only 4½ percent in 1997).

However, looking at the EU as whole, unemployment has been pushed to new heights in the 1990s. Reduced fiscal deficits on the road to EMU were achieved more by tax increases (of indirect taxes and social security contributions) than expenditure cuts. Interest payments have remained almost constant as a percentage of GDP, as higher debt levels have counterbalanced somewhat lower interest rates. The savings that have been achieved have come from reduced public investment rather than consumption (see Table 2).

A number of commentators have argued that the management of aggregate demand during

Table 2. General government budget in the EU-15 and Portugal, in percent of GDP

	EU-15			Portugal		
	1991	1997	Change	1991	1997	Change
Deficit	4.2	2.6	-1.6	6.7	2.7	-4.0
Income, of which	45.2	46.0	0.8	38.0	40.6	2.6
- indirect taxes	13.5	14.0	0.5	13.7	14.1	0.4
- direct taxes	13.0	12.9	-0.1	9.3	10.5	1.2
- social security contributions	15.1	15.8	0.7	10.3	11.8	1.5
- other	3.5	3.3	-0.2	4.7	4.2	-0.5
Expenditures, of which	49.4	48.7	-0.7	44.7	43.4	-1.3
- interest payments	4.8	5.0	0.2	8.6	4.4	-4.2
- capital	2.9	2.2	-0.7	3.5	4.3	0.8
- consumption	19.0	18.7	-0.3	17.6	18.2	0.6
- transfers	22.7	22.8	0.1	15.0	16.4	1.4

Source: European Commission.

this period has been responsible for deepening the recession of the early-1990s. Though fiscal deficits were also reduced in the United States, short-term interest rates in that country were very much lower than in Europe (see Figure 4). Indeed, by late-1992 the Federal Reserve had lowered the Federal Funds rate to three percent, a 30-year low. Even so, the recovery of US output and employment during the early-1990s was much weaker than after previous recessions (12).

Conversely, monetary policy in Europe was driven by high German interest rates and the goal of keeping fixed exchange rates. Real long-term interest rates have also been high in Europe, perhaps reflecting a risk premium over the likely success or failure of EMU (13). The high risk with recession is the permanent ratchet effect on unemployment (14). This would rather call for a gradualist approach to disinflation, and a rapid loosening of policy in the face of harmful shocks.

Since there is the huge pool of under-utilised resources (the unemployed), a Keynesian solution would be to boost demand in order to accelerate the recovery of the EU economy. The problem is that the Maastricht criteria, though somewhat arbitrary, have taken on a critical short-term political significance. And the Stability and Growth Pact has been necessary to reassure prospective member countries of the future correct functioning of EMU. In any case, continued fiscal consolidation is needed over the medium-term in order to prepare for the pension problem that will emerge during the first part of the next century.

How could one meet the seemingly contradictory goals of stimulating demand with only minor fiscal consequences? Supporting investment has been seen as one possible solution to this dilemma.

First, investment rates have fallen in Europe over the last few decades (15). Second, investment should have long-term economic benefits. Third, by providing relatively modest sums it may be possible to accelerate investment that would take place at a later date, providing substantial leverage to public spending. Finally, supporting investment - which by its very nature must be located somewhere - could be one way of dealing with the regional dimension to unemployment mentioned before.

Interestingly, the same factor could have caused both increasing unemployment and falling investment - high wages. Consider the case when there is a real wage shock (an example could be the introduction of a shorter working week with no change to wages). Wages rise above the productivity of the capital stock, and the economy must adjust in some way. If the adverse wage shock is maintained, the demand for capital will fall, and there will be a period of disinvestment. Productivity will rise to meet wages as unprofitable companies close. The result is that capacity utilisation remains relatively high, but there will be unemployment since there is not enough capital to employ everyone. Figure 5 illustrates how higher capacity utilisation in the US tends to mean lower unemployment, but that no such relation exists in Europe. This provides a convincing explanation for the fact that labour productivity

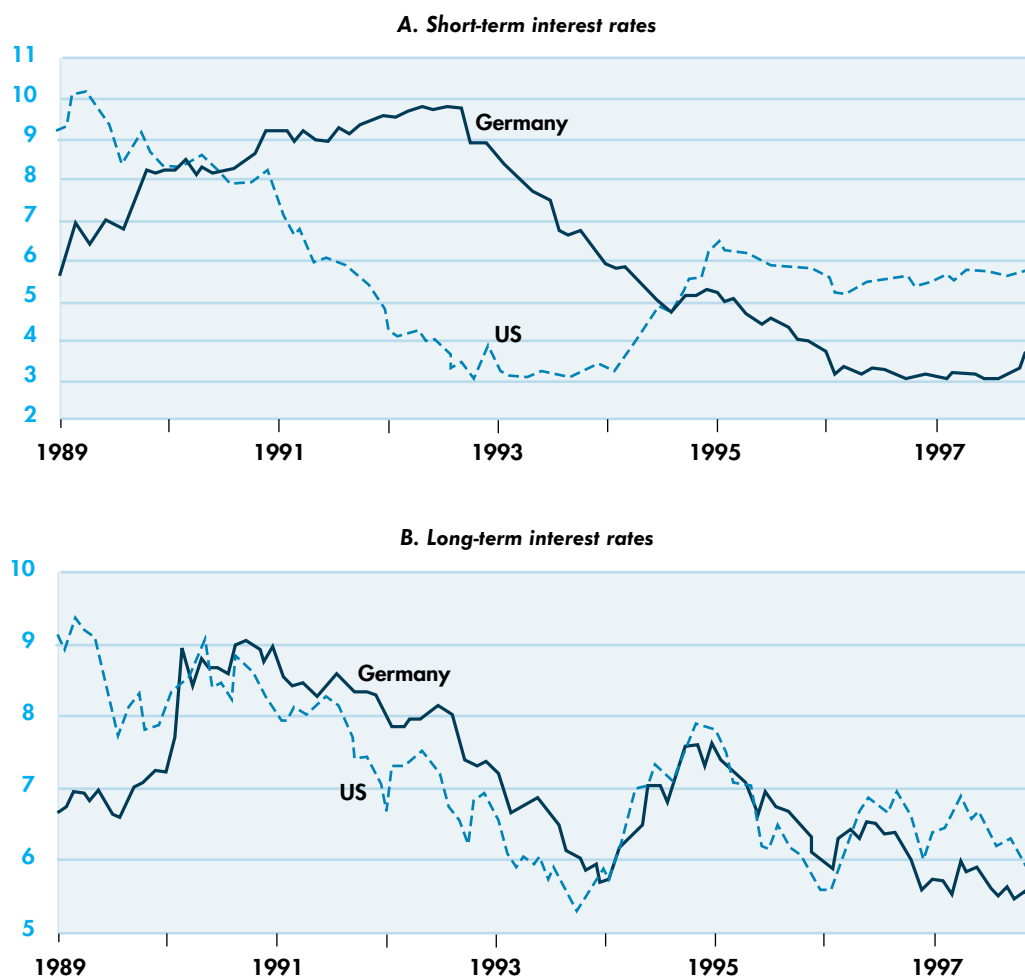
12) Though the recession of 1991 was also less deep than earlier ones.

13) This is discussed by Agnès Belaisch in EIB Papers, Vol. 2, No. 1, 1997. See the inside back cover for details.

14) That is, labour is shed as companies go out of business, while high hiring and firing costs reduce the rate at which new jobs are created elsewhere.

15) Gross fixed capital formation (GFCF) in Europe was 23-24 percent of GDP in the 1960s and early-1970s. Investment rates have since declined, and GFCF has averaged about 19 percent of GDP in recent years. However, European investment levels are still above those in the US (now of the order of 17-18 percent of GDP), and there is no simple relation between investment and employment creation. Note, also, that subsidies for investment can actually make production more capital intensive than it otherwise would be.

Figure 4. Interest rates in Germany and the US, in percent



Source: Datastream.

growth has been much higher in Europe than the US (recall that real wage growth has been stagnant in the US). In the context of this discussion, the important point to remember is that over the longer term the capital stock is not an exogenous variable that can be controlled at will by policy makers.

To conclude, there is no obvious market failure at the macroeconomic level that constrains pri-

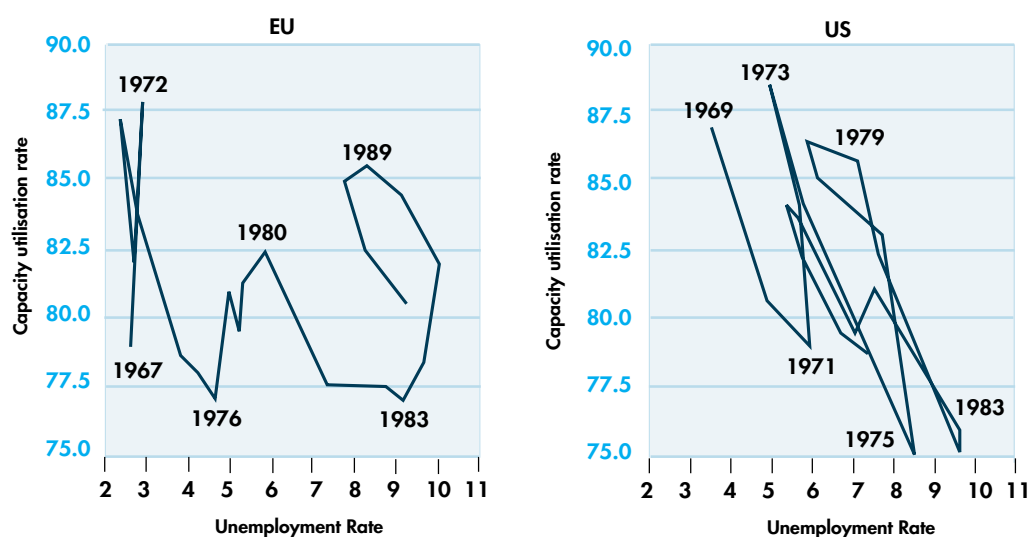
vate sector investment. However, public measures to increase investment, including direct investment by the public sector itself, may be an efficient way to raise aggregate demand (16).

A proposal to stimulate investment

Jacques Drèze, André Durré and Henri Sneessens (Université Catholique de Louvain) propose one scheme to stimulate investment.

16) Public investment has actually declined more rapidly than overall investment, from some four percent of GDP in the early-1970s to 2¹/₄ - 2¹/₂ percent of GDP in the late-1990s. As mentioned, this is in part due to Maastricht inspired fiscal consolidation. However, there may also be legitimate reasons for a relative decline in public investment; for example, if public capital goods have become relatively more expensive with respect to private capital. In any case, boosting public investment may be indiscernible from increased consumption if the projects funded are of poor quality.

Figure 5. Capacity utilisation and unemployment rates, in percent



Source: Charles Bean (17).

The logic, drawing on Belgian data, is as follows:

- There is a large stock of low-income housing that needs upgrading, and a transfer to this group of the poor is justified on grounds of social equity. A subsidy of 25 to 30 percent would bring the cost of new housing within the range of poor households.
- The share of labour costs in the value-added of housing construction ranges from 50 percent (for direct employment) to 70 percent (when indirect labour costs are included). Taking into account payroll taxes, this means that the wedge between private costs and social costs due to labour taxes probably ranges from 20 to 40 percent.
- Therefore, a subsidy to housing equal to the tax wedge on labour would make new housing investment feasible, and so accelerate housing construction and create jobs. Evidence from Belgium suggests that a demand shock to the construction sector would not be inflationary.

- The result could be fiscally neutral, since the labour subsidy would return to the Treasury via payroll taxes. However, co-ordination of these activities at the EU level is desirable, in order to maximise the beneficial effects of the increase in aggregate demand throughout Europe. The simplest way to do this is with some EU financial support for national programmes, possibly through loans from the EIB and grants from the EU Structural Funds.

Drèze et al. note that the example of low cost housing in Belgium serves only as an illustration. Detailed studies on the applicability of this scheme to other countries are needed. There may be other aspects of urban renewal, and sectors such as the environment, which could also be suitable for similar schemes. Drèze et al. conclude by inviting the EIB to study these issues in more detail.

Since the product in the example discussed is housing priced below the market rate, demand will have to be rationed. This poses a problem if private entrepreneurs are involved since,

17) Drawn from his article in the June 1994 edition of the Journal of Economic Literature.

whatever rules are implemented, there would be a risk that they would capture a share of the subsidy. The simplest approach would be for the state, or non-profit housing associations, to manage the scheme, with housing being allocated to low-income families according to existing rules.

A first observation is that some of the difficulties of designing labour subsidies mentioned earlier apply equally to this scheme. For example, Drèze et al. suggest that there should be a flat subsidy per person-year worked. However, this would mean that the direct fiscal consequences would be hard to predict, since there could be little relation between the subsidy and the expected payroll taxes.

Drèze et al. also suggest that, in order to increase the number of low-wage workers that are employed, the total subsidy should be adjusted for each builder. This would be done by calculating a theoretical employment based upon the size of each contract, and the firm's historical average labour costs. The maximum payment to each firm would equal this theoretical employment times the per capita subsidy.

Though it is only an example, this formula does seem to have its difficulties. For example, distorting competitive tendering towards companies with a track record of paying low wages may not lead to an efficient outcome, and the net employment generated by the contract need not be new low-wage hiring. In any case, a large part of any contract may be sub-contracted and it would be difficult to take this into account.

Other rules for allocating subsidies could be designed, but the main question arising from these considerations is why such a focused approach, with the risk of generating a series

of distortions, should be better than labour subsidies for all low-wage workers (18). These could raise incomes to a level so that the poor can afford to upgrade their properties without recourse to a rationed housing market. Indeed, labour subsidies in other sectors could mean that the current capital stock (e.g. buildings in the service sector) could be used to employ more people (e.g. more waiters, shop assistants, etc.) without the need for new investment. Clearly, liberalisation of these sectors (e.g. shop-opening times) would also help create demand for more staff. Perhaps the point is that there may not be the political courage to do this on such a wide scale, though Drèze et al. also doubt that this exists for their own proposals.

Regardless of the local budgetary impact, there is the question of the need for EU funding as an incentive for all countries to participate. This would have to be examined closely. With a constrained budget at the EU level, this could only be achieved by re-directing funds from alternative activities.

Investment and employment

There is also the issue of whether the housing sector is the best sector for these purposes. This, of course, would be analysed in the studies advocated by Drèze et al. However, some insights can also be gleaned from the paper by **Ole Rummel** and **Thomas Schröder** (Chief Economist's Department, EIB). Their paper summarises the results of research done at the EIB, and those of a paper presented at the conference by Charles Bean (London School of Economics).

It is clear, *ceteris paribus*, that increased investment will increase the demand for labour during the construction phase of projects.

18) This point was made a number of years ago by Alfred Steinherr and Beatrice Van Haepelen in their article ("Approche pragmatique pour une politique de plein emploi: les subventions à la création d'emplois") in the June 1985 edition of *Recherches Economiques de Louvain*.

Rummel and Schröder examine the effect of increased purchases of equipment and civil works on the European economy with Input-Output models. This assumes there is slack capacity, and prices do not change as a result of the increased demand. Rummel and Schröder find that an investment of ECU 1 billion increases employment during the building phase by about 20,000 person-years. Although not too much importance should be given to this figure, since significant country differences exist, the analysis leads to two interesting observations:

- The employment generated during a project's construction period is not crucially dependent on the sector in question. In other words an industrial project (which might be mainly the installation of equipment) would generate just as much employment as infrastructure (where only civil works are involved). This is because buying the goods and services of one sector leads to an increase in the demand for the goods and services of suppliers in other sectors, and an increase in demand for these sectors' suppliers, etc. About one-half of the increase in employment could be in this indirect way.
- Much of the employment generated - about one-quarter of the total - is in services. Again, this is due to spillovers to supplying sectors.

These results may be due to the level of aggregation used. For example, all construction is treated as one sector, while there are obviously great differences between filling holes in roads, and laying tracks for high speed trains or building state-of-the-art bridges. Nonetheless, it is important to remember that sectoral spillovers might balance the differences that could exist in the sector where the direct demand shock occurs.

Rummel and Schröder also look at the permanent employment generated once an investment is up and running. It is extremely difficult to say much about the long-term employment impacts of investment. For example, a successful investment in one location may result in the closure of a competing company elsewhere. Some investment may actually reduce employment if it is part of a rationalisation programme, but the jobs that remain will be competitive and sustainable (Saint-Paul's comments about technical progress could be re-emphasised at this juncture). Building the counter-factual case requires so many assumptions as to completely undermine the objectivity of any calculation of employment creation.

Looking simply at the ratio of employment to the capital stock, Rummel and Schröder use a vintage capital model to examine average employment multipliers. They find that capital stock of ECU one billion in the manufacturing sector is associated with about 10,000 jobs (or, alternatively, there is a capital stock of ECU 100,000 for every employee). There has been strong convergence of this figure between European countries over the last few decades.

Rummel and Schröder also attempt to extract the marginal capital-labour ratio for new investment, based on the very strong assumptions that labour and capital are complements, and that they stick together in fixed proportions throughout the life of a particular investment. They find that new investment of ECU one billion is associated with an average of about 6,500 jobs (or ECU 150,000 per job). Obviously, such general observations do not go very far towards identifying the employment impact of individual investments.

Public investment poses a particular challenge. Direct employment is very low, but there can

be important economic benefits through the enhanced productivity of private sector investment. One methodology is to use an econometric analysis to assess the dynamic impact of public investment on a range of key variables. Charles Bean uses this approach with a structural vector autoregressive (SVAR) model of the Spanish economy. He finds that every ECU one billion of Spanish public investment has "crowded-in" several ECU billion of private sector investment, and as a result significant employment has been created. Indeed, from his simulations one can calculate an employment multiplier for public capital: it is of the same order as that for the manufacturing sector capital stock mentioned above.

The problem with such an approach is that it must rely on historical data, and it may be misleading to apply the same relationships to new investment. For example, building the first major trunk road in a region may have a large economic effect, but building another road alongside the first is unlikely to be equally beneficial. Moreover, there is always the risk in such an analysis of leaving out factors that are important in explaining the economic results and so attributing an excessively large benefit to investment. This means that while Bean's analysis gives insights into the benefits of investment, it is risky to use the same coefficients to quantify the impact of a particular investment.

Market failures for young and innovative enterprises

Government intervention is best justified when there are market failures that need correcting. Pursuing this logic leads the policy discussion to an area of key importance for employment generation - investment by small and medium-scale enterprises (SMEs).

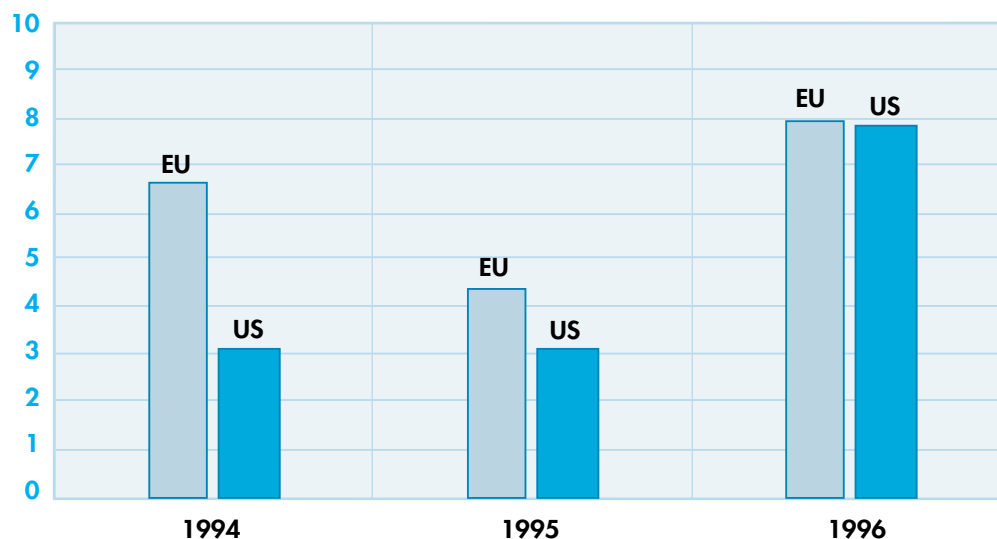
These businesses account for the vast majority of new job creation in the Union. For example, from 1988 to 1995, job creation by SMEs exceeded job losses in large companies. Over this period, enterprises with fewer than 100 employees generated an average of 260,000 net new jobs per year, while companies with more employees lost about 220,000 jobs annually. A particularly large contribution to employment creation comes from young but high-growth businesses.

There is a considerable literature showing that investment by firms is liquidity constrained. Thus, there is a direct link between increasing the supply of finance, and subsequent capital expenditures (19).

The venture capital industry has developed to deal with the particular financing problems of young companies. **Pascale Viala** (Chief Economist's Department, EIB) looks at this industry to see what additional role there could be for the public sector. Total commitments to the European venture capital industry were of the order of ECU eight billion in 1996 (see Figure 6). The conventional wisdom is that the European industry is underdeveloped. However, annual commitments in Europe are similar to those in the US, the oldest and most developed venture capital industry in the world (20). This apparent contradiction is because of major regional disparities in Europe. Venture capital is very highly developed in the UK, but very small in most of the rest of the EU. Its volume is particularly low in Germany (at only some ECU 200-300 million per year). Two significant differences with the US are the much higher share of later-stage financing (such as management buy-outs), and the greater focus on traditional sectors (e.g. retail, transportation, construc-

19) A recent empirical analysis of the financial structure of European SMEs is given by Roman Arjona, Pascale Viala and Rien Wagenvoort in Economic and Financial Report 98/03. See the inside back cover for details.

Figure 6. Venture capital commitments, in ECU billion



Source: Venture Economics for the US and EVCA for the EU.

tion) instead of innovative industries (e.g. computer-related, biotech, etc.).

The public sector as a venture capitalist?

Public support for venture capital financing of SMEs can come about through a range of tax incentives and regulatory changes. Although these should be pursued, the overall low level of external financing of SMEs vis-à-vis the financing potential gives scope for more direct public involvement.

Many earlier attempts by the public sector at providing loans and guarantees for the financing of young and innovative SMEs have had limited success. While loans do protect outside investors in the case of a liquidation, they have other disadvantages.

- They limit the influence and the control that the outside investor can have on the development of a company. This is a major problem since the involvement of venture capitalists in management decisions is one of the key factors for success.

- Given the great uncertainty of cashflows, loans can trigger the early liquidation of venture-backed companies. Equally, by changing the risks and pay-offs of the parties involved, they can increase the extent to which entrepreneurs "gamble" with the future of their companies.

Thus, it is not simply the supply of funds that is at issue, but also the relations between the firm and the provider of capital, and the incentives that each party has to act in a desirable way. Successful venture funds are built upon the careful structuring of deals (e.g. the use of hybrid financial instruments) and the venture capitalist's expertise. For this reason, participation by the public sector with equity or quasi-equity in established venture funds appears the most logical approach.

Viala notes that the involvement of institutional investors in venture funds has strengthened the already existing bias toward late-stage financing. This is because institutional investors require documented results at regular intervals, and the best

20) Though these data do not include the so-called "angels", individuals who contribute capital on a personal basis. There may be significant differences between the EU and the US in the volume of these funds.

way for the managers of venture funds to prove that they are performing well is to go into later-stage financing. Similar distortions to incentives could arise with the participation of public bodies in venture funds. Since the biggest economic gains, and the largest market inefficiencies occur with young firms, this suggests that direct provision of capital in venture capital funds should take the form of minority investments in diversified funds. The sum used for this purpose must be in scale with the overall size of the European venture industry. With respect to the public funds currently allocated to support the enterprise sector in total (some 2³/₄ percent of GDP, or ECU 150 billion per year), this will be a minute figure.

Implications for supporting investment — some concluding comments

The overall conclusion of this discussion is that a broad and deep reform of labour markets is needed to deal with the unemployment problem. Indeed, this appears a necessary condition if there is to be a substantial increase in job creation. Steps to deal with the possible resulting wage inequality include training and subsidies.

Labour market reform must be complemented with measures that support sustained economic growth. When discussing unemployment, it is important to remember that overall economic growth raises the average standard of living, and thus the ability to support transfer payments from workers to the more disadvantaged (including the financing of training schemes).

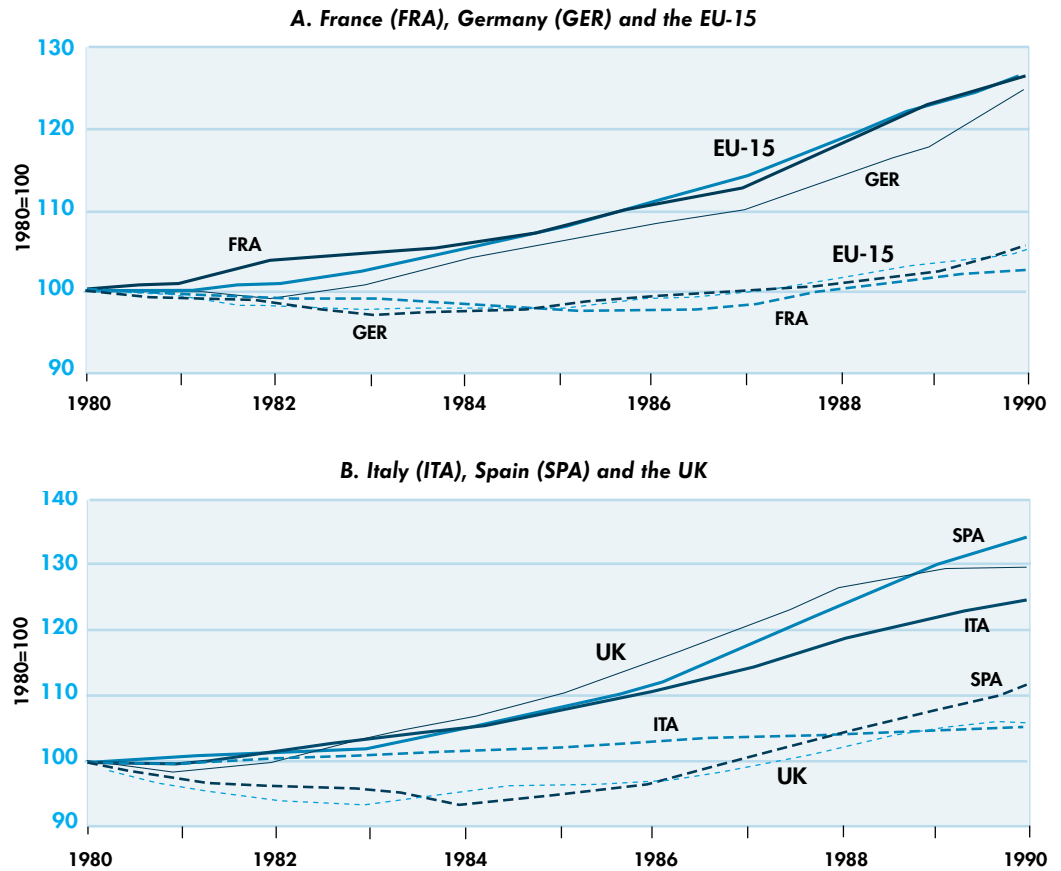
In the short-run, there might be some scope for stimulating aggregate demand. Regrettably, one should not build too much hope on this option. Aside from the constraints on fiscal policy from EMU, short-term demand management policies would only have the desired Keynesian employment repercussions when the hiring decisions of firms are less sluggish than

prices and wages, in other words when a higher demand for products converts directly into higher demand for labour. Though this may occur in deep recessions, recent experience suggests that this link may be less robust during other periods. For example, when Europe emerged from the recession of the early-1980s, product markets picked-up as early as 1982. However, with the notable exception of Italy, employment did not start to grow until several years later in most EU countries (see Figure 7). This delay is too long to be explained by normal production lags or the depletion of inventories.

This being said, supporting investment can complement the macroeconomic, competition, and labour market policies that are required to deal with unemployment. Such support can either be direct, through increasing public investment, or indirect with incentives for the private sector. In this case, there are a number of more detailed comments that can be made:

- The complex spillovers from one sector to another illustrate that supporting investment may be a blunt tool for generating unskilled employment if that is the only goal. Projects also require skilled labour and other inputs (cement, steel, etc.). Therefore, resources may be wasted if investments are not also sound in their own right. In other words, **employment generation is the beneficial side-product of successful investments.**
- Spillovers may also mean that **relatively broad-based support for investment makes sense** - focused programmes of public works may not be more efficient at generating employment. Of course, a very simple model has been used to arrive at this conclusion (including the Keynesian link we have just raised doubts over) and the issue should be explored further.

Figure 7. Occupied population and real GDP in index form



The solid line is output, while the dashed line is occupied population.

Source: European Commission.

- Spillovers may be regional as well as sectoral though probably less so. Thus, a large share of job creation may still take place in the affected region. This means that **there may be scope for using investment to address the regional dimension to unemployment.** However, if approached too enthusiastically it risks being an expensive solution, as there may be greater uncertainty regarding the long-term profitability of investment projects in lagging areas, and so a greater risk of "white elephants" if politicians are involved in the choice of investment.
- While policy makers would obviously like to know how many jobs are created, the logic for **supporting investment must to a large degree be based upon economic reasoning.** Hard proof in the form of **the exact number of jobs created cannot be provided.**
- The justification for **public intervention is strengthened if there are externalities or market failures of some kind that would reduce investment below socially optimal levels.** As mentioned by Drèze et al., environmental improvement is an obvious candidate. Investment in education facilities provide another example.

- *Small and medium-scale enterprises have a predominant role in job creation. Newly created companies also play a key role in technological innovation and, as a consequence, in economic growth. There is also a clear market failure in financing these companies. Thus, **special attention should be given to supporting investment by SMEs.** Though more mature enterprises can be funded by long-term debt, there are unique problems in financing start-ups. Tax and regulatory regimes should be adjusted to increase both the demand for finance (through encouraging entrepreneurial activity) and the supply of funds (via the venture capital industry). There might also be a role for the state to inject cash into venture funds, if this is done in a carefully controlled way.*

The problems of SMEs highlight the fact that financial market imperfections can constrain investment. This is also true on a broader scale, and the completion of the Single Market in Financial Services will provide important support to the overall EU strategy to deal with unemployment. The launch of EMU and the development of European capital markets can be expected to be a catalyst in this process. In the meantime there appears to be a role for EU institutions to strengthen financial development and integration, and to support investment. However, to paraphrase Elmeskov, it would be hard to imagine someone at the EIB coming to any other conclusion.

The unemployment problem in Europe: Lessons from implementing the OECD Jobs Strategy



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High and persistent unemployment is a key policy issue in many OECD countries, particularly in Europe. Many initiatives have been taken to reduce this problem. In 1994, the OECD launched the OECD Jobs Study, which contained both a thorough analysis of the issue and a comprehensive set of policy recommendations for dealing with it. This paper reviews the experience countries have had with implementing policies to reduce unemployment. As a background to this, it first presents a brief review of unemployment and wage developments as well as an overview of the OECD Jobs Strategy.

1. Unemployment, wages and the OECD Jobs Strategy

There may not be much which is particularly European about the unemployment problem in Europe. That is not to say that cultural backgrounds and norms play no role. But it is probably the case that if European labour market institutions and European macroeconomic and structural policies had been in place in other corners of the world, then unemployment would have been a problem there as well (1). This also means that it is important to look beyond Europe both to identify the mechanisms that have created high European unemployment and to look for policies which may help to bring European unemployment down. In what follows, this paper therefore draws on experience in European as well as non-European OECD countries.

Much research has been done on unemployment and a lot of statistics are available. Presenting a brief review of unemployment is therefore a selection process, which in this case has led to a focus on six features.

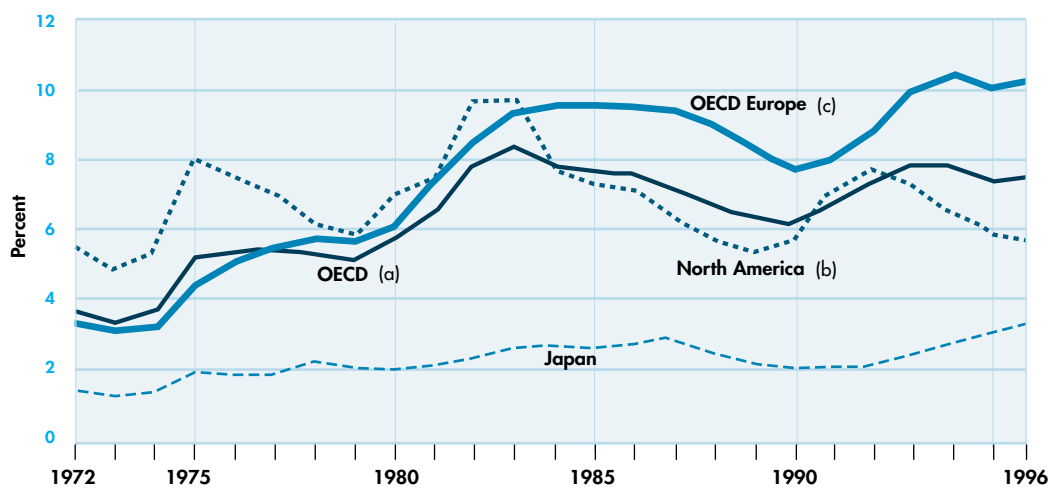
First, high and rising unemployment has been a particular problem in Europe (Figure 1). Some of the non-European OECD countries have managed to preserve low and/or unchanged unemployment over the last two to three decades. This is notably the case for the two large ones, the United States and Japan. However, there are also European countries, such as Norway, where unemployment has remained relatively low for many years. Noteworthy is also the tendency for unemployment to rise rapidly in downturns but to fall back only slowly thereafter – a time-series feature which is common across most regions but most pronounced in Europe, where some recoveries made hardly any impact on unemployment.

There may not be much which is particularly European about the unemployment problem in Europe.

The views expressed in this paper are those of the author and do not necessarily represent those of the OECD or its member governments. This paper draws heavily on Elmeskov (1998).

1) In a comprehensive cross-country/time series study of unemployment and its determinants, Scarpetta (1996) tried to identify outlying observations which did not fit the estimated general pattern of links between unemployment rates and determinants. Both this analysis and a look at the estimated country-specific unemployment components indicated little systematic difference between European and non-European countries.

Figure 1. Standardised unemployment rates in OECD regions, 1972-1996



Notes: Standardised unemployment rates for all countries except for Austria, Denmark, Greece, Iceland, Luxembourg and Turkey. Data for 1996 are OECD estimates.

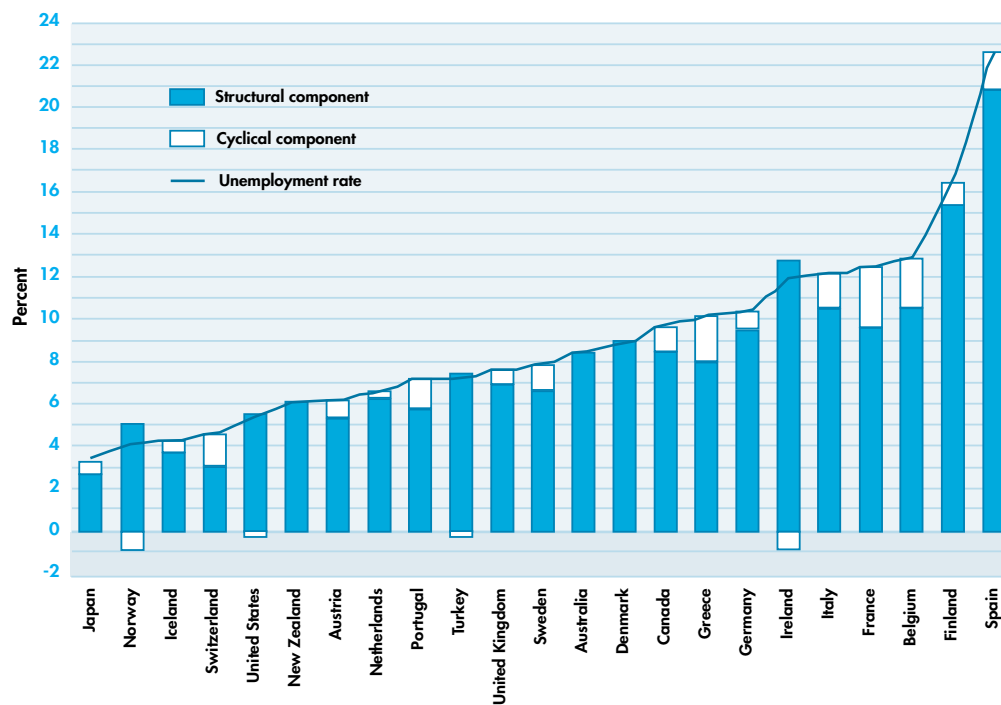
(a) Excluding the Czech Republic, Hungary, Korea, Mexico and Poland.

(b) United States and Canada.

(c) EU-15, Iceland, Norway, Switzerland and Turkey.

Source: OECD Labour Force Statistics.

Figure 2. Structural and cyclical components of unemployment rates, 1996



Based on national unemployment definitions. Structural unemployment data are based on OECD Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c).

Source: OECD Secretariat.

There is a tendency for unemployment to rise rapidly in downturns but to fall back only slowly thereafter.

Second, unemployment is predominantly structural even if there are significant cyclical components in some countries (Figure 2). By their nature, estimates of structural unemployment are subject to both numerical and conceptual uncertainties, and the OECD indicator is only one among many (its derivation is described in Box 1). Nevertheless, it is noticeable that changes in estimated structural unemployment rates have generally gone together with corresponding movements in a range of other labour market indicators such as long-term unemployment, the number of discouraged workers and employment rates (Figure 3). Moreover, comparison with other time-varying indicators of structural unemployment in most cases show relatively high correlations (Elmeskov, 1993) (2).

Box 1. The OECD indicator of structural unemployment

The OECD indicator of structural unemployment is based on the notion of a non-accelerating wage rate of unemployment (NAWRU). Estimates are derived under the assumption that changes in wage inflation are proportional to the gap between actual unemployment and the NAWRU:

$$D^2 \log W = -\alpha \cdot (U - \text{NAWRU}); \alpha > 0$$

where D is the first-difference operator, and W and U are levels of wages and the unemployment rate, respectively. Using consecutive observations, and assuming the NAWRU to be constant between two consecutive years, an estimate of α can be calculated as:

$$\alpha = -D^3 \log W / DU$$

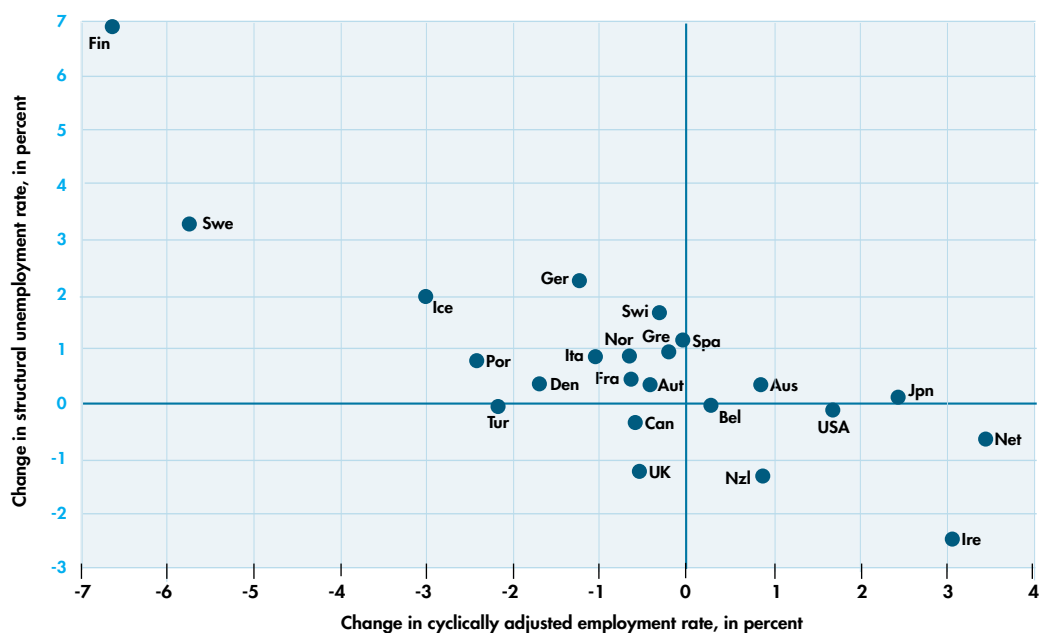
which yields an estimate of the NAWRU as

$$\text{NAWRU} = U - (DU/D^3 \log W) \cdot D^2 \log W.$$

Conceptually, the NAWRU estimated in this way is a short-run concept, i.e. it indicates the rate of unemployment which, in a given year and based on the actual history of unemployment, would be associated with a constant rate of nominal wage increases. In the presence of speed-limit effects or slow adjustment, a lower (or higher) rate of unemployment may be associated with stable wage inflation in the long run, but this rate of unemployment cannot be reached in the short term without setting off changes in inflation. In practice, the OECD indicator of structural unemployment takes into account not only the (suitably smoothed) "mechanical" estimates based on the above method but also the factors particular to the countries under observation (Giorno *et al.*, 1995).

2) Holm and Somervuori (1997) argue that in the case of Finland the short-term NAWRU estimate deviates significantly from their estimate of a time-varying long-term equilibrium rate of unemployment. For countries such as Finland and Sweden, which experienced very abrupt increases in actual unemployment in the beginning of the 1990s, uncertainties about the level of structural unemployment are particularly large.

Figure 3. Change in structural unemployment and employment rate, 1990-1995



Structural unemployment data are based on OECD Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c).

Source: OECD Secretariat.

High unemployment is usually accompanied by a high share of long-term unemployment and weak employment for marginal groups.

Third, high unemployment is usually accompanied by a high share of long-term unemployment (Figure 4). This suggests that high unemployment is associated with marginalisation of the unemployed. There is evidence to suggest that the long-term unemployed exert less downward pressure on wages than people who have recently become unemployed (Elmeskov and MacFarlan, 1993). It is also noticeable that the risk of becoming unemployed is actually higher in the United States, with relatively low unemployment, than it is in Europe with relatively high unemployment. This reflects that once people become unemployed in Europe there is a much bigger risk of becoming stuck in that situation.

Fourth, in much of Europe high unemployment also goes together with weak employment for marginal groups in the labour market. For example, employment rates for young workers and for older adults are comparatively low. In the latter case, this reflects inter alia the proliferation of early retirement and similar schemes. By contrast, employment rates for men between 25 and 54 years of age, which are often taken to be a core group on the labour market, vary much less across countries and regions.

Fifth, unemployment rates are disproportionately high for low-skilled workers. This is the result of a long-term trend away from the use of low-skilled labour which, however, has been partly offset by a relative decline in supply (see e.g. OECD, 1997a). The trend towards declining demand for low-

skilled workers has sometimes been linked with trends towards globalisation and technological change (3).

Real compensation rose rapidly in Europe over the last couple of decades while it broadly stagnated in the United States.

Sixth, there seems to be a link across countries between unemployment and participation rates: where unemployment is high, participation is low (Figure 4). Thus, the unemployment rate shows only part of the employment problem — the rest is hidden both in various schemes such as early retirement, invalidity etc., but also in people being discouraged from entering the labour force. At present, some countries, including the United States, Japan, Iceland, Norway and Switzerland combine low unemployment with high rates of labour force participation. By contrast, France, Italy, Belgium, Spain and, despite strong recent improvements, Ireland share with some of the transition economies the combination of high unemployment and low labour force participation. Other countries are in intermediate positions.

These six main features of unemployment do not permit any simple diagnosis of the problem. Nevertheless, they are not inconsistent with the view that insider-outsider distinctions play a significant role together with influences on demand and supply of low-skilled labour.

As concerns wage developments, trends have also differed significantly between the United States and Europe. At the aggregate level, real compensation rose rapidly in Europe over the last couple of decades while it broadly stagnated in the United States. To some extent this difference reflected higher productivity growth in Europe. But the reverse causality was probably also important. That is, higher real wage growth forced firms to rationalise and forced low-productive firms and workers out of production (4). As concerns relative wages, there has been broad stability of wage dispersions in continental Europe but significant widening in the United States, the United Kingdom and some other countries (see e.g. OECD, 1997b). In the United States, widening wage dispersion in a context of broad stagnation of average real wages implied that those at the bottom suffered real cuts in pay. This development gave rise to the discussion about the 'working poor', even if poverty in all countries is linked predominantly to people not being employed (5).

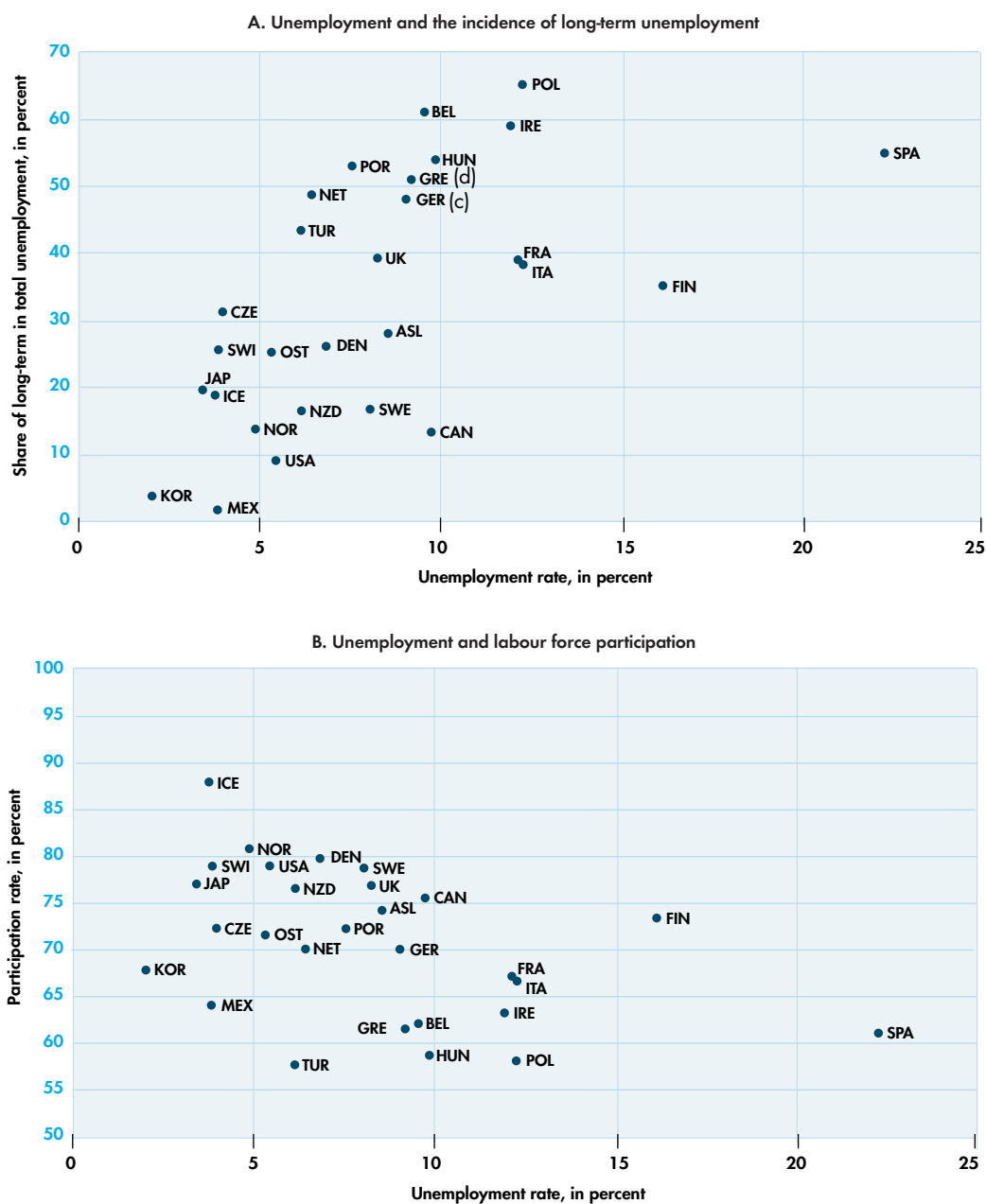
Against this background, the Jobs Study proposed a balanced and wide-ranging set of policy recommendations to reduce unemployment, raise employment and increase prosperity (see Box 2). These recommendations aim, on the one hand, to raise the ability of economies to adjust and to adapt to new developments, including cyclical variations as well as trends towards globalisation and technological change, and, on the other hand, to increase their knowledge base and innovative capacity.

3) This is particularly so because relative wage developments appear unable to explain the shift in labour demand. Evidence on the influence of globalisation and technological change mostly suggests that the former played a relatively limited role compared to the latter, but a great deal of uncertainty remains in this area (see OECD, 1997a, and Lawrence, 1996).

4) See, for example the discussion in International Monetary Fund (1996).

5) Poverty rates after taxes and transfers for individuals living in households without employed adults vastly exceed those for individuals in households with at least one employed adult (OECD, 1997c).

Figure 4. Unemployment, long-term unemployment (a) and labour force participation (b), 1996



Notes:

(a) Long-term unemployment is defined as twelve months and over.

(b) Labour force as a share of total population 15-64 years.

(c) Data for long-term unemployment in Germany refer to 1995.

(d) Data for Greece refer to 1995.

Source: OECD (1997a).

Box 2. The OECD Jobs Strategy

1. Set macroeconomic policy such that it will both encourage growth and, in conjunction with good structural policies, make it sustainable, i.e. non-inflationary.
2. Enhance the creation and diffusion of technological know-how by improving frameworks for its development.
3. Increase the flexibility of working-time (both short-term and lifetime) voluntarily sought by workers and employers.
4. Nurture an entrepreneurial climate by eliminating impediments to, and restrictions on, the creation and expansion of enterprises.
5. Make wage and labour costs more flexible by removing restrictions that prevent wages from reflecting local conditions and individual skill levels, in particular of younger workers.
6. Reform employment security provisions that inhibit the expansion of employment in the private sector.
7. Strengthen the emphasis on active labour market policies and reinforce their effectiveness.
8. Improve labour force skills and competences through wide-ranging changes in education and training systems.
9. Reform unemployment and related benefit systems - and their interactions with the tax system - such that societies' fundamental equity goals are achieved in ways that impinge far less on the efficient functioning of the labour markets.
10. Enhance product market competition so as to reduce monopolistic tendencies and weaken insider-outsider mechanisms while also contributing to a more innovative and dynamic economy.

Comprehensive reforms are capable of expanding employment opportunities and reducing structural unemployment.

2. Main lessons from implementing the Jobs Strategy

Overall, the experience across OECD countries over the last few years gives rise to both hope and caution (6). On the one hand, it seems clear that comprehensive reforms along the lines of the recommendations in the OECD Jobs Study are capable of expanding employment opportunities and reducing structural unemployment. On the other hand, only a few countries have introduced and sustained policy reforms in a sufficiently wide-ranging and consistent way to achieve such an

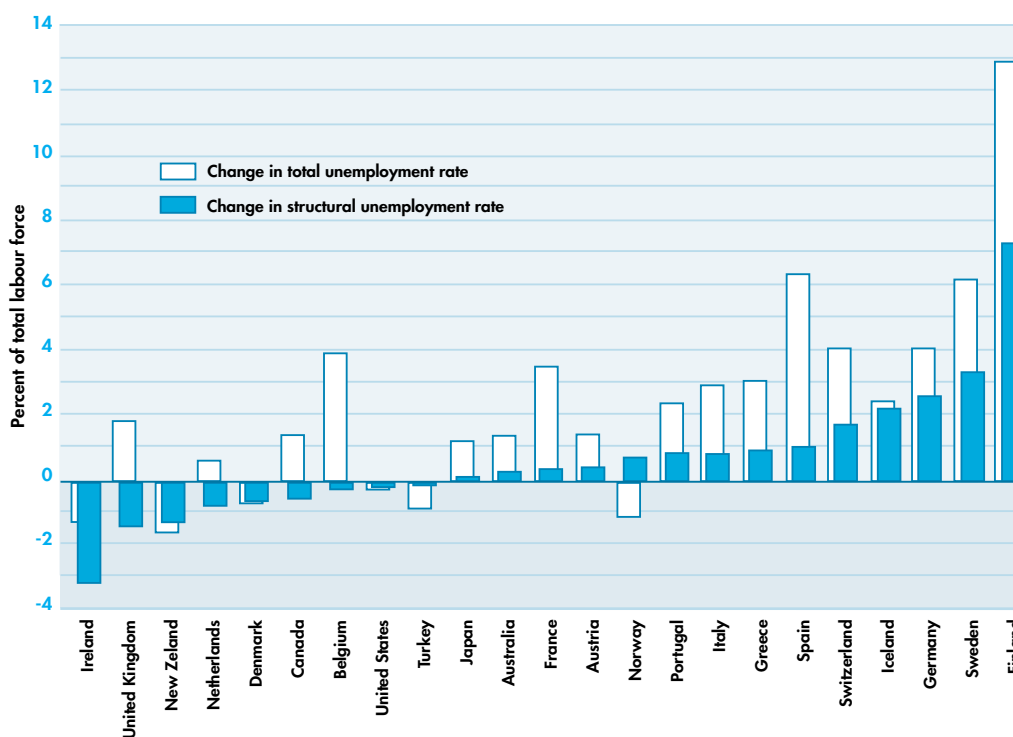
6) This analysis draws on country reviews by the OECD's Economic and Development Review Committee of the implementation of the Jobs Study recommendations, a number of thematic reviews exploring appropriate policy orientations in specific fields, as well as recent work by the OECD Secretariat.

improvement in labour market performance. This is partly because implementing the OECD Jobs Strategy sometimes involves difficult trade-offs between different policy concerns. Moreover, special interest groups often put up strong resistance to needed reforms. In what follows, the discussion has been organised along the six broad conclusions identified by the OECD Secretariat in OECD (1997b).

High and persistent unemployment has been the result of both conjunctural and structural forces, and it can be durably reduced

As shown previously, unemployment in the OECD area as a whole rose over the period 1990-1996 from its already high level at the end of the previous decade. Based on OECD Secretariat estimates, most of this increase was cyclical, but structural unemployment may also have gone up. Area-wide developments mask considerable differences across individual member countries (Figure 5). In part, this reflects different cyclical positions. But structural unemployment rates have also shown diverse trends (Table 1), often moving in the same direction as actual unemployment rates.

Figure 5. Changes in structural and cyclical components of unemployment rates, 1990-1996



Based on national unemployment definitions. Structural unemployment data are based on OECD Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c).

Source: OECD Secretariat.

Table 1. Structural unemployment in the OECD countries, 1980-1996 (percent of total labour force)

In the nineties the structural unemployment rate has ...		1986	1990	1996
... increased:	Finland	5.5	8.0	15.4
	Sweden	2.1	3.2	6.7
	Germany	7.3	6.9	9.6
	Iceland	0.8	1.5	3.8
	Switzerland	0.7	1.3	3.1
	Spain	19.1	19.8	20.9
	Greece	6.7	7.0	8.0
	Italy	8.4	9.7	10.6
	Portugal	6.1	4.9	5.8
	Austria	4.1	4.9	5.4
	France	8.9	9.3	9.7
	... remained fairly stable:	Norway (a)	3.1	4.2
Australia		8.1	8.2	8.5
Japan		2.5	2.5	2.7
Turkey		7.5	7.6	7.5
United States		6.2	5.8	5.6
Belgium (b)		11.7	10.8	10.6
Canada (a)		8.3	9.0	8.5
Denmark (a)		8.6	9.6	9.0
... decreased:	Netherlands	8.0	7.0	6.3
	New Zealand	4.7	7.3	6.0
	United Kingdom	10.2	8.4	7.0
	Ireland	15.3	16.0	12.8
	OECD structural unemployment rate (c)	7.0	6.8	7.1
OECD actual unemployment rate (c)	7.7	6.1	7.7	

Notes: Based on national definitions of unemployment. Structural unemployment data are based on OECD Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c). A change is considered significant (in absolute terms) if it exceeds one standard deviation. The latter was calculated for each series and country over the 1986-1996 period.

(a) Canada, Denmark and Norway had an increasing structural unemployment rate in the late 1980s up to the beginning of the 1990s.

(b) Belgium had a decreasing structural unemployment rate in the second half of the 1980s.

(c) Weighted average of the countries reported in the table.

Source: OECD Secretariat.

In many countries, structural unemployment appears to have risen over the 1990s. On the other hand, some countries, including the United States, Japan and Norway, have managed to keep structural unemployment steady at a relatively low level. The most encouraging new developments were registered in the United Kingdom, Ireland, the Netherlands and New Zealand, where falls in

structural unemployment rates either began or continued in the course of the 1990s (7). In a context of worries about European unemployment, it is notable that three of these four countries are European.

Many countries have made progress in implementing the Jobs Strategy, but progress has been uneven both between countries and between different areas of policy

There may be considerable lags between the start of reform and improvement to labour market performance.

Developments in structural unemployment over the 1990s to a large extent reflect the progress made in implementing the OECD Jobs Strategy. Some countries had introduced a number of the main recommendations well before the completion of the OECD Jobs Study. Indeed, the United Kingdom and New Zealand have pursued both wide-ranging and deep structural reforms beginning already in the early to mid-1980s. These are also among the countries where the estimated rate of structural unemployment has fallen significantly - since the second half of the 1980s in the United Kingdom, which began earlier to introduce structural reform, and since the early 1990s in New Zealand. Based on a more gradualist approach, the Netherlands have also pursued a comprehensive reform programme starting in the first half of the 1980s, with positive results in the form of falling structural unemployment since the second half of that decade. In Ireland, macroeconomic stabilisation began in the first half of the 1980s, while structural changes commenced in the second half of the 1980s; structural unemployment has declined during the 1990s. These experiences suggest that, even where policies are reformed over a broad range, lags may be considerable between the introduction of reform and the subsequent improvement of labour market performance.

The reform processes in these four countries (Ireland, the Netherlands, New Zealand and the United Kingdom) share a number of common features. One is that they were all initiated at a time when serious economic disequilibria had made it clear that existing policies could no longer be sustained. Another is that all four countries put in place macroeconomic frameworks focused on sound public finances and effective control of inflation. Even though the countries were not always successful in implementing these frameworks, by 1996, Ireland, the Netherlands and New Zealand combined inflation below two percent (measured by the GDP deflator) with general government balances which were either in surplus (New Zealand), or had deficits of less than three percent of GDP. Nevertheless, reform processes also differed between these countries, reflecting different starting positions, not least as regards structural policies. Examples include:

- The Netherlands, where high labour costs, including very high payroll taxes, were perceived as a problem, focused on achieving general wage moderation through centralised bargaining and tax reductions, restrictions on social transfers, lowering minimum wages, including in particular for young workers, and scaling back payroll taxes, especially on low-wage groups.

7) Statistical tests reported in OECD (1997b) suggest that the decline in structural unemployment over the period 1990-1996 in these four countries is significant and tests based on trends in actual unemployment tend to confirm this impression. Recently, there has been some discussion as to whether the Netherlands should be regarded as an example of successful policy adjustment given, not least, its relatively high level of non-participation in the labour force (e.g. McKinsey Global Institute, 1997). However, as discussed in OECD (1997b), there seems to have been a notable improvement in the labour market situation, even if levels of inactivity, and in particular levels of invalidity, remain high. The assessment thus depends in part on whether the focus is put on levels or first differences of indicators such as unemployment and employment rates. Falls in Danish and Canadian structural unemployment rates of about 1/2 percentage point were not statistically significant but may become so if, as seems likely, trends towards decline continue beyond the observation period.

- The United Kingdom had a heritage of nationalised industries and troubled labour relations and gave priority to product market reform, including privatisation, and reform of industrial relations.
- New Zealand, which was arguably among the most protectionist OECD countries at the beginning of the 1980s, gave early priority to trade liberalisation and reduced government intervention in its comprehensive reform programme (8).
- Ireland, which was faced with a dependency problem in the presence of unemployment and poverty traps due to interaction between the tax and transfer systems, and had a tradition of weak education effort, has taken action to lower the generosity of unemployment benefits, reduce marginal effective tax rates and improve human capital formation.

In the United States, Japan and Norway, policy settings prevented a significant rise in structural unemployment from occurring in the first place. Arguably, the three countries managed to maintain low unemployment because policies in important respects followed the main thrust of the OECD Jobs Strategy, though with clear differences of emphasis between the countries. Thus, the United States has traditionally operated and adapted its structural policies so as to be consistent with flexible labour and product markets while also placing emphasis on macroeconomic policies geared towards sustainable high employment. In Japan, institutional features have allowed high flexibility of wages and working hours at the same time as favouring geographical mobility and functional versatility of labour within enterprises. And in Norway, macroeconomic stability has been given priority, against the background of the flexibility provided by oil and gas revenues, and emphasis has been placed on human capital formation. Nonetheless, even in these three cases, there remain areas in which policy can be improved.

At the same time as initial, and different, starting positions of countries have conditioned progress in the 1990s, reform efforts in different areas have met with varying degrees of political resistance across countries (9). Partly as a result, progress within specific structural policy areas has differed considerably from country to country (10). Hence, it is difficult to draw strong, OECD-wide conclusions about reforms in specific areas in the 1990s.

Nevertheless, in a number of policy areas, most countries have shied away from pursuing policy reforms which would directly and negatively affect core groups in the labour market and have instead relied on other adjustments:

- Few countries have cut replacement rates or maximum durations of unemployment benefits more than marginally, whereas many have tightened benefit administration and eligibility rules, which are more likely to affect marginal groups on the labour market (Table 2).

8) An overview of the New Zealand reform process is presented in Atkinson (1997).

9) In some countries, including Germany, France, Italy and Belgium, political constraints prevented greater breadth and/or depth of reform.

10) See OECD (1997b) for more details of policies implemented in recent years.

Table 2. Evolution of unemployment benefit systems over the 1990s

	Summary measure of gross replacement rates (a)		Tighter work availability requirements and enforcement (b)	Tighter eligibility requirements (b)
	1991	1985		
United States	11.1	11.8	0	0
Japan	9.9	9.9	0	0
Germany	28.1	26.4	✓	0
France	37.2	37.5	0	✓
Italy	2.5	19.7	✓	0
United Kingdom	17.5	18.1	✓	✓
Canada	27.8	27.3	✓	✓
Australia	26.5	27.3	✓	✓
Austria	31.0	25.8	✓	0
Belgium	42.3	41.6	✓	✓
Denmark	51.9	70.3	✓	✓
Finland	38.8	43.2	0	✓
Greece	17.1	22.1	0	0
Ireland	29.3	26.1	✓	0
Netherlands	51.3	45.9	✓	✓
New Zealand	30.4	29.8	✓	✓
Norway	38.8	38.8	0	✓
Portugal	34.4	35.2	0	0
Spain	33.5	31.7	✓	✓
Sweden	29.4	27.3	✓	0
Switzerland	21.9	29.5	✓	✓

Notes: (a) Benefit entitlements before tax as a percentage of previous earnings before tax. Data shown are averages over different earnings levels, length of unemployment spells, and family situations. The index does not take into account social assistance at the regional or local level. For further information and comparison with other indicators of generosity, see Martin (1996).

(b) ✓ denotes that the country has taken action; 0 means no action

Source: OECD Database on Unemployment Benefit Entitlements and Replacement Rates; OECD Economic Surveys.

There is the perception that undertaking reform involves conflict with policy objectives concerning equity and social cohesion.

- Though some action has been taken to weaken general employment protection legislation, countries have generally shown greater willingness to introduce and liberalise fixed-term contracts and job protection for part-time workers and workers in small firms, which also affect mainly marginal groups.
- Some governments have focused on increasing product market competition in order to increase market pressures for more flexible labour market regulations and practices rather than aiming to reform the latter directly.
- To some extent, the countries which have seen significant reductions in structural unemployment are the ones which have managed to introduce reforms that also affected labour market insiders (11).

11) For example, among the countries which experienced falling structural unemployment, both the Netherlands and the United Kingdom cut maximum benefit duration, whereas Ireland abolished earnings-related benefit schemes.

The central issue dividing the more comprehensive reformers from the less comprehensive is differences in judgement about potential conflicts between better labour market performance and concerns for equity and social cohesion

Low-paid employment may be a stepping-stone to better pay, particularly for the young.

A key reason cited for slow and sporadic implementation of the OECD Jobs Strategy is the perception that undertaking reform involves conflict with policy objectives concerning equity and social cohesion. In particular, concern has been expressed in some quarters that enhanced wage flexibility and the reform of social transfer systems would be at odds with the policy objectives of ensuring some degree of equity across members of the labour force or the population at large. So far, no conclusive evidence has been provided as to the nature and magnitudes of any potential trade-offs. Nevertheless, it has been suggested that these objectives do not necessarily conflict, or at least that the terms of the trade-off change, when they are seen in a dynamic perspective. Three reasons have been quoted for this:

- First, increased employment as a result of policy reform will tend to offset at least partly the impact of increased wage-rate dispersion and restricted social transfers on income distribution. Thus, a wider distribution of wage rates is likely to enhance the employment prospects of workers at the bottom of the qualification scale. Such effects may lie behind the negative cross-country correlation between widening of the bottom part of the wage-rate distribution and the change in unemployment and the positive, albeit weak, correlation between a wider distribution at the bottom of the pay scale and the rise in employment. Nevertheless, this evidence is far from conclusive and there is little agreement about the magnitude of such employment effects, with econometric estimates of elasticities between relative wage rates and demand for different categories of labour being both highly uncertain and variable across studies (12).
- Second, there is evidence of considerable mobility of individuals over time within the wage scale, implying that in some cases low-paid employment may be a stepping-stone to better pay. Across countries, with large differences in the static distribution of earnings, the degree of mobility appears to be remarkably similar (13). As a rule of thumb, it seems that after a period of five years only about a third of those full-time workers initially receiving low earnings (belonging to the lowest earnings quintile) do so at the end of the period (Table 3). And among full-time workers continuously employed over the 1986-1991 period only three to five percent remained in the lowest quintile throughout the period. A large part of the workers who left low-paid employment had moved up in the earnings distribution, though in some countries a significant fraction had also moved out of employment. Young persons in particular have a high likelihood of moving up in the earnings distribution. However, older and less educated workers run a higher risk of becoming trapped in low-paid jobs. Moreover, there are indications that "cycling" may take place, with those moving upwards in the earnings distribution subsequently falling back again. As a result, among workers with continuous employment those who started out as low-paid in 1986 on average spent some 3½ to 4 years in the low-paid group.

12) For example, estimates of elasticities of substitution between different categories of labour substantially above one have been found by Bound and Johnson (1992) and Katz and Murphy (1992) for the United States, and Risager (1992) for Denmark. In contrast, Machin et al. (1996) find an elasticity of around one for the United States and less than ½ for the United Kingdom, Denmark and Sweden. OECD (1996a) presented a number of simple cross-country correlations between wage distributions and indicators of labour-market performance without finding any strong relationships, though that result may reflect the focus on static correlations and the fact that different distributions of qualifications across countries could not be taken into account.

13) This is based on the comparative data on earnings mobility in a number of countries presented in OECD (1996a and 1997a). The finding of broadly similar mobility patterns across countries is also supported by Aaberge et al. (1996).

Table 3. Retention rates in low earnings after five years

	Low earnings defined as bottom quintile among:		Low earnings defined as below 0.65 median earnings of full-time wage and salary workers
	Full-time wage and salary workers	All employed wage and salary workers	
United States			
Male	29.4	28.2	31.2
Female	31.2	57.9	35.4
Germany			
Male	14.4	20.1	10.7
Female	34.6	48.3	18.2
France			
Male	28.5	21.3	17.5
Female	42.4	32.9	28.0
Italy			
Male	37.2	29.8	15.3
Female	49.8	41.2	23.0
Denmark			
Male	19.6	40.6	4.8
Female	37.6	44.0	6.7
Finland			
Male	30.1	45.3	30.0
Female	28.0	40.4	24.5
Sweden			
Male	22.7	25.8	-
Female	40.7	42.9	-
United Kingdom			
Male	30.7	-	28.1
Female	38.7	-	37.0

Share of the low-wage population in 1986 that received low earnings also in 1991.

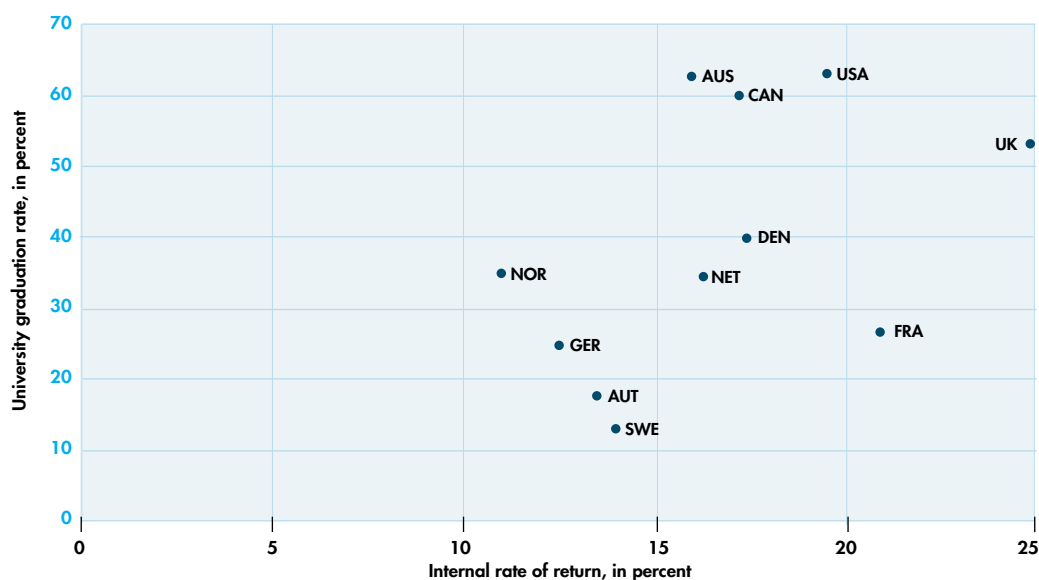
Source: OECD (1996a) and further calculations based on the longitudinal data sets used in that publication.

Lower relative incomes at the bottom of the scale may raise incentives for investment in human capital.

- Third, lower relative incomes at the bottom of the scale may raise incentives for investment in human capital by groups who would otherwise have made little such investment; the existence of this kind of linkage is supported by evidence that, across countries, university graduation rates tend to be higher where the financial rewards to such education is higher (Figure 6) (14). Such an effect in turn could reduce income dispersion over the longer run and assist the adaptation of the workforce to changing skills requirements.

14) It should be noted that the rates of return shown in Figure 6 do not take into account the effects of tax-transfer systems, including support for students, or different unemployment risks across education categories. Freeman (1986) presents an overview of empirical estimates concerning the link between the return to education and the demand for it. More recently, Fredriksson (1997) and Hers (1997) have presented supportive evidence on this link in the cases of, respectively, Sweden and the Netherlands.

Figure 6. Internal rate of return and university graduation rates



University graduation rate is the ratio of graduates from short first university degree programmes to population at the typical age of graduation in 1994 (long first university degree programmes where short first degree programmes are not available (Austria, France and Germany)). The internal rate of return is based on university wage premia in the early 1990s, the theoretical length of study and an assumed retirement at age 65.

Source: OECD Secretariat calculations based on OECD (1996d), and OECD (1994).

It is not clear to what extent public expenditure on training can compensate for weaker incentives for private investment in this area.

In addition to the traditional arguments stressing market failure as a reason for government involvement in education, training and active labour market policies, many countries see these policies as a way of supporting horizontal equity without having to pay a price in terms of lower economic efficiency, or vice versa. Some, most notably France, Belgium and the Nordic countries, resist a wider distribution of wage rates as a means to reduce unemployment and instead rely on these policies to bring the dispersion of individual productivity levels into line with the prevailing wage distribution. However, a compressed wage structure and generous social transfers limit the financial returns to private investment in human capital, and it is not clear to what extent public expenditure can compensate for weaker incentives for private investment in this area. There is also a question-mark over the effectiveness of much public spending on active labour market policies, suggesting a need for further efforts to raise their efficiency if they are to play a substantial role in affecting the distribution of individual earnings capacities.

Thus, it remains an open question whether a policy approach that sees public intervention in post-compulsory education, training and active labour market policies as a substitute for relative wage flexibility is effective, let alone cost-effective, particularly in a world of rapid structural change where shifts in demand for particular skills are likely to exceed the pace at which skill supplies can be adjusted through education and training. At the same time, however, there is also concern about the effectiveness of relative wage signals in influencing human capital investment, not least because increased inequality of income, in a context of imperfect capital markets, may prevent those at the bottom of the income distribution from investing in their own or their children's education (15).

15) A model illustrating this point is presented in Benabou (1996).

A balance may be achieved with a combination of the two policy approaches, relying both on the market mechanism, through relative wage signals, and government support to education and training and active labour market policies in the pursuit of equity and employment objectives.

In some cases, fear of negative consequences not only for horizontal equity but also for the much wider concept of social cohesion has been a reason for adopting a measured and incremental approach to reform along the lines of the OECD Jobs Strategy. Such consequences, were they to occur, would be undesirable in their own right and may also entail high economic costs. Indeed, with social cohesion goes a set of common norms and standards of behaviour without which individual opportunistic behaviour might be difficult, or at least very costly, to constrain. At the same time, however, high and persistent unemployment is itself likely to seriously impair social cohesion.

Driven by fears of undermining social cohesion, some countries have emphasised institutions that support the establishment of a social consensus. However, such institutions may, over time, gradually come to serve the interests of labour market insiders to the detriment of outsiders and become increasingly static in their outlook, and thereby less flexible in a dynamically changing environment. For example, institutions of consensus and corporatism, which usually go hand-in-hand with a centralised element in wage bargaining, may have increased the flexibility of aggregate wages in the past – arguably the case in Austria, Norway and Sweden – but they may work less efficiently in a low-inflation climate and are much less adapted to deal with economic changes which require changes in relative wages (16). The risk may also be particularly high in a corporatist set-up that failure to adjust relative wages and associated malfunctioning of labour markets could then spill over into pressures on the government to expand early retirement schemes and other fiscal measures to encourage withdrawal from the labour force.

Partly for these reasons, the role of strong political leadership in introducing structural reform has been stressed in the cases of the United Kingdom and New Zealand. And, in the case of the latter country, it has been argued that since structural reforms imply the destruction of economic rents, undertaking deep structural reforms through a consensual process is difficult. Moreover, in these countries, structural reforms seem, as noted above, to have been sufficient to reduce structural unemployment over the 1990s. However, the Netherlands and Ireland also experienced falling structural unemployment and are examples of countries where both macroeconomic policies and comprehensive structural reforms were implemented based on processes of decision making involving the social partners directly. Thus, the experience of these four countries suggests that there are different approaches to successfully implementing the Jobs Strategy, depending on national traditions and institutions.

While there were profound differences between the four countries, a crucial common feature facilitating the reform processes seems to have been the notion that individual reforms were part of a wider programme. Hence, specific reforms that affected particular groups met with less resistance

A crucial common feature facilitating the reform processes seems to have been the notion that individual reforms were part of a wider programme.

16) See, for example, Calmfors (1993) on the relationship between centralisation of wage bargaining, real wages, inflation and relative wage developments. Scarpetta (1996) presents evidence of a hump-shaped relationship between an indicator of centralisation and unemployment, and also shows results to suggest that increased employer coordination is associated with lower unemployment, whereas the opposite is the case for worker bargaining strength, as proxied by union density. OECD (1997a), using a somewhat different specification, finds little evidence of systematic links between features of bargaining systems and unemployment. It did, however, find strong evidence that more centralised and/or co-ordinated bargaining systems were associated with more compressed wage distributions.

because they were seen as part of an overall strategy affecting much wider groups and thereby possessing an element of fairness, which is an essential factor working for social cohesion.

There are significant synergies between structural reforms in different fields

Seeing structural reforms as part of an overall strategy is also important because reforms in one area produce better results if other areas are also reformed, while sometimes the beneficial effects of reform in one area may be blocked by impediments elsewhere (17). As a result, broad-based reform is likely to be more effective than reform focused in particular areas (18). One general channel for these interactions arises from the effects of policy reform on government budgets: many reforms which raise employment and lower unemployment will also result in reduced public expenditure or higher tax revenue, thereby permitting lower tax rates, which, in turn, may set off further improvements in labour market performance. A few more specific examples of such interactions include (19):

- Increasing incentives for seeking and accepting jobs is likely to be more effective when, on the one hand, product market reforms have ensured that labour demand will react swiftly and significantly to changes in wages and, on the other hand, regulations governing industrial relations, minimum wages and employment protection are reformed in ways which ensure that such a wage response will be forthcoming swiftly.
- Easing employment protection legislation may, by raising turnover in the labour market and the supply of vacancies, enhance the effectiveness of active labour market policies as well as the enforcement of availability for and willingness to work criteria in unemployment benefit systems.
- The tightening of unemployment benefits is likely to be more effective in terms of reducing overall under-utilisation of labour, as opposed to measured unemployment, if accompanied by tightening invalidity, early retirement, and social assistance schemes. Conversely, reducing the generosity of other transfer programmes may be ineffectual without tightening unemployment benefits.
- Where wage rigidities, caused, for example, by legislated minimum wages or administrative extension of wage agreements, prevent wages from falling in response to higher employer social security contributions, the effects of increases in payroll tax rates may be particularly onerous.

Interactions between structural policies may also be political in nature. This may sometimes lead to cases of substitutability, rather than complementarity, between structural reforms in different fields. For example, the absence of an adequate social safety net has in some cases been seen as strengthening the political case for various types of employment protection, including severance pay (Greece, Mexico, Turkey) or, conversely, its existence has been seen as a political pre-condition for a liberal job protection regime (Denmark).

17) This point was emphasised in Lindbeck (1996). Coe and Snower (1996) illustrate such complementarities in a search model, including taxation, employment protection, bargaining power, unemployment benefits and job creation.

18) In the chapter on "Interactions between Structural Reform, Macroeconomic Policy and Economic Performance", OECD (1996b) discusses a number of issues related to the political economy of structural reform.

19) Further examples are outlined in OECD (1997b).

Macroeconomic conditions and their interactions with structural forces are important for labour market outcomes

Macroeconomic policy reduces unemployment by providing a stable framework based on sound public finances and price stability.

Macroeconomic conditions are very important for labour market outcomes. There are two dimensions here: establishing an appropriate medium- and long-term framework for policies and preventing excessive short-run fluctuations in output and employment.

The OECD Jobs Study emphasised the role of macroeconomic policy in reducing unemployment by providing a stable framework, based on sound public finances and price stability. A main channel through which budget consolidation may affect unemployment over the longer term is via its impact on real interest rates (20).

- First, a fall of real interest rates may lower production costs in much the same way that lower payroll taxes or energy prices would do and it may raise capital accumulation and thereby labour productivity. Where wage earners do not receive a corresponding increase in real wages, unemployment is likely to fall (21).
- Second, lower real interest rates may in some cases affect the bargaining attitudes of workers and the labour demand behaviour of enterprises with the end result of lower unemployment (22).
- Third, lower real interest rates could favourably affect productivity growth, either temporarily, while the capital-intensity of production responds, or more long-lasting, if the rate of innovation and its diffusion are affected. Increased productivity growth again might cause unemployment to fall. This would be the case to the extent it reduced the incidence of downward wage stickiness or facilitated wage bargaining by increasing the scope for real wage gains (23).

Empirical estimates of the effects of real interest rates on unemployment have given results which are variable but suggestive of significant impacts in some countries (24).

20) Orr et al. (1996) estimate that a rise in the government deficit of one percent of GDP will lead to an increase in domestic real interest rates of between 1/6 and 1/3 percentage points depending on the extent to which it affects the external balance of a country. Much larger effects have been found by authors focusing on the effects of government debt. Thus, estimates suggesting that a one percentage point rise in debt/GDP ratios may increase real interest rates by 14 to 24 basis points have been reported by Helbling and Wescott (1995) and Ford and Laxton (1995).

21) This line of reasoning has been emphasised by Cotis et al. (1996) to suggest that higher real interest rates have been a factor behind the rise in French unemployment since the early 1970s. However, while wage rigidities are likely to prevent full wage adjustment to an increase in real interest rates, for example because of institutional hindrances such as minimum wages, there is a question as to whether the same incomplete adjustment can be assumed when real interest rates fall, since, for example, minimum wages do not prevent wages from rising.

22) Manning (1992) has argued that, in a context where current employment raises the chances of future employment, higher real interest rates will harden the bargaining stance of wage earners because the present value of future earnings is diminished, reducing also the value of current jobs and thereby the expected loss from pressing for higher wages. Phelps (1992) emphasises that higher real interest rates will reduce the asset value to firms of their customer base and their stock of employees familiarised with the firm, and thereby reduce labour demand at a given level of real wages. The links between real interest rates and unemployment are discussed further in Mellis and Webb (1997).

23) There is some empirical evidence suggestive of a link between productivity growth and unemployment. Manning (1992) argues that a substantial part of the rise in unemployment until the early part of the 1980s can be explained by lower productivity growth. Turner et al. (1993) present results suggesting that such effects are large in the case of Germany but insignificant in the cases of the United States and Japan.

24) Scarpetta (1996) finds that across 17 OECD countries the rise in real interest rates accounted for between one and three percentage points of the rise in the unemployment rate over the period 1971-1993. Manning (1992), in a study of 19 OECD countries, finds effects suggesting that a one percentage point increase in real interest rates may increase unemployment by between zero and one percentage point. Phelps (1992) finds an impact of 0.1 to 0.4 percentage points in a study of 17 OECD countries. Cotis et al. (1996) report estimates suggesting that rising real interest rates accounted for about half of the rise in the French equilibrium unemployment rate between 1974 and the mid-1990s.

Nominal floors on wages are less constraining in conditions of high productivity growth which would explain the low inflation and low unemployment of the 1960s, but not now.

Price stability has now been recognised as the primary goal of monetary policy in virtually all OECD countries. However, there is some disagreement as regards the long-term impact on unemployment of moving to price stability as compared to accepting stable but moderate rates of inflation:

- On the one hand, moves to, and the maintenance of, price stability may have favourable effects on labour markets to the extent that they reduce risk premia in real interest rates associated with inflation variability or lead to improved resource allocation and higher productivity (25). Both cross-country evidence and time-series evidence from individual countries is suggestive of a link between lower inflation and higher output growth, though it remains an open question whether this link holds also for moves from already low inflation to price stability (26).
- On the other hand, the presence of nominal wage floors may prevent wages from falling in absolute terms and such effects could impede relative and, indeed, aggregate real wage adjustment at price stability, putting upward pressure on unemployment. Such nominal floors would obviously tend to be less constraining in conditions of high productivity growth which would explain why it was possible to combine low inflation and low unemployment in the 1960s but not now. There is some empirical evidence suggesting that nominal wage floors are indeed present and that the importance of downward sticky wages increases with declining inflation (27). However, the argument has been made that this evidence relates to periods when inflation was non-negligible and, thus, may not be representative of the importance of nominal floors at price stability when expectations have adjusted to that situation (28). Nevertheless, to the extent expectations are slow to adjust, this may argue in favour of slow movement towards price stability, when this has not already been attained.

As noted, the second main orientation for macroeconomic policies is to minimise macroeconomic fluctuations as far as is realistically possible within the scope given by other policy targets and constraints. Countries with the room for manoeuvre to counteract prolonged slumps in macroeconomic conditions have avoided strong increases in actual unemployment and estimated structural unemployment. In contrast, countries with relatively large fluctuations in unemployment have usually also seen stronger rises in structural unemployment because increases in unemployment which were initially cyclical in origin have often tended, over time, to become structural. Indeed, the countries where structural unemployment rose the most in the 1990s were largely the ones where the cyclical volatility of unemployment increased significantly (Figure 7) (29).

25) Orr et al. (1995) present evidence that, across countries, real interest rates are correlated with the extent of exchange rate depreciation and inflation and estimate an impact on real interest rates from errors in inflation expectations which may be interpreted as an inflation-risk adjustment.

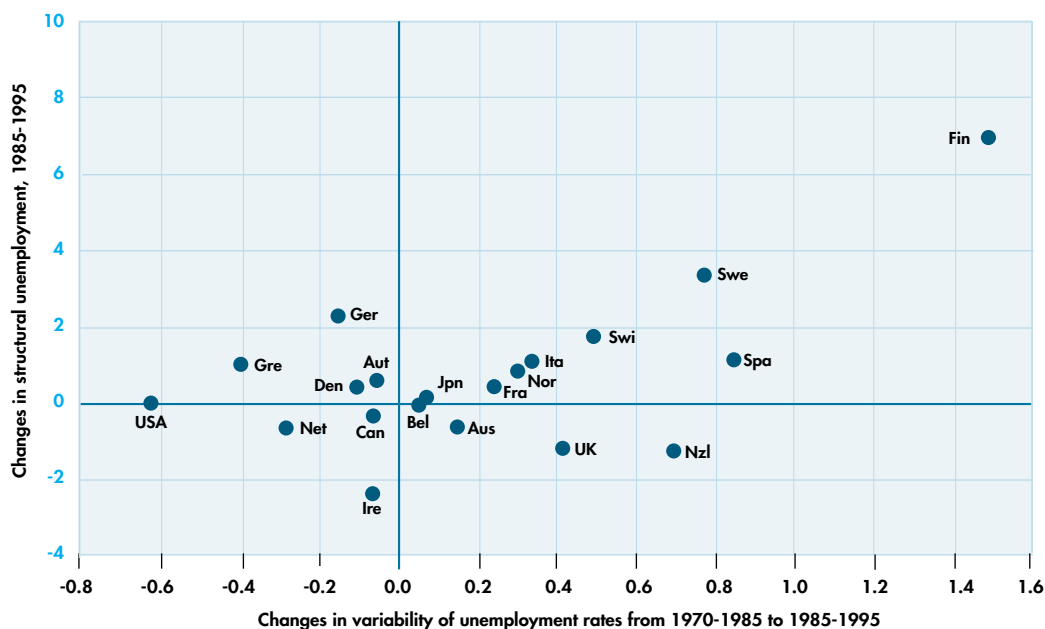
26) For an overview, see Edey (1995). More recently, Feldstein (1996) has argued that because tax distortions of household saving and investment decisions are large even at price stability, the added effect of even fairly low inflation is also likely to be large.

27) Looking at distributions of wage changes, several authors have found a spike at zero (for an overview of these results, see Braun and Chen (1996) or Chapple (1996)). Concerning the relation between stickiness and inflation, Chapple (1996) estimated a significantly negative effect from expected inflation on the incidence of sticky wages in New Zealand, and Fortin (1996) argues that at inflation rates below four percent, wage stickiness exerts significant upward pressure on unemployment in Canada. Using state-level data for the United States, Card and Hyslop (1996) found that the incidence of sticky wages in the United States did not depend very strongly on the rate of inflation. In contrast, Akerlof et al. (1996) criticise as spurious the evidence of nominal wage reductions based on panel data and set up a model showing large unfavourable unemployment effects as a result of a fall in inflation.

28) The literature on wage bargaining has in some cases argued that multi-layered bargaining entails a need for each level of bargaining to produce positive wage increases which may conflict with the goal of price stability at low rates of unemployment (e.g. Calmfors, 1993).

29) As a special case, the substantial increase in the German structural unemployment rate despite a slight fall in cyclical variability is related, not least, to the re-unification of the country and the rapid convergence in labour market institutions and policies as well as wages between the two parts of the country.

Figure 7. Cyclical variability and structural unemployment, in percent



Structural unemployment data are based on OECD Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c). The change in variability of unemployment rates is measured by the standard deviation of yearly changes in unemployment rates.

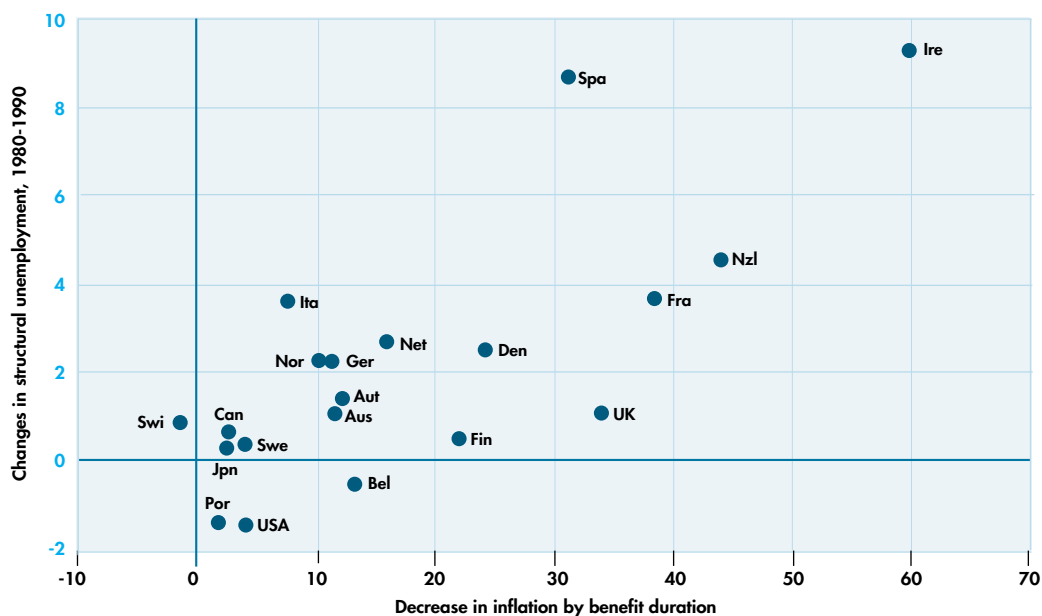
Source: OECD Secretariat.

The extent to which cyclical unemployment increases are transformed into higher structural unemployment depends on structural policy settings (30). The policy implications of these relationships include:

- For countries with very rigid labour markets, macroeconomic instability carries a particularly high price in terms of structural unemployment, whereas countries with flexible labour markets, most notably the United States, have experienced large cyclical fluctuations in unemployment around a rather stable trend.
- Moves towards medium-term macroeconomic targets will often be less costly in terms of unemployment if the appropriate structural policies have been implemented first. Conversely, a sequencing which involves moving towards macroeconomic targets before implementing structural reform may be expensive in terms of unemployment. For example, countries which both disinflated significantly and did so with unemployment benefit systems which were very generous in terms of benefit duration, tended to experience large increases in their structural unemployment rates over the 1980s (Figure 8).

30) Scarpetta (1996) links slow adjustment of unemployment to strict employment protection, generous unemployment benefits and aspects of wage bargaining systems. Barro (1988) reports evidence that the existence of corporatist institutions and, where these are not present, the degree of unionisation slows down unemployment adjustment. Finally, Layard (1989) finds that long benefit durations slow down adjustment whereas centralised bargaining and expenditure on active labour market policies speed it up.

Figure 8. Disinflation, benefit duration and structural unemployment



Structural unemployment data are based on Secretariat estimates of the non-accelerating wage rate of unemployment (NAWRU) made for the OECD (1996c). The variable on the horizontal axis is the decrease in inflation over the period 1980-1990 as measured by the consumer price deflator multiplied by the maximum duration of unemployment benefits in the mid-1980s (see Layard et al., 1991). The rationale for this specification is that increases in unemployment associated with disinflation may be more persistent in countries with long maximum duration of unemployment benefits.

Source: Ball (1996).

- Structural rigidities may sometimes be associated with asymmetric responses of the economy to unemployment being, respectively, above and below structural levels (31). Thus, where inflation reacts more strongly when unemployment is below its structural rate than when it is above, a policy which prevents strong fluctuations will also be associated with a lower average rate of unemployment than one which results in stronger fluctuations. Where hysteresis effects are asymmetric in the sense that increases, but not decreases, in actual unemployment are followed by hysteresis, avoiding large cyclical fluctuations is evidently also important. Since fluctuations are inevitable even under the best macroeconomic management, these observations underscore the need to implement structural reforms to eliminate the asymmetries themselves.

The upshot is that structural policy setting consistent with the recommendations of the Jobs Strategy is likely not only to reduce unemployment directly but also to reduce the risk that unemployment persists following a cyclical downturn.

Other synergies also exist between structural reforms and an appropriate setting of macroeconomic policies. For example, progress in structural reform leading to lower unemployment rates may

31) Turner (1995) presents evidence on asymmetric inflation effects and Giorno et al. (1996) present evidence suggestive of asymmetric hysteresis in some countries.

increase the credibility of macroeconomic policies, with the end-result of reducing risk premia in interest rates and diminishing speculative pressures against currencies (32).

Conversely, structural reform will be more effective when introduced in stable macroeconomic conditions. For example, policies to increase work incentives through curbs on welfare provisions work best when the economy is generating a reasonable number of job vacancies. Similarly, when activity is high, relaxation of employment protection legislation may predominantly act to remove a disincentive for hiring, whereas such deregulation is more likely to be followed by labour shedding when undertaken in a weak business climate (as seems to have been the case recently in Italy). More generally, structural reform is usually aimed at giving greater scope for market forces. Improved functioning of markets and structural policy settings which are more sustainable should in themselves tend to raise confidence, but where structural reform leads to the destruction of economic rents – in the shape of excessive prices, wages or job security, or low work intensity – confidence could suffer. Macroeconomic policy setting should, as far as possible, take this into account. It is noticeable that the countries where structural unemployment has fallen have all had rapid enough growth for actual unemployment to fall. However, at the same time there is a risk, which judged by past policy developments is non-negligible, that when conjunctural conditions are relatively buoyant, the motivation could be weakened for undertaking necessary structural reforms.

Overall, the Jobs Strategy remains an effective response to labour market problems in member countries

Perhaps it is difficult to imagine the OECD reaching any other conclusion than the one just stated. But, as illustrated above, there is indeed some evidence to suggest that the Jobs Strategy works. Nevertheless, there are still areas where knowledge is weak. The linkages and potential conflicts between reforms to enhance economic efficiency and the policy concerns for equity and social cohesion are a prominent example. Work is also ongoing to enhance our understanding concerning the roles for labour-market performance of entrepreneurship and technology – two of the main areas of policy recommendations in the OECD Jobs Study. Moreover, continued monitoring of the effectiveness of policies pursued in individual countries is also likely to generate further insights.

High and persistent unemployment can be cut on a durable basis by adopting the right policies.

Summing up, developments in recent years have provided evidence that high and persistent unemployment can be cut on a durable basis by adopting the right policies. There is no reason for countries to become resigned to high and persistent unemployment: a comprehensive approach along the lines of the Jobs Strategy holds out promise of improved labour market performance. General policy recommendations for implementing the Jobs Strategy have been available for some time, but so far they have been acted upon only partially and insufficiently in most countries. Country-specific recommendations in line with the Strategy, but taking into account the specificity of each country, have now been derived. What remains is to proceed with the practical implementation of these recommendations.

32) Funke (1996) presents evidence that an increase in unemployment increases the probability of devaluation for countries operating fixed exchange rate regimes.

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Does technical progress create unemployment?



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1. Introduction

Political opposition to technical change is not a new phenomenon; at the plant level, organised labour has often resisted implementation of new technologies, as is exemplified by the Luddites in the nineteenth century, the dockers' strikes against the use of containers in Britain in the early 1970s, or the pervasiveness of various union work rules that impose minimum unit labour requirements on production. At the national level, it is customary to hear complaints that new technologies increase unemployment as growth fails to absorb the larger output potential they generate. This feeling that technical progress destroys jobs because output cannot follow is closely connected, in its logic, with popular recipes against unemployment such as working time reduction or pre-retirement schemes. For example, the French Employment Minister, Martine Aubry, recently declared to the press that working time reduction should be large and quick enough in order to prevent productivity growth from offsetting its supposedly positive effects on employment.

On the other side of the debate, economists have always had a hard time finding rigorous foundations for these views, and tend to consider that technical progress is neutral, as far as unemployment is concerned, or that, if anything, it is favourable for employment.

This paper reviews some theoretical arguments and empirical evidence about the effect of technical change on unemployment.

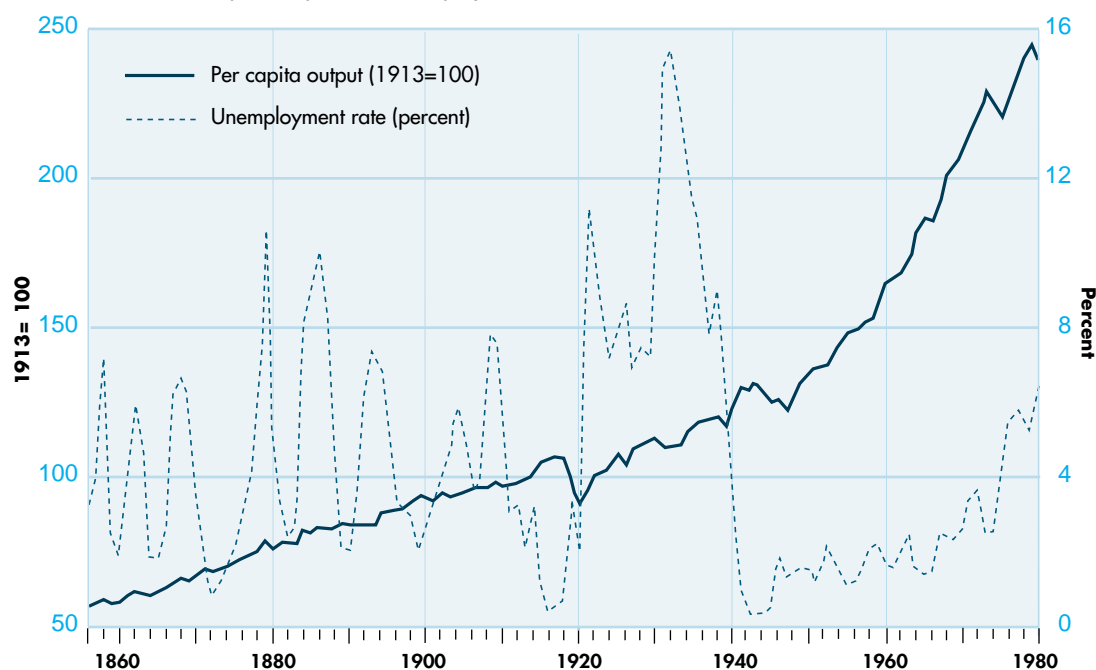
The broad conclusion is that overall, there is no reason to believe that technical progress is bad for employment, even though it is likely to destroy some jobs at the microeconomic level. But the gains in terms of welfare and the lack of a negative effect on overall employment should outweigh the costs of job losses in specific industries. Such job losses may be problematic in situations where the labour market does not function well, but then there would be resistance to *any* change that requires reallocation of labour, and the fundamental cause of unemployment is then a rigid labour market, not reallocative shocks.

The paper is organized as follows: The first three sections discuss the *macroeconomic* effect of technical change on employment. The last two consider the role of *asymmetric* technical progress, both across sectors and skill levels.

2. The long-run

One of the most striking stylised facts of the last two centuries is the tenfold increase in living standards that was made possible by continuing improvements in technology. If those who hold the view that technical progress increases unemployment were right, as an outcome of this process we would virtually all be unemployed by now. However, over the last two hundred years, unemployment exhibits large fluctuations, but no upward trend.

Figure 1. Per capita output and unemployment for the UK, 1856-1980



This pattern is illustrated by Figure 1 in the case of the United Kingdom. Between 1856 and 1980, unemployment exhibits fluctuations around a level roughly equal to four percent, while per capita output grows steadily. Over that period this corresponds to a fivefold increase in productivity.

Technical progress allows us to produce and to consume more output with the same employment level.

This evidence is consistent with the standard way macroeconomists think of technical progress. They treat it, in the long-run, as a multiplicative factor that allows us to produce and to consume more output with the same employment level. In general, it is assumed that market forces restore full employment in the long-run and that technical progress does not interact with them. It is possible to add equilibrium unemployment to growth models; equilibrium unemployment then results from frictions in the labour market that slow down the reallocation of labour and prevent wages to adjust downwards in the presence of excess supply of labour. In the most standard treatment of equilibrium unemployment the natural rate of unemployment is unaffected by technical change, because it symmetrically affects wage aspirations and productivity. Non-neutrality may be added but if anything that would lead to employment-enhancing effects of technical progress, as it would increase the value of working relative to not working.

It is true that the rise in living standards has been accompanied by a secular decline in hours worked per employee. But this is simply the result that part of the increase in living standards is consumed in the form of additional leisure time. It has nothing to do with unemployment rising or jobs being destroyed because there is "no demand". More generally, the issue of whether one should work less or more when there is technical change is distinct from the issue of unemployment. Unemployment (at least at the levels and duration that we experience in Europe) is a symptom that the labour market does not function well. Reducing the amount of work is the optimal response of an economy that values leisure to the increased potential output brought about by technical

progress (such increased potential output is signalled to private agents via an increase in wages, to which they react by reducing their labour supply).

Thus, there is no presumption, either theoretical or empirical, that the *level* of technical progress negatively affects employment.

3. The medium-run

While it is clear that in the long-run unemployment does not rise when there is technical progress, it is also true that even in relatively well functioning labour markets, it may take a decade or more for an imbalances to be eliminated. As an example, the drastic reforms that took place in the United Kingdom at the beginning of the 1980s only showed up as a persistent reduction in unemployment ten years later. Thus it is legitimate to consider whether technical change can lead to a transitory, but long, increase in unemployment. This brings up the question of whether there is an association between the *pace* of technical progress and the level of unemployment. According to this view, unemployment would rise when technical progress accelerates, but would be restored to its previous level once the level of technology has stabilised at a permanently higher level. A possible mechanism is the need to retrain workers to get them acquainted with new technologies.

Table 1. Stylised facts about G-7 economies

	Growth per capita, 1960-1975, in percent	Unemployment, 1960-1975, in percent	Growth in real output per employee, 1976-1995, in percent	Unemployment, 1976-1995, in percent
US	1.6	5.2	0.8	6.9
Germany	3.7	1.0	1.2	6.5
France	3.8	2.5	2.0	8.7
UK	2.4	2.1	2.0	8.0
Italy	4.9	5.4	2.4	10.0
Canada	2.0	5.4	1.1	9.3
Japan	7.2	1.3	2.4	2.4

Source: OECD Economic Outlook Statistical Database.

Again, the recent experience does not support this view. As we can see in Table 1, the increase in unemployment has coincided with a *fall* in the rate of productivity growth (the so-called productivity slowdown). Productivity slowdown is one of the puzzles that has kept many economists busy for a long time. While oil shocks could in principle explain it, their reversal in the 1980s has not brought productivity growth back to its pre-1975 level. Part of the productivity slowdown is also explained by the catch-up of Europe and Japan with the US. But that does not explain why productivity growth has fallen in the US itself.

In any case, this slowdown has coincided in timing with an increase in unemployment almost everywhere. This negative association between growth and unemployment is a robust empirical regularity, and it is consistent with the so-called "capitalisation effect". This effect comes from the fact that to the extent that hiring somebody is costly, it is similar to an investment decision. An expectation

of faster growth reduces the time needed to recover the hiring costs. That is, even if the hiring cost rises at the same rate as productivity, at any point in the future the revenues generated by a worker hired today are higher, relative to the hiring costs incurred. Consequently the incentives to post vacancies are greater, which lead to a reduction in equilibrium unemployment. That growth is not associated with job destruction is also confirmed by statistical analysis; for example, in the French case, Cohen *et al.* (1997) find that an acceleration in growth is accompanied by an increase in hirings and a *fall* in job separations.

If growth were more turbulent, it would be more destructive of jobs than it used to be. However, the economic environment is less volatile now than in the 1960s.

One could also argue that what matters is that the *nature* of growth has changed. According to this view, if growth were more "turbulent", it would be more destructive of jobs than it used to be. Again, this view is inconsistent with the empirical evidence. Surprising as it may seem, the economic environment faced by individual firms is less volatile now than in the 1960s. Measures of turnover, as well as measures of intersectoral labour reallocation, have fallen during the 1970s and 1980s. For example, in the United States, in 1971, 50 percent of workers lost their jobs, and 47 percent were hired; these figures were down to 41 percent and 39 percent in 1980 (see OECD, *Jobs Study*, 1994, part II, tables 6.1 and 6.2, pp. 64-65). The same picture is true for Europe. In France, the hiring rate dropped from 22 percent to 13 percent between 1971 and 1984, while the separation rate dropped from 19 percent to 14 percent. Looking at movements of labour between unemployment and employment confirms this view. Similarly, for the French economy, the pace of intersectoral reallocation of labour has fallen between 1965 and 1990 (see Saint-Paul, 1997).

4. Business cycle frequencies

What happens, next, when we look at the very short-run? That is, what is the *impact* of a productivity shock on output?

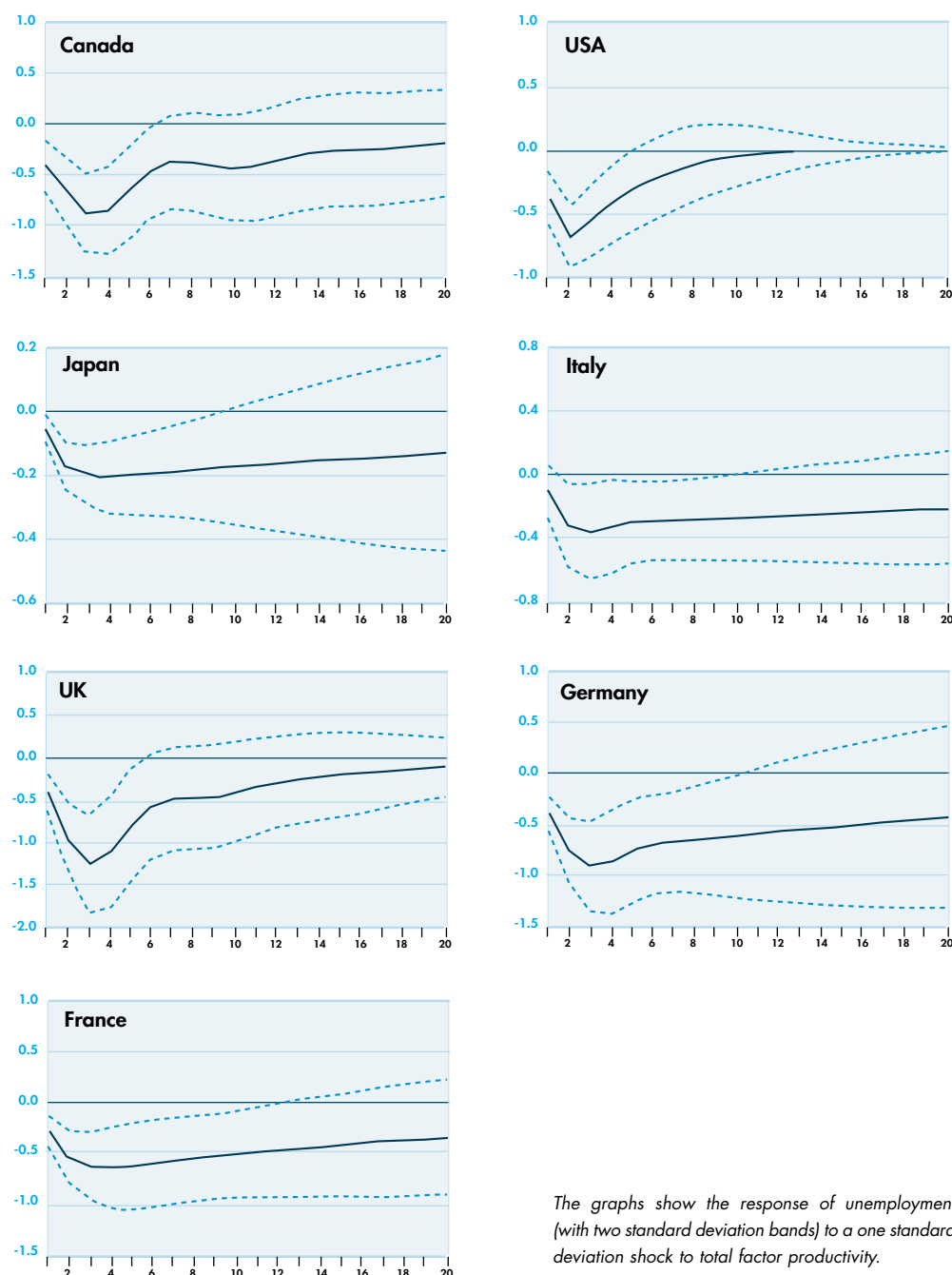
In principle, an increase in productivity should lead to the inverse of what is usually called "stagflation". Inflation should fall as more productive firms can grant their workers the same increase in nominal wages, while increasing their prices by less. Lower inflation in turn boosts aggregate demand by increasing the real value of nominal assets and of monetary holdings.

However, a positive impact effect might require an accommodative monetary policy if rigidities in nominal price setting lead to a fall in inflation that is lower than the increase in output. Therefore, an increase in technical progress can in principle lead to a recession if the two following ingredients are present: (i) inflation fails to fall because of nominal price rigidity, and (ii) the central bank fails to accommodate the increase in the demand for nominal money balances associated with the rise in output and the insufficient fall in prices.

We argue that it is unlikely that either condition is satisfied. Concerning the first condition, recent evidence on the behaviour of individual price setters suggests that as much as 70 percent of prices are changed every week (see Lach and Tsiddon, 1994), suggesting that there is very little nominal price rigidity (which is perfectly consistent with having a considerable degree of nominal wage rigidity; but what is needed for technical change to generate a recession is nominal *price* rigidity; nominal wage rigidity is not enough).

Concerning the second condition, given that the impact effect is downward pressure on inflation, there is no reason why a central bank that has inflation as its target should not provide the market with the extra cash balances it requires. Even a central bank that targets the nominal exchange rate should do that, as if anything the pressure would be for an appreciation of the nominal exchange rate. Thus, only a central bank with a very sub-optimal target, namely the growth in the total nominal money stock, not adjusted for real output, would potentially fail to accommodate.

Figure 2. Estimated dynamic response of unemployment to a technological shock for the G-7



The effects of technological shocks on unemployment remain very doubtful and have certainly not contributed at all to the increase in unemployment.

Figure 2 shows the estimated dynamic response of unemployment to a technological shock for the G-7 economies; as is clear the response is negative (1). An increase in productivity leads to a reduction in unemployment followed by a gradual return to its initial level (2). This return can be quite slow as in France or Germany where unemployment is still substantially lower than its equilibrium level after 20 years, or more rapid as in the US where the employment effect of the shock has vanished after ten years. There are other ways of estimating that response, and they sometimes lead to a negative impact effect; however, in those cases, the initial reduction in employment is usually quite short-lived and often statistically insignificant. Thus even if such an effect exists, which remains very doubtful, we should not worry about it and it has certainly not contributed at all to the increase in unemployment.

Another interesting aspect of Figure 2 is that unemployment jumps to a lower level, but reverts to its mean following a productivity shock much more rapidly in the US and the UK than in other countries. While this is subject to various interpretations, we interpret it as unemployment being less persistent in Anglo-Saxon countries. Such lower persistence comes from differences in labour market institutions. The cost of adjusting the labour force is lower in the US (and to a milder extent in the UK) because of less stringent job protection regulation. This makes employers less cautious when hiring and more drastic when firing, which explains both the larger size of the initial response and the more rapid decay thereafter. Lower long-term unemployment (associated with less generous unemployment benefits), and lower bargaining power of unions (which reduces the weight of the currently employed insiders in wage formation) also account for a less persistent behaviour of unemployment.

Another argument that makes a negative impact effect of increased productivity on employment highly implausible is the "sign-reversion test". If such an effect existed, then by the same token a *reduction* in productivity would *increase* employment. But the response to the oil shocks of the 1970s, which were very similar to a reduction in productivity, was a clear jump in unemployment.

5. Intersectoral reallocation

We hope that the reader is now convinced that as far as the *macroeconomic* performance of an economy is concerned, there is no reason whatsoever to fear that technical progress may increase unemployment. However, this does not imply that everybody will keep one's job when an innovation is made.

A firm in a given sector may discover that in order to absorb the extra output allowed by an increase in its productivity, it may have to lower its price to such an extent that its profit actually falls. In that case it will rather not increase its output by so much and shed labour instead. This will occur if the demand for its good is "inelastic". This low elasticity in turn comes from the fact that when faced with a decline in the price of the good, consumers prefer to reduce their spending on that good, which allows them to increase their consumption of *other* goods. In other words, it is because a good is *complementary* to other goods in consumption that an increased productivity in that good reduces employment.

1) Figure 2 was estimated using a vector autoregression for total factor productivity growth and unemployment. These series were computed using annual data from the OECD Economic Outlook database. The identifying assumption is that a demand shock has no impact on total factor productivity.

2) By construction, the productivity shock cannot have a permanent effect on unemployment, which is modelled as a stationary variable which eventually reverts to its mean, albeit slowly.

This phenomenon may only prevail if technical progress is *asymmetric*, that is, if it hits some sectors more than others. If productivity were to increase by the same percentage in all sectors, the relative price of a good vis-à-vis any other good would remain unaffected, so that consumers would uniformly increase their consumption of all goods. But, when goods are complements in consumption and technical progress is larger in one sector than in others, the relative price of the good that is experiencing technological change falls to such an extent that labour is reallocated from that sector to other sectors.

Thus, technical progress destroys jobs in the sector where it occurs and creates jobs elsewhere. On net, employment need not fall, but at the microeconomic level displaced workers will feel that they are indeed the victims of technical progress, since employment reallocation is needed *away* from the sector where productivity has increased.

In principle, it is difficult for these displaced workers to end up actually worse-off than if technical progress had not taken place. Once reallocation has taken place wages have increased economy-wide, so that these workers end up with a better pay than they previously had. This phenomenon captures part of what has been going on. In the 1960s and early 1970s, massive movements toward the service sector were driven by large productivity gains in manufacturing, and many clerical workers ended up earning more than they previously did working in factories. However, labour market rigidities may make this reallocation process painful and lead to opposition to technical change in the sector where it takes place. Regulation may make mobility more costly, increase the duration of unemployment before one finds a new job, etc. Another market imperfection that may generate losers from technical change is the well documented existence of *industry rents*. Some sectors pay above market clearing wages because they share monopoly power with their workers or because it is more important for them to generate appropriate incentives and good worker morale. If these sectors experience technical progress their workers may experience wage losses as they lose their rents when moving to other sectors. That is, technical progress may in principle relocate labour from "good jobs at good wages" to low-pay jobs. While this seems to capture part of the recent experience, as high paying manufacturing jobs seem to have disappeared at the benefit of low-pay jobs in sectors such as retail trade (the so-called "McJobs"), this popular view is not supported by the statistical evidence. It has been shown that changes in relative demand over the last three decades have tended to favour high paying jobs at the expense of low paying jobs (see Juhn *et al.*, 1993).

Technical progress destroys jobs in the sector where it occurs and creates jobs elsewhere. In principle, it is difficult for displaced workers to end up worse off than if technical progress had not taken place.

The asymmetry of the impact of technical progress on employment is documented in Table 2 (3). The second and third columns report the estimated response of employment, both in the short-run and in the long-run, to an increase in productivity specific to a sector. The fourth and fifth columns consider a shock specific to the rest of the economy, but that does not affect the sector. The last column reports the impact of a shock that increases productivity in all sectors by the same percentage. The response is in accordance with the arguments presented above, with the notable exception of the United Kingdom. A productivity shock in a given sector will in most countries reduce employment in that sector, both at the date it occurs and in the long-run. By contrast, a productivity shock that affects all sectors simultaneously has, if anything, a positive impact on employment.

3) A vector autoregression involving total factor productivity growth and employment growth was estimated over a panel of 20 sectors using the OECD Intersectoral Data Base. The identification assumption is that demand shocks have no long-run effect on the level of total factor productivity.

Table 2. Employment effects of an innovation that increases total factor productivity by one percent

Country	Sector-specific productivity shock		Productivity shock in the rest of the economy		Symmetric productivity shock
	Short-run	Long-run	Short-run	Long-run	Long-run
US	-0.23	-0.34	0.73	0.19	0.00
Canada	-0.51	-0.44	0.45	0.25	0.12
Germany	-0.19	-0.26	0.35	0.52	0.32
France	-0.08	-0.09	0.51	0.8	0.73
UK	0.08	0.32	-0.12	-0.26	0.04
Italy	-0.17	-0.17	0.34	0.93	0.82
Japan	-0.18	-0.13	0.09	0.15	0.08

Source: Cohen and Saint-Paul (1998).

6. Skill-biased technical progress

There is also an ongoing debate on whether technical progress is biased in the sense that it increases the demand for skills at the expense of unskilled workers. This debate is based on the observation that in the United States inequality has increased since the seventies. While average wages are stagnating, the wages of the poorest have fallen by almost 30 percent, while the top decile has gained around 20 percent.

Economists who have studied this phenomenon have eliminated explanations based on changes in the structure of labour supply, as well as those based on foreign competition from low-wage countries (4). They have concluded that such developments are due to technical change that increases the demand for skilled workers while reducing the demand for unskilled workers, such as new information technologies that are complements for skilled workers but substitute for unskilled workers.

Such an increase in inequality has been observed in the United Kingdom too, but much less in other European countries. For example, in France, the relative wage of university graduates over other workers fell by ten percent over the eighties, while it rose by 20 percent in the United States over the same period. One may, however, speculate that wage rigidity has prevented wage dispersion from rising, and that the same trend in the demand for skills has generated higher unemployment at the bottom of the income distribution in Europe, rather than lower wages. This very plausible hypothesis does not fare too well with the data. While it is true that the relative unemployment rate of the least skilled has risen in France, it has also risen in the United States by a comparable factor. Furthermore, the unemployment rate of the skilled has also risen in France, whereas it should have fallen if the hypothesis of skilled bias technical progress were correct.

This hypothesis therefore remains very much a residual one, that is an explanation that has been adopted after elimination of other explanations. There is still a shortage of direct evidence in its favour.

4) See, for example, Levy and Murnane (1992).

7. Conclusion

The broad conclusion is that technical progress reduces rather than increases unemployment.

We have reviewed the empirical evidence on the employment effect of technical change. The broad conclusion is that if anything, technical progress reduces rather than increases unemployment. As far as macroeconomic policy is concerned, we have seen that its role should be to ensure that nominal aggregate demand rises in line with productivity growth. This should be enough to avoid any deflationary impact of technical progress. As far as sectoral policy is concerned, we have seen that technical progress is likely to destroy jobs in the sectors where its pace is most rapid. Depending on the functioning of the labour market, specific policies may be required to help displaced workers find jobs in new industries, although a thorough reform of labour market institutions would greatly ease these problems.

It is often argued, for example, that training policy is an appropriate cure for unemployment. This is based on the simple observation that unemployment is higher for unskilled workers than for skilled workers. This simple recipe too often ignores the cost of training and assumes that the government knows better than the market which training should be provided.

While it is reasonable to think that more education would reduce unemployment, we believe that unemployment should be mostly considered as a *symptom* of an ill-functioning labour market, and that training policy will not improve the functioning of the labour market. The aim of training policy is not to cure unemployment but to increase the productivity of the workforce, and it should be evaluated on the basis of its social costs and benefits. These may well be affected by the existence of unemployment, but this is not to say that training is a panacea against an ill-functioning labour market.

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The consequences of EU enlargement for Central and Eastern European labour markets



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1. Introduction

Two or three decades from now, economic historians will note that a hallmark of successful transformation in Central and Eastern Europe (CEE) was the speed in which it became a non-issue for the body politic. A corollary of this is the expectation that, as formerly centrally planned economies irrevocably transfer responsibility for resource allocation to markets, they will increasingly resemble and behave little differently from other less-developed OECD countries or advanced developing economies. The prospect of accession to the European Union has heightened an already exaggerated optimism that this transition will take little or no time at all. Since 1993, GDP in Poland has grown by more than 30 percent; in the Czech Republic by eleven percent; in Hungary by nine percent; and in Slovakia by more than 20 percent. But there is much work left to be done; these countries remain at per capita income levels well below those of the poorest EU members (1).

The principle that the same rules should apply to EU newcomers from the East is especially applicable to labour markets. It is generally observed that mechanisms which reallocate human resources in advanced economies have lost their cutting edge in Europe. While overall job turnover - measured as gross job creation and destruction - is comparable, worker turnover in Europe, especially employer initiated turnover, is dramatically lower (2). The attenuation of the churning or sifting function of labour markets has contributed to a low employment equilibrium in which outside hiring by firms has become an unusual, almost last-resort measure. As it stands, a large fraction of the CEE labour force has been reallocated, but more is needed to move skills and talents across alternative uses. Insofar as the CEE countries jump into the EU bed, to what extent are they giving up flexible labour markets - joining in effect the continental European camp - at a time when they might still need them?

Institutions of the "continental" sort will leave their traces in indicators such as the employment ratio, the participation rate, or labour force turnover. First, for most CEE countries, joining the European Union will imply additional structural shocks to agriculture, industry and services, after already been subject to the "transformation shock." Second and more significantly, EU membership may affect the labour markets' ability to

This paper is based in part on Chapter 4 of the European Policy Initiative Report No. 4, "Mediating the Transition: The Labour Market in Central and Eastern Europe", written jointly with Tito Boeri (Universita Bocconi) and Janos Köllö (Hungarian Academy of Sciences). See Boeri et al. (1998).

1) In 1995, the Czech Republic and Poland possessed a per capita GDP of USD 4,420 and USD 3,057, respectively, versus USD 22,631 for the EU-15 and USD 20,315 for OECD-Europe. When these numbers are corrected for purchasing power, the comparison remains striking; while the Czech Republic's per capita GNP is roughly 40 percent that of Germany's, Slovakia is only one-third, while Poland is 27 percent and Bulgaria is 21 percent! (Source: World Bank Atlas, 1996).

2) See Burda and Wyplosz (1994) and Boeri (1996).

cope with future shocks on the horizon. Could joining the EU lead to higher unemployment, if only by virtue of a much slower adjustment to the new steady state?

Boeri *et al.* (1998) provides a recent comprehensive overview of the progress made in transforming labour markets in CEE countries, including a discussion of what can be expected in the future. In this paper I have chosen to stress this latter issue, and in particular some of the risks and benefits associated with EU enlargement for CEE countries. Thus, despite Western Europe's fascination with the impact of the East on their own labour markets, I plan to spend more time asking - in the spirit of J.F. Kennedy, perhaps - not what can the CEE countries do for us, but what can or will we Western Europeans do for them?

The paper is organised as follows. Section 2 describes the state of affairs in the CEE economies and concludes that the transformation of labour markets, while well underway, is far from complete. Section 3 describes some of the labour market implications of EU entry, while Section 4 presents empirical evidence suggesting that EU entry may contribute to higher levels and persistence of unemployment rates. Section 5 concludes.

2. The current situation, end-1996: Transformation's scars on CEE labour markets

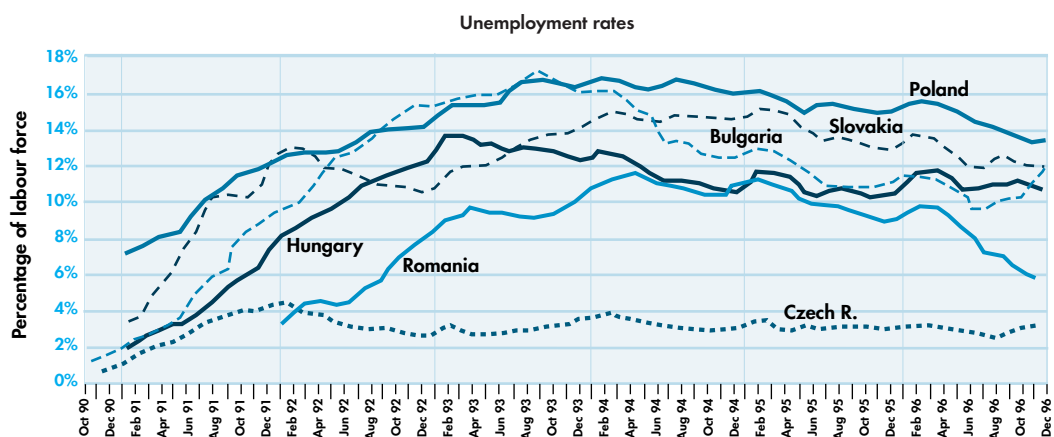
2.1 Growth returns but unemployment is still high

It is well-known that the CEE countries took an economic nose dive in the course of transformation to a decentralised, market-based economy. The liberalisation of prices led to a price shock, but more importantly, output dropped dramatically in the first few two to three years, on the order of 20 to 30 percent of GDP and more if industrial output is considered. Explanations for the output shock have abounded: excessively tight fiscal and monetary policy, the collapse of COMECON trading arrangements, the destruction of network capital associated with the planned economy, lack of managerial incentives for restructuring, and so on. What is less well-known is that the CEE countries have made a dramatic recovery of economic output in the meantime.

Unemployment rose in less than three years from virtually zero in 1990 to double digit, and decidedly West European levels.

As Figure 1 shows, unemployment rose in less than three years from virtually zero in 1990 to double-digit, and decidedly West European levels. The interesting fact is that "Okun's law" seems to work, albeit in a limited fashion. Large one-off changes in labour force participation have wrecked havoc with the figures, but more so with the link between output and employment than between output and unemployment. In 1997 the long awaited declines in unemployment rates finally occurred in Poland (10.6 percent in October 1997 compared with 13.5 percent a year ago) and Hungary (10.5 percent in October 1997 compared with 11.1 percent a year ago). In contrast, joblessness in the Czech Republic stood at five percent, up from 3.3 percent in the previous year. Romania has also been a surprise to many, showing surprising resilience despite large political and economic setbacks. The curious pattern in Bulgaria can be attributed to a massive decline in participation coupled with a return to "subsistence" agriculture and an expansion of the underground economy.

Figure 1. Unemployment in the CEE economies, 1990-1996



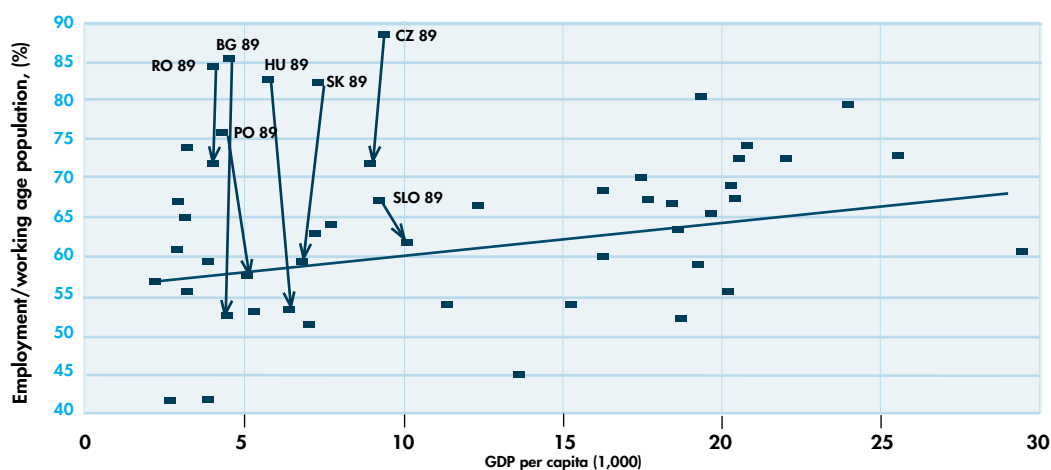
Source: Boeri *et al.* (1998)

2.2 Participation is down but not out

One of the most remarkable facts about labour markets under communism was the high rate of labour force participation by both men and women. Partly due to communist ideology, partly due to necessity, everyone worked, often long beyond established retirement ages. Explicit subsidies made this ideal affordable for the average family. The adoption of capitalist labour markets radically changed attitudes towards the benefits and costs of labour force participation, as well as the opportunities workers faced in the market. The socialist ideal of work for all at all costs was not only economically inefficient and unsustainable, but also conflicted with preferences for leisure, family, household production (especially the raising of children), as well as social alternatives to work. As Figure 2 shows, countries of Central and Eastern Europe have experienced dramatic declines in labour force participation rates in the years following transformation. Box 1 explains some of the data issues in arriving at employment figures.

Central and Eastern European countries have experienced dramatic declines in labour force participation rates.

Figure 2. Employment-population ratios (a) and GDP per capita (b) in international comparison, 1994



Notes: (a) Employment over population aged 15-64. (b) GDP per capita in USD at PPP. Regression line: $y = 55.8 + 0.52x$, $R^2=0.19$.

Source: Boeri *et al.* (1998)

Seven years afterwards, labour participation rates in the CEE countries remain above those in OECD economies of similar levels of development or in advanced developing economies. When compared with EU neighbours, they are much more comparable, ranking roughly at the average for wealthier Central European countries. For males, participation declined below West European countries, while female participation - even after a sharp drop - remains considerably higher. Employment rates in CEE countries are now roughly comparable with OECD countries, so high unemployment rates can be attributed to above-average labour force participation, to a large extent (see Table 1).

Table 1. Labor force participation (percentage of population of working age), 1996 Q3

CEE Countries	Total	Male	Female	OECD Comparators	Total	Male	Female
Bulgaria	71.3	72.7	69.7	Belgium (1995)	65.0	73.1	56.8
Czech Republic	76.8	82.7	70.2	France (1995)	67.3	74.8	60.0
Hungary	65.6	70.8	60.0	Germany (1995)	71.0	80.3	61.3
Poland	69.5	73.8	64.9	Portugal (1995)	70.8	80.2	61.9
Romania	75.8	80.7	70.5	Sweden (1995)	77.0	79.0	74.9
Slovakia	76.2	80.9	71.2	Turkey (1995)	58.4	81.2	34.3
Slovenia	68.1	70.7	65.3	OECD Total (1995)	71.4	83.5	59.2

Source: Boeri *et al.* (1998).

2.3 The transformation was and remains painful

The transformation has been a painful process. An unprecedented rearrangement of economic activity has not only shifted individuals out of work and the workplace for good, but has also reallocated resources across uses. Table 2 displays the extent of these relative shifts since 1989. In almost all countries, a dramatic reduction in industrial employment could be observed; only in Hungary, where services had already assumed an important role at the outset, the shift was rather modest. In some countries, notably Poland and Hungary, there has been a marked shift out of agriculture as well; in Bulgaria and Romania, agricultural activity has increased in both relative and absolute terms. In all countries the relative and absolute size of the service sector has increased, in some dramatically so.

The transformation has had a significant regional element, leaving the landscape a patchwork of varying unemployment rates. Observers interpret this as reflecting a large deficit in labour mobility and in travel-related infrastructure (roads, highways, trains, buses etc.), as well as the nature of social insurance and the existence of family networks.

3. The "Return to Europe" and the choice of labour market institutions

3.1 Efficiency versus solidarity

Jeffrey Sachs has stressed "the return to Europe" and the desire by CEE economies to regain their lost status in the process of European integration as soon as possible (3). This has become evident by their rush into EU association agreements as well as accelerated negotiations for outright entry,

3) See Sachs (1993).

Table 2. Changing structure of output and employment in CEE economies, 1989-1995

... originating in	Percentage point change in share of:		
	GDP	Employment	
Agriculture	Bulgaria	+2.0	+3.9
	Czech Republic	-0.7	-5.1
	Hungary	-3.7	-9.8
	Poland	-5.6	-7.0
	Romania	+6.2	+12.4
	Slovakia	+0.1	-4.6
	Slovenia	+0.2	na
Industry	Bulgaria	-28.0	-8.0
	Czech Republic	-14.9	-4.0
	Hungary	-2.7	-9.6
	Poland	-11.9	-3.4
	Romania	-20.5	-14.1
	Slovakia	-27.1	-7.4
	Slovenia	-9.2	na
Services	Bulgaria	+26.0	+4.0
	Czech Republic	+14.2	+9.1
	Hungary	+ 6.4	+22.4
	Poland	+17.5	+10.4
	Romania	+14.3	+1.7
	Slovakia	+27.0	+19.2
	Slovenia	+9.1	na

Source: Boeri *et al.* (1998).

The "return to Europe" has the connotation of a "social market economy" which strives to avoid excessive inequality by state-managed solidarity.

despite enormous problems associated with fast track admission (4). The "return to Europe" also has another connotation, namely the implementation of a "social market economy" which strives to avoid excessive inequality by state-managed solidarity with the less fortunate. In this context, it was only natural that strains placed on individuals during the course of the transformation would give rise to political demands for social insurance. In most CEE countries, programs of unemployment compensation, early retirement, social assistance, and severance pay were implemented soon after governments committed to market transformation, even before its most difficult consequences had occurred, and often without much consideration of potential future costs.

Interventions for reasons of equity and solidarity often collide, however, with efficiency-related objectives of a successful transition. One of the greatest challenges in the transformation has been to develop a system of social insurance that guarantees the basic needs of the population, yet at the same time does not impede labour mobility, a central element of transition. The transformation necessitates redeployment of talents and skills, and is often associated with human capital loss and reduction of expected lifetime income. Most attempts to protect unfortunate workers do so at the cost of postponing the necessary structural changes. This mobility is not restricted to the expansion of the service sector and shrinking of bloated manufacturing; within-industry mobility is also needed to allocate labour between shrinking and failing to new and growing enterprises, which are often in the same general area of activity. By reducing the cost of not acting, the social safety net can increase the option value of waiting, and thereby reduce the implicit cost of immobility.

4) See François *et al.* (1996).

Box 1. Data issues

Some evidence on incentives to remain in the labour force despite unfavourable job market prospects, as well as the nature of unemployment itself, is available from comparisons of survey and registry unemployment. With the support of international organisations, labour force surveys using International Labour Office standards are now available in most CEE economies, and are now widely used for assessing joblessness there. It is agreed among labour economists that the labour force survey (LFS) provides the closest approximation to effective labour supply, as it measures the self-reported activity of employable individuals who are fit and available for work. Using this metric, worker discouragement reflects an assessment that work at current wages and job availability is not an economically viable strategy. Registry unemployment, in contrast, is based on actual count data generated by local labour offices and is related to advantages flowing from this status, including access to job information, counselling, and training programs; more importantly, registration is often a precondition for unemployment benefits, health insurance, housing subsidies, etc. The relationship of registry to survey unemployment can be viewed as an indicator of these net incentives. The Table shows that this ratio deviates widely from country to country. In countries where it is significantly less than one, job information services and social benefits linked to employment offices are probably unattractive. Values in excess of unity suggest either that many registered have ceased to search, or that continued registration is a requirement for other benefits administered by the employment offices. It may be important to ask whether the latter indicates an inefficient use of employment agency resources.

Table. Survey versus registry unemployment and benefit receipt in 1995 (in thousands)

Country	Registry count	Survey estimate	As a fraction of survey unemployment:		
			Registry unemployment	Unemployment benefit recipients	Registered unemployment social assistance recipients
Czech Republic	155.0	189.0	0.82	0.12	0.27
Hungary	507.7	416.5	1.22	0.38	0.47
Poland	2,694.6	2,276.8	1.18	0.54	na
Romania	1,111.3	967.9	1.15	0.21	0.77
Slovakia	348.2	324.5	1.07	0.27	0.49
Slovenia	121.5	70.0	1.74	0.40	0.08

Source: Boeri *et al.* (1998).

3.2 Taxation and regulation of the labour market (and the underground economy)

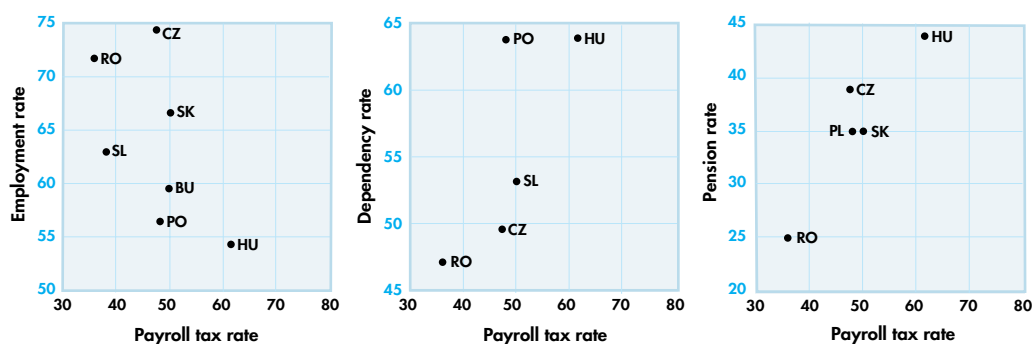
The abdication of central planning meant surrendering large parts of the economy to private owners and managers. Consequently, many government revenue sources disappeared, leading to increases in taxation of wages, either directly or via "contributions" to various social funds. These taxes and contributions were easier to collect than VAT or income taxes, so governments became increasingly dependent on their existence. So as the cost of passive measures (primarily unemployment insurance and assistance) soared and tax collections and contributions declined, labour taxes were increased, raising labour costs, dampening labour demand and making the system increasingly unsustainable (5).

Although the literature is agnostic about the role of labour taxation and employment in the OECD (see Nickell and Bell, 1997, or Layard *et al.*, 1991), the first panel of Figure 3 shows a clear negative association in a cross-section of CEE countries between statutory payroll tax rates on the one hand, and employment ratios on the other. The second and third panels show that payroll tax rates are positively correlated with both the incidence of dependent individuals (unemployed plus those out of the labour force) as well as pensioners. It is difficult not to infer the existence of an unemployment/fiscal trap. Under such conditions, a given regime could be consistent with an equilibrium of high job creation, high employment rates, low taxes and low dependency ratios; or with an equilibrium of low employment, with high dependency ratios and high labour taxes necessary to finance them.

The early transitional experiences of Hungary and Poland confirm that a "vicious circle" of labour taxation and job destruction can arise.

The elasticity of labour demand, while thought to be relatively low in the short run with given capital stock, is effectively increased by the emergence of the underground economy. It is commonplace for small and medium-sized firms to take on a core of officially reported workers and use a second group "off the books" to reduce tax and social charge liabilities, as well as to respond more flexibly to demand fluctuations. A number of studies, many originating in the CEE countries, confirm a large role for the underground economy (6).

Figure 3. Payroll taxes, employment rates and contribution rates (in percent)



Source: Boeri *et al.* (1998).

5) A widely-cited case is Hungary. From 1991 to 1993, Hungarian social security contributions rose from 42.3 percent of wages and salaries to 50.2 percent. This was a direct result of increasing social insurance burdens and increases in the social security tax contribution rates. See EBRD (1994, 1995, 1996).

6) See Lacko (1995), who estimates the sizes of the underground economies of Poland, Hungary and the Czech Republic as well as more advanced OECD economies on the basis of household electricity use. For a recent review, see EBRD (1995).

There is a danger that social systems could kill the goose even before the golden egg has been laid. The early transitional experiences of Hungary and Poland confirm that a "vicious circle" of labour taxation and job destruction can arise, in which initially inexpensive but potentially costly programs put in place at the outset of the transition became problematic when unemployment rose rapidly.

3.3 Active labour market policies

Another sign that the CEE economies have adopted the "return to Europe" is their aggressive implementation of active labour market policies (ALMPs), which are intended to help reintegrate long-term unemployed. ALMPs are usually discussed in terms of three types (7). *Job intermediation* measures aim at improving information about vacancy availability, employee qualifications currently in demand, and future prospects; they provide guidance to the unemployed and monitor their search behaviour. *Labour market training measures* are intended to improve worker skills, and are justified to the extent that workers lack access to capital markets to finance human capital investments themselves. *Job creation* schemes - either direct make-work or employment subsidies - usually comprise the largest component of ALMPs and are designed to increase the demand for labour, particularly for those individuals in long term unemployment. Such interventions make sense if workers are "scarred" by unemployment (loss of skills or industry specific human capital) or discriminated against ("ranked" by duration of their current spell of joblessness). Another interpretation of job creation schemes is a direct test of the unemployed's willingness to work, as they are usually used to generate offers for long-term unemployed (Jackman, 1995).

During transformation when firms are shedding their least productive employees, being unemployed is a particularly negative signal in the labour market.

In a transformation context in which all firms are shedding excess labour and selecting their least desirable productive employees for culling, unemployment is a particularly negative signal in the labour market. At the same time it is a noisy signal, so a strategy of preventing long-term unemployment could presumably be justified. In general, targeted job creation for problem groups can increase outflows out of unemployment and reduce the power of insiders hindering downward adjustment of real wages. While active labour market policy commands considerable political support among both the employed and the unemployed, a strong case can be made that ALMPs have *negative* effects on the functioning of labour markets (8). Most importantly, dead-weight loss and substitution effects can be large, and under such conditions, they are a questionable use of scarce public resources.

In recent years, this scepticism concerning the efficacy of active labour market policies has mounted. Most European commentary can be traced to the disastrous response of Swedish and Finnish labour markets to shocks in the early 1990s. This stands in stark contrast to the 1970s and 1980s, when the outstanding labour market performance of the Nordic economies was linked to high spending on ALMPs. In the aftermath of the serious recessions of the early 1990s, both countries now have open unemployment several times higher than levels in previous decades which shows

7) See Calmfors (1994).

8) The most important negative effects cited by Calmfors (1994) are (i) reduction in search intensity of program participants; (ii) a labelling or lock-in effect which stigmatises participants (see Burtless, 1985); (iii) dead-weight loss effects (some of those receiving subsidies would have found a job anyway); (iv) substitution effects of the favoured at the expense of others (naturally, what one would hope for!) (v) fiscal displacement effects (local governments undertake projects that would have occurred anyway), and (vi) "crowding out" effects in local labour markets, in which wages rise due to labour market tightness, leading to unemployment elsewhere.

no sign of returning to previous low levels. That labour market policies have done nothing to stem this tide has cast doubt on their ability to cope with stressful conditions (9).

The Czech Republic now appears in line to provide confirmation of this hypothesis. The aftermath of the currency crisis in the spring of 1997 has been a slowdown in industrial activity. Until then, the Czech Republic was the positive outlier in the labour market experience of the transition economies. With an unemployment rate of under four percent, it was the envy of the OECD as well as the transforming economies. It was tempting to link the extraordinary success of the Czech Republic to its use of ALMPs, and a number of successful aspects of Czech active labour market policy have been isolated by researchers (10).

While a judgement at this stage may still be premature, evidence is mounting that other circumstances peculiar to the Czech Republic may have been responsible for the "unemployment miracle" (OECD, 1995). These include favourable initial conditions with respect to industrial specialisation, a well-educated labour force, a large potential for service employment (tourism especially), a tradition of entrepreneurship, a small agricultural sector, and proximity to high-wage Germany with its demand for low wage labour and low-cost production sites. Less optimistic observers have criticised the slow restructuring pace in privatised state enterprises as a sign that the storms lurk on the horizon; recent bank failures and growing internal and external macroeconomic imbalances certainly do not belie this impression.

The extensive use of active labour market policies can be interpreted as accepting some inefficiency as the price of "churning up" stagnant pools of unemployed.

In fact, econometric evidence adduced by Burda and Lubyova (1995) conveyed the impression that ALMPs alone cannot explain the difference between Czech and the Slovak unemployment rates, though other evidence does point to a significant, albeit small, effect of ALMPs on flows from unemployment to jobs in the CEE economies (11).

Viewed in this light, the extensive use of ALMPs to increase turnover can be interpreted as accepting some inefficiency (in the form of displacement effects) as the price of "churning up" stagnant pools of unemployed. However, the recent experience in some Nordic economies suggests that the resulting supervision of the unemployed can be an Achilles heel in the face of large negative macroeconomic shocks.

3.4 Continental labour market regulations

An important component of the "return to Europe" was the adoption by CEE countries of Western European style labour market regulation and the rejection of Anglo-Saxon "hire at will" industrial relations. As an example, the annex provides an overview of severance regulations currently in force. While not as strictly enforced as in Western Europe, these laws have the general flavour of

9) For a discussion of the early apparent successes of active labour market policies in the Nordic countries see Jackman et al. (1990); for a critical discussion see Calmfors and Nymoer (1990).

10) See OECD (1995).

11) See, for example, OECD (1995), Munich et al. (1994), and Boeri and Burda (1996). Recent evidence relating to experiences of other transforming economies make it clear that conditioning on the country is important for predicting success and may cast doubt on earlier optimism. In particular, the country understudy seems to have a systematic effect on the findings. In Poland, the evidence is almost uniformly negative (Lehmann, 1995, Kwiatkowski, 1996, and Puhani and Steiner, 1996) which is often rationalised by poor targeting of programs (Puhani and Steiner, 1996).

continental severance rules. As will be shown below, the accession of these countries to the European Union is likely to mean that these laws will be enforced more rigorously or perhaps even tightened in the future.

It is useful to distinguish between severance benefits paid by the employer directly to the employee, and severance costs imposed from the outside on firms for dismissals (formal approval from ministries, adjudication procedures, costs related to "social plan" regulations, the need for specialised legal staff, etc.). In the former case, wage adjustments or side payments - as long as they are feasible - can generally offset the economic effects of mandated severance bonuses. In the latter case, however, severance regulation acts like a tax on job creation, and creates a wedge between the wage and the (marginal) productivity of workers which accrues to third parties or is pure loss (12). Despite rather compelling evidence from employers' surveys (e.g. Emerson, 1986), there is little academic agreement that severance regulation adversely affects employment. It is nonetheless important to stress one prominent effect seldom considered in the context of the CEE countries and systemic transformation: the impact of such regulations on small firms and new business formation. In a situation of systemic structural change, such regulations might have an important effect on the emergence of new firms (Hopenhayn and Rogerson, 1993). This is because firm formation and dissolution is not only a precondition for production, but serves the important purpose of processing information, which is still scarce in these countries. Matching of resources, capital, and talents inherently entails a certain amount of experimentation. Concretely, the creation of firms is a highly risky undertaking, many of which do not succeed (13). Imposing red tape costs can be equated to a direct tax on this activity, which curtails (gross) employment growth at this level.

Strict enforcement (of severance rules) will either push small enterprises out of business or into the underground economy.

It follows that the enforcement of severance rules will either push small enterprises out of business or into the underground economy with the consequent impact on tax collection and the aggravation of the fiscal trap discussed above. By this logic it would seem important to offer generous exemptions for small firms from these rules, and that "small" should be liberally defined. This is especially true in light of the high fixed cost of compliance, for which a separate department and personnel is often required. In fact, the present regime has achieved de facto precisely this outcome; only large state enterprises have been subject to such rules, with smaller and foreign firms evading them in one way or another.

4. Accession to the European Union and implications for labour market policy in CEE

Despite current preoccupation with the single currency project, recent EU pronouncements have only strengthened accession aspirations of the first wave candidates (Czech Republic, Hungary, Poland, Slovenia and Estonia) before 2005. At first sight, admission to the EU seems to have few official implications with respect to labour markets and labour market policy, besides the direct impact of trade creation and diversion as these countries are more intensively integrated into the EU pattern of specialisation.

12) See, for example, Lazear (1990) or Burda (1992).

13) It is for this reason that even in advanced, developed western economies the amount of churning - that is, the excess of gross labour and job turnover over net changes, or even the excess of labour turnover over job turnover - is significant. See Burgess et al. (1995).

Raising wages and introducing more regulations will vitiate the attractiveness of Central and Eastern Europe for direct investment.

One important quasi-legislative document with implications for the CEE is the Social Charter of the European Union (ESC), the provisions of which enumerate a number of rights of workers and responsibilities of employers.

A benign interpretation of the ESC is an expression of "European" concern for solidarity and an effort to enshrine this idea in a common doctrine, which is especially valid with respect to newcomers to the club. The "return to Europe" necessitates, in this view, a common stance on what constitutes "European" labour market and social policy. The ESC is not a precondition for accession to the European Union, although it is difficult to believe that ratification is irrelevant. The ESC embodies a number of provisions which, taken individually and legalistically, are not specific enough to cause alarm; yet in their entirety they commit member countries to provide minimal work conditions. Since its original enacting, it has been accepted with little derogation by all countries except the UK, and accession implies an expectation of implementation of the terms of this agreement.

A second, less favourable interpretation of the ESC is an attempt to preclude "wage and social dumping," meaning preventing some EU member countries who, because of low labour costs and lower standards of living, offer a cost competitive production environment. This interpretation would imply that joining the EU implies loss of export competitiveness, and of a chance to develop and raise standards of living rapidly.

It is significant that most of the provisions are currently hardly enforced in the CEE economies. Cynically, because the newcomers produce at significantly lower labour costs, it might be in the interests of other EU countries to adopt measures which inhibit direct wage competition with existing EU members. Specifically, raising wages, increasing the cost of the hiring decision, and introducing more regulations and standards will vitiate the attractiveness of Central and Eastern Europe for direct investment as well as diminish its ability to compete in the internal market.

I see a number of potential mechanisms at work here. First, the enforcement of the Social Charter will certainly take on a less elastic quality as accession draws near. For example, the European Commission has recently found new energy in extending social Europe (14). Second, another problem is the underground economy, which has assumed mammoth proportions in these countries. Insistence on tracking down lost VAT income that this forgotten segment of the economy brings in will be equivalent to increasing its production costs. Finally as foreign firms invest increasingly larger stakes in these countries they will come under pressure to adhere to the same rules at home, especially as labour unions begin to break out of their national boundaries.

In any case, EU accession could have a deleterious impact on labour market performance. To examine this issue in a more quantitative fashion, Boeri *et al.* (1998) studied the behaviour of unemployment rates and employment growth for newcomer EU-members (those joining after 1970), and it is these results that I would like to summarise here. The behaviour of these variables were studied around the dates of (i) first application to the EU, and (ii) EU accession.

14) According to the *Financial Times* of December 16, 1997, the European Commission will launch a number of proposals in March 1998 to extend the 1993 law on working hours, rest, and paid holidays to previously exempted workers. In addition, directives have extended holidays, pension rights and dismissal rights to a number of previously exempted industries. Ostensibly, these measures are designed to counter what Social Affairs Commissioner Flynn considers a trend towards excessive exemptions.

EU accession could have a deleterious impact on labour market performance.

Some elaboration on the analysis is appropriate. Because candidate countries usually have to "get their house in order" in order to qualify to join, it is important to distinguish between accession (formal membership) and first application (the lodging of the formal petition for membership). Both dates of application preceding accession as well as accession itself were taken as indicators of regime change and as benchmarks for analysing labour market performance. The time between application and entry into the EU is variable, ranging from 33 months (Finland) to almost nine years (Portugal); this turns out to provide useful variation in the data for econometric estimation.

In a first pass at the data, I present the average behaviour of unemployment rates and employment growth around dates of first application and EU entry. In order to control for business cycle factors, a cyclical component was removed from these data using conventional regression methods (15). The unweighted average of the results centred around application and accession dates can be seen in the panels of Figure 4. The evidence does suggest that countries experience the strongest increases in structural or equilibrium unemployment upon application, and that this rise continues after accession. The most likely explanation is the structural change that joining brings, possibly also combined

Box 2. Testing the impact of EU membership

To test the hypothesis that EU membership could have negative implications for employment, a fixed-effects regression model was estimated pooling all nine countries into one sample, while allowing an individual trend for each country's relative unemployment rate. The specification was

$$\eta_{it}^{(k)} = \mu_i + \tau_{i1}t + \tau_{i2}t^2 + \tau_{i3}t^3 + \sum_{j=0}^2 \alpha_j g_{it-j} + \beta_1 ap_{it} + \beta_2 ac_{it} + \varepsilon_{it}$$

where μ_i is a fixed effect for the i th country, τ are country-specific time trends coefficients, t is a time trend, and g_{it} is the current growth rate of real GDP. The dependent variable is either $\eta_{it}^{(1)} = u_{it}/u_{it}^{core}$ or $\eta_{it}^{(2)} = e_{it} - e_{it}^{core}$, where u_{it} is the unemployment rate and e_{it} is the employment growth rate for the i th country in period t , respectively. "Core" refers to an unweighted average of France, Germany and Italy. The different specifications of the two dependent variables are chosen because e_{it} can take negative values. ap_{it} (ac_{it}) is a dummy variable which takes the value one after application (accession) to the EU, zero otherwise; so β_1 and β_2 are the coefficients of primary interest.

15) Specifically, we ran the regression for each country

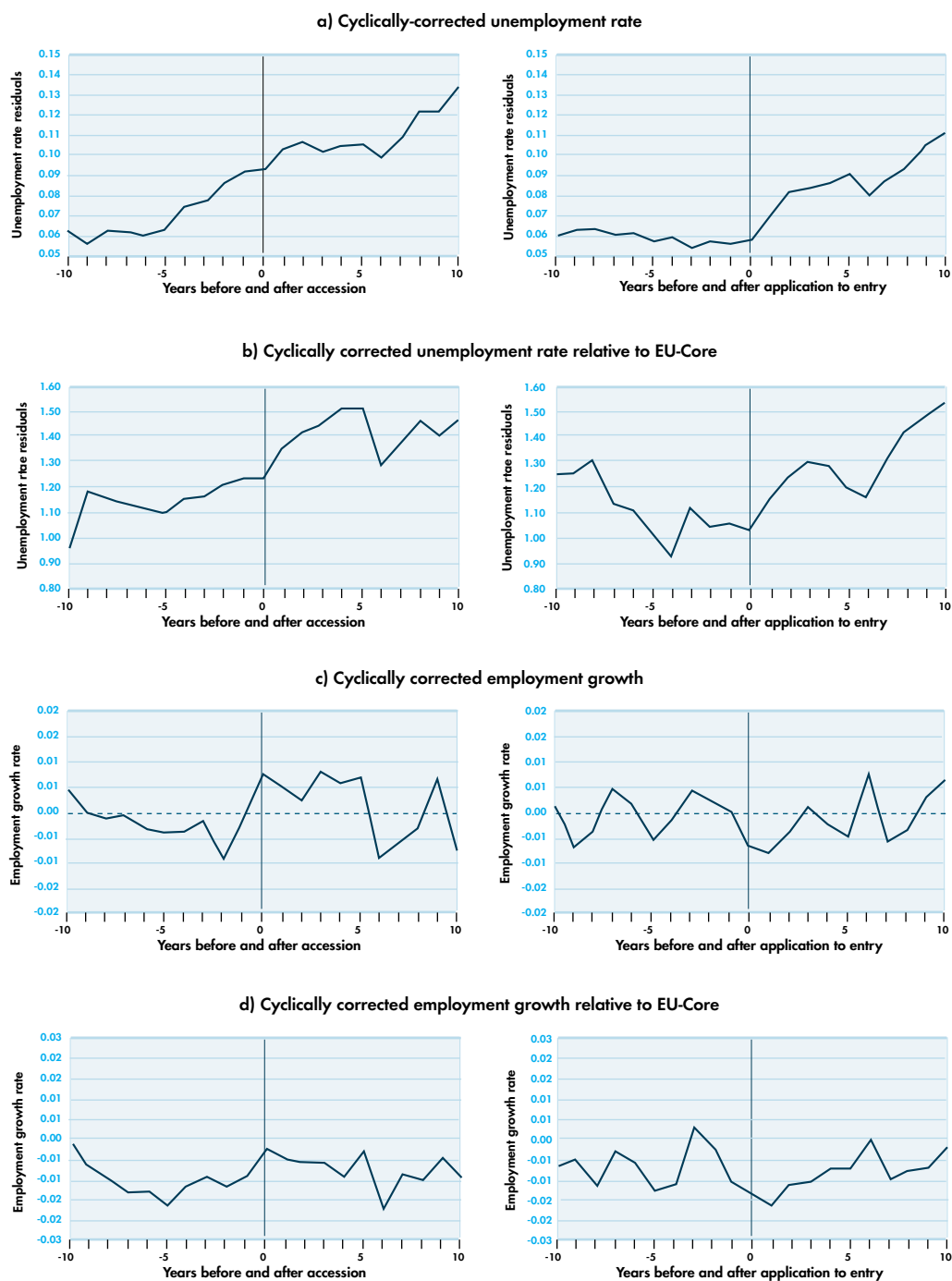
$$x_t = \alpha + \sum_{i=0,1,2} \beta_i \Delta y_{t-i} + \gamma_1 t + \gamma_2 t^2 + \gamma_3 t^3$$

where x is either the OECD standardised unemployment rate or the growth rate of employment, y is the log of GDP, and t is a time trend. From the estimates we then constructed and studied the series $x_t - \sum_{i=0,1,2} b_i \Delta y_{t-i}$, where the b_i are estimates of the β_i .

with an increasingly "European" safety net which slows the transition process. An optimistic view suggesting accelerated integration, however, is buttressed by results for employment growth.

The "EU is bad news" hypothesis can be tested more formally using econometric methods. This is explained in more detail in Box 2.

Figure 4. Labour market performance and EU accession



Application as well as accession of a country to the EU is associated with a statistically significant higher unemployment rate, where application appears to be more important than accession.

The regression results are presented in the columns of Table 3. As expected, cyclical factors are significant with the expected sign, i.e. that higher GDP growth is associated with lower relative unemployment and higher employment growth. As in the figures, both application as well as accession of a country to the EU is associated with a statistically significantly higher unemployment rate, relative to the core. Interestingly, application appears to be more important than accession, although all coefficients are estimated positive. In columns (b) and (d), in which the cubic time trend is omitted, EU accession is also accompanied by significantly higher employment growth.

Table 3. Unemployment and employment growth rate regressions, 1964-1996 (unemployment) and 1966-1997 (employment growth)

Trend	$\eta_{it}^{(1)} = u_{it}/u_{it}^{core}$				$\eta_{it}^{(2)} = e_{it} - e_{it}^{core}$			
	(1) linear, square, cubic time trends	(2) linear, square time trends	(3) linear, square, cubic time trends	(4) linear, square time trends	(a) linear, square, cubic time trends	(b) linear, square time trends	(c) linear, square, cubic time trends	(d) linear, square time trends
Constant	1.926** (0.362)	1.224** (0.206)	1.847** (0.363)	1.333** (0.206)	0.015 (0.038)	0.006 (0.016)	0.014 (0.038)	0.007 (0.017)
g_{it}	-1.764** (0.536)	-2.082** (0.606)	-1.760** (0.533)	-2.013** (0.596)	0.162** (0.040)	0.172** (0.040)	0.162** (0.040)	0.172** (0.040)
g_{it-1}	-2.796** (0.526)	-2.921** (0.600)	-2.807** (0.523)	-2.880** (0.590)	0.117** (0.041)	0.122** (0.041)	0.116** (0.041)	0.122** (0.041)
g_{it-2}	-2.827** (0.537)	-3.048** (0.600)	-2.797** (0.535)	-2.897** (0.592)	0.080* (0.041)	0.084** (0.040)	0.080* (0.041)	0.083** (0.040)
ap_{it}	0.141* (0.073)	0.204** (0.065)	0.140* (0.073)	0.227** (0.064)	-0.004 (0.005)	-0.002 (0.005)	-0.004 (0.005)	-0.003 (0.005)
ac_{it}	0.092 (0.069)	0.225** (0.065)	0.101 (0.068)	0.241** (0.064)	0.010* (0.005)	0.009** (0.004)	0.010* (0.005)	0.009** (0.004)
ems_{it}			0.115* (0.059)	0.166** (0.052)			0.002 (0.004)	-0.0003 (0.004)
adj. R^2	0.873	0.838	0.875	0.839	0.222	0.215	0.222	0.212
# of obs.	296	296	296	296	288	288	288	288

Notes: A * (**) denotes significance at the 10 percent (5 percent) level. Standard errors are reported in parentheses. Estimated coefficients on time trends are not reported.

Source: Boeri *et al.* (1998).

While it is theoretically possible that a few isolated countries affected our results, we obtained similar results when excluding Austria, Sweden and Finland (not reported). This is a particularly interesting result, since the typical ratchet adjustment in the EU to the oil shocks was absent for these countries during that period - a period during which they were not EU members. Since most analysts describe the recent, obviously very persistent 1990 shock to Sweden and Finland as a "demand" shock, it seems that the "side" (supply or demand) from which the shock originates is less important than the fact that a negative shock occurred.

While entry in the EU will carry enormous advantages, it will also imply additional structural adjustment. This process may be attenuated by excessively rapid entry.

Finally, we wanted to investigate the possibility that the result was simply an artefact of the introduction of the EMS, which coincided with the second great ratchet upwards in unemployment rates. The results in columns (3) and (4) report the same specification as columns (1) and (2), but include an "EMS dummy" with a value of zero before 1978, and one afterwards. The results show that relative unemployment rates of EU entrants were indeed significantly higher in the EMS period. But controlling for the EMS period does not change the result that accessions and applications have a significant positive coefficient in the relative unemployment rate regressions. In the employment growth rate regressions the EMS dummy is insignificant.

5. Conclusions

The message of this paper is straightforward and disturbing. The CEE countries have already experienced a great deal of stress in the adjustment process. At the risk of speaking in platitudes, it is important to emphasise just how much adjustment still needs to occur in these countries. The "return to Europe" is a desideratum, yet the price is negotiable; it is currently too high. While entry in the EU will carry enormous advantages, it will also imply additional structural adjustment, as inefficient producers in agriculture, high tech manufacturing and services are squeezed. More importantly, the evidence reviewed in this paper suggests that the adjustment process itself may be attenuated by excessively rapid entry into the rich man's club which is the European Union. It would be a mistake, therefore, to adopt continental-style labour market rigidities at such an early point in the process.

Annex

Employment protection regulation in CEE economies

Country	Law	Definition of mass redundancy	Required consultation with employment representatives	Advance notice	Statutory severance pay
Bulgaria	Labour Code 1994 (Ch. 16,1)	Total or partial closing down of enterprise or staff cuts	Yes	30-90 days	Up to one month, more if stipulated in collective agreements or labour contracts
Czech Republic	Labour Code 1993	Redundancies resulting from changing firm objective, new technical equipment, increasing work efficiency, other organizational changes	Yes	3 months	Two months' wages unless collective agreements state otherwise
Hungary	Labour Code 1992	Dismissals of 25 percent of employees or at least 50 people	Yes	30-90 days depending on seniority	One months' pay if job tenure was less than three years, up to six months' pay if job tenure exceeds 25 years
Poland	Act concerning termination of employment relationships for reasons connected with establishments (1989)	Dismissals of at least ten percent of the staff in establishments up to 100 workers or at least 100 workers in establishments employing more than 1000 workers	Yes	45 days	One month's pay for seniority up to ten years, two months' pay for seniority of 10-20 years, three months' pay for seniority of more than 20 years and compulsory allowance for lower income workers in new job, up to six months
Romania	Labour Code 1994	Dismissal due to organizational changes, insolvency or reallocation	Yes	15 days	At least three months' average wages, possibly extended depending on seniority and sector of employment
Slovakia	<ul style="list-style-type: none"> • Act No. 195/1991, Col. on severance pay after termination of labour contract, • Labour Code (Act No. 451/1992 Col.) • Act. No. 387/1996 on employment 	At least ten employees in a firm with 20-99 employees, at least ten percent of employees in a firm with 100-299 employees, at least 30 employees in a firm with more than 299 employees	Yes	3 months	Two months' wages, possibly extended up to five months' wages on the basis of collective agreement or an internal instruction of the employer
Slovenia	Labour Code	Following temporary redundancy of up to six months (at reduced pay), no numerical limits	Yes	6 months	For employees with least two years' tenure: at least one half of the wage during the last three months, for each year of previous employment

Sources: Boeri *et al.* (1998).

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The impact of EMU on European unemployment



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1. Introduction

Persistent unemployment is the top social and economic problem of most EU countries. Today, the unemployment rate in most EU countries is above ten percent and, although unemployment has decreased during expansions, the average EU unemployment rate within each cycle has increased since the early seventies. Although unemployment evolutions have been to some extent similar in EU countries, there are some outliers. On the one side, Portugal, Austria, the UK, the Netherlands, and Luxembourg, which have unemployment rates close to or below seven percent, are the “low unemployment” countries. On the other side, Spain, with roughly 20 percent unemployment, and Finland, whose unemployment rate is close to 15 percent, are the extreme examples of the EU unemployment “disease”. Participation rates, the incidence of unemployment among some population groups (the young, females, and low-skilled workers), and the duration of unemployment spells also vary across EU countries. This variation suggests that there may be some peculiarities in the unemployment situation of these countries. However, the overall situation regarding unemployment is that most of these countries are “converging” to unemployment rates close to or above ten percent.

In this situation, most EU countries' governments are under pressure to fight unemployment precisely at the time when they are about to enter a monetary union. The topic that we address in this paper is to what extent Economic and Monetary Union (EMU) will affect the future evolution of European unemployment. At first sight, it may seem that this topic should not deserve much attention. After all, under the traditional macroeconomic paradigm, the question about the impact of EMU on unemployment has a straight answer. In particular, since in the long run unemployment is determined by real factors; since EMU is, in principle, just a change in the monetary regime; and, since monetary policy ought to be neutral in the long run, EMU should have no effects on unemployment over that horizon.

However, in our view, there are at least two reasons to feel uneasy about this proposition. First, we shall not quote Keynes on the relevance of the “long run”, but one thing we have learned about European unemployment over the last two decades regarding the effects of some transitory shocks on unemployment is that the long run can be “very long” (see, for instance, Bean, 1994). Secondly, EMU will not just imply a change in the monetary regime. The entrance into EMU has to be achieved under certain conditions (the fulfilment first of the fiscal requirements laid out by the Maastricht Treaty, and, then, of the Stability and Growth Pact) which have influenced and will continue to influence the European macroeconomic scenario. Furthermore, EMU may bring up some real effects, for instance, on price setting - through the deepening of economic integration -

This paper partly draws on Viñals and Jimeno (1996). The views expressed by the authors are purely personal and do not thus necessarily coincide with those of the institutions with which they are affiliated.

and on wage setting - through changes in the wage determination process - which may have some effects on unemployment.

We organise our discussion of the likely effects of EMU on unemployment in several steps. In section 2, we discuss some empirical evidence that is relevant for the discussion of the costs of forgoing the nominal exchange rate as an instrument for short-term macroeconomic adjustment. First, we estimate the sources of shocks to unemployment across EU countries and disentangle the "common" European component of those shocks from the national/regional component. Second, we survey some evidence on the sources of exchange rate fluctuations. Third, we report some estimates of the degree of real wage rigidity across EU countries in order to gauge the extent to which nominal exchange rate changes translate into real exchange rate changes. Finally, we discuss some evidence on the impact of real exchange rate fluctuations on employment at the industry/regional levels. In section 3, we look at the effects of EMU on macroeconomic policies, with particular emphasis on the Stability and Growth Pact, and on price and wage determination processes, so as to assess the overall consequences for unemployment. The paper ends with section 4, which contains some concluding remarks.

2. The costs of a common currency

The early theoretical literature on Optimal Currency Areas reached some clear conclusions on the costs of forgoing the nominal exchange rate as an instrument for short-term macroeconomic adjustment. These costs will be, *ceteris paribus*, smaller when shocks require little movement of the real exchange rate to restore equilibrium (i.e., shocks are "symmetric" rather than "asymmetric" or idiosyncratic), when nominal exchange rates move in response to monetary and financial shocks rather than to address real imbalances, and when real exchange rates are little affected by nominal exchange rates. In this section we present a brief survey of the empirical evidence on these issues. From this evidence we shall conclude that, as far as unemployment is concerned, the short-term costs of forgoing nominal exchange rate flexibility as a tool for macroeconomic stabilisation are likely to be rather limited.

The short-term costs of foregoing nominal exchange rate flexibility are likely to be rather limited.

2.1. The sources of shocks to unemployment

In order to infer how symmetric shocks could be under EMU, recent empirical analysis has generally looked at the present situation in the EU and compared it to the US (1). While the evidence is far from uncontroversial (see Viñals, 1994, and 1996 for surveys), the dominant conclusion seems to be that asymmetric shocks are quantitatively more important in the EU than in the US. However, a subset of EU countries known as the "core" - Germany and EU countries which have traditionally maintained closer economic and monetary links with it - are rather similar to the US in this regard (see, for instance, Bayoumi and Eichengreen, 1995). The conclusion that follows is that a "narrow EMU" would work satisfactorily, but that a "wider EMU", including the "periphery", could be ridden by asymmetric shocks and serious national imbalances.

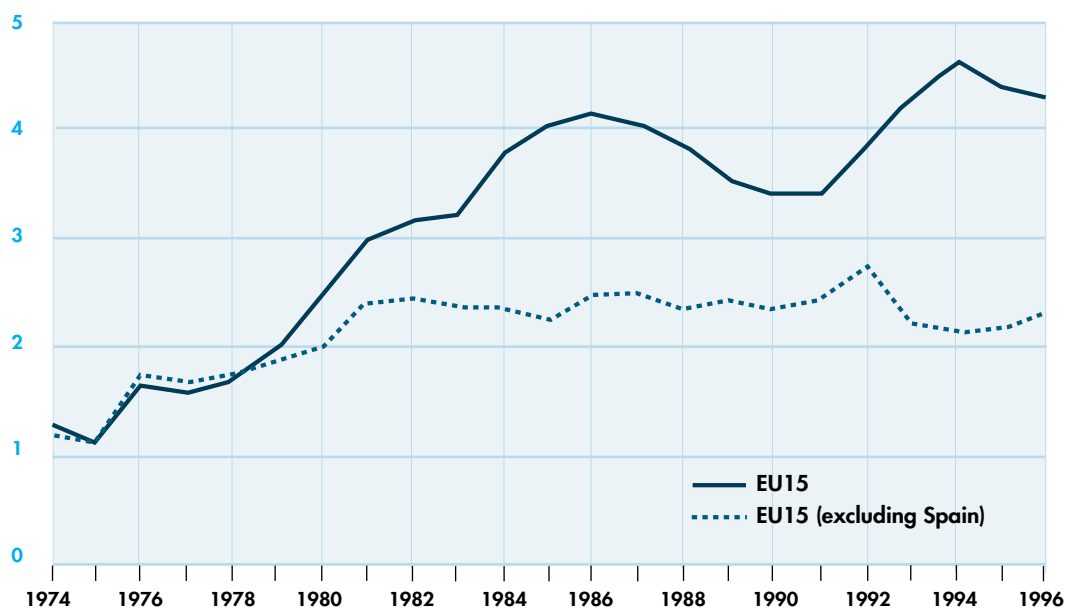
There are several reasons to cast doubt on this conclusion. First, the degree of synchronisation of shocks across EU countries is endogenous, and several papers have shown that the correlation of the business cycles across EU countries have increased as economic and financial integration proceeded (see, Artis and Zhang, 1995, Fatás, 1997, and Frankel and Rose, 1997). This finding contrasts with the view that EMU will result in higher specialisation, regional concentration of produc-

1) Needless to say, the "Lucas critique" applies here.

tion and, thus, more likely asymmetric shocks (Krugman, 1993). Second, when looking at the evolution of unemployment, the data seem to support the existence of a significant “common component” in the unemployment rates of EU countries, and that both “core” and “periphery” countries are rather similar in this regard. We now turn to present some empirical evidence on the sources of shocks to unemployment rates across EU member countries.

There are several approaches to assessing the relative importance of the different sources of shocks to unemployment in a cross-section of countries or regions. There is the descriptive approach, which consists of measuring the evolution of unemployment dispersion, as indicated by the standard deviation of unemployment in a given sample. Were unemployment exclusively driven by a common shock with the same effects on unemployment in all countries, then this index of unemployment dispersion should remain constant; were the incidence of specific shocks increasing over time, then the index should show an increasing trend (2). Regarding EU countries, the evolution of unemployment dispersion, as measured by the evolution of the standard deviation of unemployment rates, shows an increasing trend in dispersion from the mid-1970s up to the mid-1980s, a mild decreasing trend until 1990, and, again, a surge in the early 1990s (see Figure 1). However this evolution (and, in particular, its rise in the early 1990s) is heavily influenced by the contribution of Spain, which, with almost ten percent of the EU labour force, has experienced very wide fluctuations in the unemployment rate. Thus, when Spain is excluded from the sample, the standard deviation of unemployment rates across the rest of EU countries increases by less up to 1981, and remains more or less constant since then. We have computed a similar index of unemployment dispersion using regional data (at the EUROSTAT NUTS-1 level of disaggregation) and find a similar picture: There is no significant overall increase in the dispersion of regional unemployment rates since the mid-1980s up to the early 1990s, and when dispersion increases in the early nineties, it is mainly due to the contribution of Spanish regions.

Figure 1. Standard deviation of unemployment rates across EU countries, 1974-1996



2) The converse statements are not true, though.

A more rigorous method for assessing the relative importance of different sources of shocks to national/regional unemployment rates consists of using econometric models to break unemployment down into different components: a “common” EU component, and a national/regional “specific” component. This is discussed in more detail in Box 1.

Box 1. The decomposition of unemployment rates in EU countries and regions

Our decomposition of unemployment rates in EU countries and regions is based on the following recursive model:

$$(1) \quad \begin{aligned} u_t^{EU} &= \delta^{EU} + A_1(L)u_t + \varepsilon_t^{EU} \\ u_t^I &= \delta^I + A_2^I(L)u_t^{EU} + B_2^I u_t^I + \varepsilon_t^I \\ u_t^J &= \delta^J + A_3^J(L)u_t^{EU} + B_3^J(L)u_t^I + C_3^J(L)u_t^J + \varepsilon_t^J \end{aligned}$$

where δ 's are constants; u^{EU} , u^I , u^J , are, respectively, the EU average unemployment rate, the unemployment rate of country I , and the unemployment rate of region J in country I ; $A(\cdot)$, $B(\cdot)$ and $C(\cdot)$ are polynomials in the lag operator L (with $A(0) = B(0) = C(0) = 0$); and the ε 's are shocks to unemployment. Under this model, nation-specific shocks have no effects at the EU level, and region-specific shocks have no effects at the national level.

Since the system is recursive and we have different sample sizes for national and regional unemployment rates, we estimate the first two equations to decompose shocks to national unemployment into a “common” EU component and a nation-specific component. The decomposition of shocks to regional unemployment rates is based on the estimation of the three-equation system on a panel of EUROSTAT NUTS-1 regions for each country, controlling for regional fixed effects, and imposing the constraint that the coefficients of the third equation in (1) are the same across regions within the same country. Data on regional unemployment are available from EUROSTAT (REGIO databank) for the 1983-1993 period (except for the new member countries, Greece, Portugal and the Netherlands) (3). Note that this recursive model is a simplification of the following three dimensional vector autoregression (VAR):

$$(2) \quad x_t^I = D(L)x_t^I + v_t$$

with $x^I = (u^{EU}, u^I, u^J)$, $D(0) = 0$, and v_t are innovations to unemployment. We have also estimated this VAR and recovered aggregate, national and regional shocks to unemployment under the identifying assumptions that both the contemporaneous effects of national shocks on the EU average unemployment rate and that the contemporaneous effects of regional shocks on national unemployment rates are zero. Under this maintained hypothesis, we cannot reject the (over-identifying) restrictions imposed on the recursive model.

3) At the NUTS-2 level of disaggregation, the analysis with the EUROSTAT REGIO database is restricted to the indicated sample period for seven countries only due to data availability.

EU-wide innovations to unemployment seem to play a very important role in driving national unemployment rates.

The results are presented in Tables 1 and 2. As for national unemployment rates, the “common” EU component of the shocks explains, on average, almost half of the variance of EU member countries’ unemployment rates within a one-year horizon. This proportion increases to 59 percent, 70 percent, 78 percent and 83 percent after one, two, three, and four years, respectively. Thus, EU-wide innovations to unemployment seem to play a very important role in driving national unemployment rates even in the short run (4). This is true for most member countries, except for Italy, Portugal, and Sweden. Apart from these exceptions, our results do not support any clear distinction between the “core” and the “periphery” in this regard. As for regional unemployment rates, we find that region-specific shocks explain around 65 percent of the variance of regional unemployment rates. Moreover, the combination of EU-wide and region-specific shocks leaves only about 20 percent of the variance of regional unemployment rates to be explained by national shocks (with the only exception of Denmark).

In sum, given the relative small role of national shocks in driving unemployment rates in EU countries, the conclusion we reach is that giving up the national currencies under EMU implies rather small macroeconomic costs.

Table 1. Proportion of the variance of national unemployment rates explained by innovations to the EU unemployment rate (in percent)

	Within 1 year	After 1 year	After 2 years	After 3 years	After 4 years
Belgium	61	76	82	85	86
Denmark	58	60	64	68	72
Germany	32	54	70	79	83
Greece	36	48	59	68	75
Spain	52	72	86	92	94
France	65	80	87	91	94
Ireland	46	60	72	80	85
Italy	9	26	46	67	79
Netherlands	48	62	73	80	83
Austria	29	54	72	81	86
Portugal	7	26	44	56	64
Finland	60	62	64	67	65
Sweden	13	15	18	20	23
UK	72	85	90	93	94
EU*	45	59	70	78	83

* Weighted average

The result for the weighted EU aggregate is noticeably different from that for the US (cf. footnote 5). However, the difference disappears quickly at the second and third horizon, so that the conclusion about the relevance of EU-wide shocks is still relevant.

4) As a reference point, we have performed a similar decomposition of US states’ unemployment rates during the 1976-1990 period. We find that US-wide shocks to unemployment explain, on average, 79 percent of the variance of states’ unemployment rates within one year, and around 85 percent between one to five years.

Table 2. Proportion (in percent) of the variance of regional unemployment rates explained by:

1. Innovations to the EU unemployment rate								
	Belgium	Denmark (5)	Germany	France	Spain	Italy	UK	EU*
Within one year	2	1	5	19	4	1	24	11
After 1 year	28	3	11	26	17	6	26	17
After 2 years	45	3	11	26	17	6	26	17
After 3 years	45	22	14	26	24	12	21	20
After 4 years	50	49	12	26	27	22	21	20
2. Innovations to the national unemployment rate								
Within one year	26	92	24	10	10	17	48	25
After 1 year	22	86	23	6	6	11	29	18
After 2 years	17	64	22	5	5	15	31	18
After 3 years	15	52	22	4	6	15	28	18
After 4 years	15	52	22	5	5	15	31	18
3. Innovations to the regional unemployment rate*								
Within one year	72	7	71	71	86	82	28	64
After 1 year	50	11	66	68	77	83	45	65
After 2 years	38	14	64	70	70	73	51	62
After 3 years	35	6	64	72	71	67	51	61
After 4 years	35	6	66	70	68	58	47	64

* Weighted Average.

Growing openness within the EU makes the use of exchange rates to restore competitiveness increasingly less effective in economic terms, and increasingly more difficult politically.

2.2 Evidence on the sources of exchange rate fluctuations

In the literature on Optimal Currency Areas, the nominal exchange rate is thought to determine - in the short-term - the real exchange rate and thus foreign demand. Therefore, in this framework, exchange rate management helps to smooth short-term economic fluctuations resulting from national (asymmetric) shocks. Nevertheless, in this respect, it has been argued that the growing economic openness among EU countries within the Single Market makes the use of nominal exchange rate to restore or improve competitiveness increasingly less effective in economic terms, and increasingly more difficult in political terms (see, for instance, Eichengreen and Ghironi, 1995, and Viñals, 1996). Furthermore, the evidence of a significant degree of real wage rigidity in European labour markets (see section 2.3 below) suggests that nominal exchange rate movements are not very effective in moving the real exchange rate in the desired direction. Finally, and perhaps most importantly, in a world of free capital movements, where foreign exchange markets are often subject to self-fulfilling speculative crises which move the exchange rate away from where fundamentals suggest it should be during prolonged periods, there is little room for nominal exchange rate management.

Some recent evidence also casts doubt on the effectiveness of nominal exchange rates as a tool for short-term macroeconomic management. In a recent paper, Canzoneri *et al.* (1996) investigate whether European nominal exchange rates actually address real imbalances, or whether they are basically driven by monetary and financial considerations. The authors estimate a structural VAR model on three

5) The results for Denmark in Table 3 do not seem to fit well with the variance decomposition in Table 2. However, Denmark is a small country containing three homogenous NUTS-2 units. It may happen that regions move together, but that, at the aggregate level, EU-wide shocks still explain some of the fluctuations of the Danish unemployment rate.

variables - output, the nominal exchange rate and government spending - where the long-run restrictions come from the well-known Mundell-Fleming model. Making use of these restrictions, monetary and financial shocks are separated from real shocks (both supply and demand), and their relative roles in driving output and exchange rate fluctuations assessed. The quarterly data runs from 1970:1 to 1985:4, the period of "relative exchange rate flexibility", which goes from the end of the Bretton Woods System to the hardening of the Exchange Rate Mechanism (ERM) of the European Monetary System. The variables are in relative terms (taking Germany as the centre) so as to capture potential asymmetric shocks.

The empirical results show that in many EU countries - both large and small, more or less open, and with different economic structures - most of the short-term variation in relative national outputs can be explained by real shocks. These shocks, nevertheless, play a very limited role in explaining movements in nominal exchange rates (see Table 3 for a summary of the results for relative output and nominal exchange rates). As a consequence, nominal exchange rates do not seem to respond much to the asymmetric shocks which create macroeconomic imbalances, thus reducing their value as a tool for macroeconomic adjustment (6). This means that there are further reasons to believe that the costs of EMU will be quite small as a result of forgoing nominal exchange rate flexibility.

Table 3. Sources of fluctuations (in percent)

	Relative output		Nominal exchange rates	
	Real shocks	Monetary and financial shocks	Real shocks	Monetary and financial shocks
Austria	94	6	77	23
Netherlands	96	4	67	33
France	96	4	71	29
Spain	92	8	81	19
Italy	95	5	54	46
United Kingdom	90	10	68	32

One-year horizon relative to Germany.

What matters, as far as EMU is concerned, are the sources of shocks and their transmission through labour markets.

2.3. Real wage rigidity and persistence

Another way of looking at the potential impact of EMU on unemployment in the short-term is to assess how effective nominal exchange rate changes are in leading to real exchange rate changes. In particular, when real wages are rigid, it is to be expected that nominal exchange rate variations will translate very quickly into wages and prices, thus having little or no effect on real exchange rates. Consequently, the higher the degree of real wage rigidity, the smaller the costs from forgoing nominal exchange rate flexibility, even in the face of real asymmetric shocks.

There have been numerous attempts at estimating the degree of real wage rigidity in EU countries. Some of the most-often quoted estimates are from Layard *et al.* (1991). These estimates come from structural estimation of wage and price equations, which are sometimes criticised on identification grounds and on the measurement of relevant regressors. Since what matters, as far as EMU is concerned, are the sources of shocks and their transmission through the labour markets, an alternative approach to estimat-

6) These results apply to "average" shocks, but not to those big real asymmetric shocks which come, say, once in a decade and which may require an adjustment of nominal exchange rates.

Box 2. Estimating wage rigidity

We take a bare-bones model where it is assumed that there is constant mark-up pricing. Prices are given by:

$$p - w = m + z$$

where p are prices, w are (nominal) wages, m is the mark-up and z are shocks assumed to follow an $I(1)$ process, and, therefore, innovations in z have permanent effects on real wages. Wages are assumed to be negatively related to unemployment, as in the following equation:

$$w - p = -c(u - bu_{-1}) + z^w$$

where u is the unemployment rate, c and b are positive parameters, and z^w are shocks to the wage equation when $b < 1$. A measure of real-wage rigidity is the inverse of $c(1 - b)$. The higher is c , the less rigid real wages are; the higher is b , the more rigid are real wages. Combining these two equations yields that unemployment is given by:

$$u = m/c + bu_{-1} + (z^w + z)/c$$

Assuming that shocks to the price-setting equation are mostly of a “technological” nature with permanent effects on real wages ($z = -e^s$), that shocks to the wage equation include both technological and (stationary) wage push/labour supply shocks, so that $z^w = e^s + e^w$, and that $b < 1$, yields that unemployment is stationary and that its initial response to wage push/labour supply shocks is greater the more rigid real wages are. Moreover, the mean lag of the response to unemployment ($b/(1 - b)$) is increasing in b . Alternatively, if $b = 1$, unemployment follows a random walk with drift, and its short-run and long-run responses to wage push/labour supply shocks are decreasing in c . This simple model suggests that the degree of real-wage rigidity is related to some characteristics of the impulse response of unemployment to wage push/labour supply shocks. In both cases considered ($b < 1$ and $b = 1$) real wages are $I(1)$ and wage push/labour supply shocks have no long-run effects on the level of real wages. Thus, the empirical exercise to assess the degree of real-wage rigidities across countries is rather simple. First, assuming that $b < 1$, we estimate a VAR composed by the rate of growth of real wages and the unemployment rate and recover the structural parameters (c and b) from the impulse response of unemployment to shocks which have no long-run effects on real wages. Second, assuming that $b = 1$, we estimate a VAR composed of the growth rate of real wages and the first difference of the unemployment rate, and recover the structural parameter, c , from the impulse response of unemployment to the same kind of shocks. It should be noted that the model above suggests that the other type of shocks recovered are technological shocks which increase real wages in the long run and do not affect unemployment.

ing the degree of real wage rigidity can provide interesting insights. This approach consists of estimating the dynamic responses of real wages and unemployment to different shocks and inferring from them the degree of real wage rigidity and shock persistence. Under the assumptions of constant returns to scale and constant mark-up pricing, the initial response of unemployment to a transitory wage-push shock is determined by the response of real wages to unemployment, while the mean lag of the adjustment path followed by unemployment after such a shock depends on the response of unemployment to lagged unemployment. A simple model for estimating wage rigidity is set out in Box 2.

The results of this exercise are reported in Tables 4 and 5. In the first case, when unemployment is assumed to follow a stationary process ($b < 1$) (7), we find that the average degree of real wage rigidity in EU countries is almost double that of the US. By countries, only the Netherlands and Ireland seem to be close to the US benchmark. Similarly, the average mean lag response of unemployment to wage-push shocks in EU countries is more than two years higher than in the US. In the second case, when unemployment is assumed to follow an I(1) process ($b = 1$), we find qualitatively similar results, although there are some differences with respect to the previous case across countries.

The high degree of real wage rigidity - as opposed to nominal wage rigidity - implies that the cost from giving up nominal exchange rate flexibility is likely to be rather limited.

While a high degree of real wage rigidity - as opposed to nominal wage rigidity - implies that the cost from giving up nominal exchange rate flexibility as a tool for short-run macroeconomic adjustment is likely to be rather limited, it is nevertheless not good news at all for European unemployment, quite independently from EMU. In particular, the higher is the degree of real wage rigidity, the higher is the structural rate of unemployment. For this reason, it is very important to improve real wage flexibility through labour market reforms aimed at enhancing nominal wage flexibility if the costs of EMU are to be still kept to a minimum and progress made in reducing unemployment.

Table 4. Estimates of real wage rigidity and persistence

	Estimates from VAR ($\Delta(w - p), u$)	
	Persistence	Mean Lag
Belgium	0.77	3.44
Denmark	0.72	2.55
France	0.81	4.20
Germany	0.77	3.30
Ireland	0.74	2.78
Italy	0.82	4.66
Netherlands	0.76	3.14
Spain	0.78	3.56
UK	0.72	2.51
Austria	0.79	3.69
Finland	0.83	5.01
Sweden	0.83	4.92
EU*	0.78	3.61
US	0.60	1.53
Japan	0.65	1.90

* Weighted average.

7) The salient feature of stationary variables is that a shock to the variable will only have a temporary and transient effect. The opposite is true for non-stationary variables, of which the simplest case is a so-called I(1) variable. Here, a shock to the variable will have a permanent effect. A non-stationary variable can be rendered stationary by differencing.

Table 5. Real Wage Rigidity in the EU

	Estimates from VAR ($\Delta(w - p)$, Δu)
Belgium	1.42
Denmark	1.10
France	1.58
Germany	1.48
Ireland	1.68
Italy	1.00
Netherlands	1.52
Spain	1.94
UK	1.16
Austria	0.85
Finland	1.71
Sweden	1.41
EU*	1.39
US	0.73
Japan	0.89

* Weighted average.

2.4. Employment effects of real exchange rate fluctuations

The above notwithstanding, even if nominal exchange rates could be set in order to influence real exchange rates, some evidence on the response of employment to the real exchange rate also suggests that forgoing nominal exchange rate flexibility will not be very costly in employment terms. Two recent papers (Burgess and Knetter, 1996, on the G-7 countries, and Dolado *et al.*, 1998, on Spanish regions) are devoted to the estimation of the response of employment at the industry level to exchange rate shocks for the G-7 countries. At the theoretical level, the determinants of this response are mainly the degree of competitiveness of product markets and the regulation of the labour market. The more competitive are product markets, the larger are the changes of production patterns brought on by changes in real exchange rates. However, if firms can adjust mark-ups, then price adjustments may partially offset the need for adjusting employment after changes in real exchange rates. Furthermore, labour market regulation (job protection legislation, say) may reduce the response of employment to exchange rate shocks.

Burgess and Knetter (1996) find that exchange rate fluctuations influence employment at the industry level in the expected manner (a real appreciation leads to a decline in manufacturing employment in most sectors) (8). There are some differences across countries, though. While in the UK, Italy and Canada employment seems to be more sensitive to exchange rate changes than in the US, the contrary happens in Germany, France and Japan. Using their own words, "*the data are consistent with the view that employment in European labour markets ... is much less influenced by demand shocks and much slower to adjust to long run steady states* (p. 17)". In a similar study, Dolado *et al.* (1998) estimate an employment equation using data on 17 sectors and 17 Spanish regions. The specification of their employment equation also includes domestic aggregate demand and exchange rate volatility as regressors. Their results confirm that while real exchange rate appreciations reduce employment in most industries, reducing exchange rate volatility has nevertheless positive effects on employment.

8) About a quarter of their 95 country-industry observations showed statistically significant negative exchange rate elasticities.

To sum up, this section has presented evidence to suggest that common shocks are likely to be prevalent once in EMU; that, in the past in the EU, nominal exchange rate flexibility has not played the "buffer stock" function assumed by the Optimal Currency Areas literature; and that the degree of real wage rigidity in European countries is quite high. Taken together, these bits of evidence suggest that European countries are going to face only very limited costs from not being able to use nominal exchange rates as a short-term tool for addressing macroeconomic imbalances in EMU.

3. Impact of EMU on macroeconomic policy and wage-price setting

In addition to implying a common currency area in which monetary policy will be strongly oriented towards pursuing price stability, the establishment of EMU will also enhance fiscal discipline through the Stability and Growth Pact. In this section we discuss the macroeconomic policies under EMU and the likely impact of EMU on wage and price determination.

3.1 Macroeconomic Policy

EMU brings with it not only a common currency - the EURO - but also a single monetary policy. In this respect, it is particularly important to note that the single monetary policy will be run by an independent European Central Bank (ECB) with the primary objective of achieving and maintaining price stability. If it is accepted that price stability is a precondition for achieving a better output performance (see Andrés and Hernando, 1997), then the single monetary policy will exert a favourable impact on output and employment conditions in the EURO-zone in the medium-term.

Fiscal consolidation will improve employment prospects by leading to a more stable environment characterised by lower and less volatile interest rates.

EMU also comes together with the Stability and Growth Pact, which establishes certain norms of fiscal rectitude aimed at preserving or restoring the sustainability of national fiscal positions and at avoiding an inadequate overall policy-mix in the EMU area as a whole. Given the terms of the Stability and Growth Pact, fiscal consolidation may need to proceed in the future in some countries. An important question, therefore, is how fiscal consolidation measures will affect European unemployment in the next years.

From a short-term perspective, the traditional story on the effects of fiscal consolidation is that it leads to a reduction in the rate of expansion of aggregate demand, which initially has negative effects on unemployment. In addition, insofar as persistence mechanisms are at work, the impact on unemployment could last for some time.

While these effects are generally recognised as being valid to a first approximation, in practice the size of the short-run impact of fiscal consolidation on unemployment will vary across countries and will depend critically on which kind of measures are taken and on how they are implemented. In particular, it may happen that a reduction of budget deficits based on permanent cuts in current government purchases may lead to lower short run unemployment. The reason is that the reduction in aggregate demand derived from a cut in total public spending would (at least partially) be offset by the beneficial effects on private demand of the credible permanent reduction in current government purchases. Private consumption would expand as the public revises upwards its expectations of future disposable income, in the understanding that budgetary consolidation today reduces future taxes to service the debt. Private investment would also increase once real long-term interest rates fall.

Some European countries have already experienced beneficial output and employment effects while pursuing fiscal consolidations in recent years, partly linked to the reduction of the risk-premium implicit on interest rates through the decline of both exchange and default risks. Once EMU is in place, however, these countries should not take further reduction of interest rates for granted.

From a medium-term viewpoint, insofar as present structural budget deficits are too high, and that their reduction is not carried out through tax increases which may raise "wage pressure", the process of fiscal consolidation, which is amplified by the Stability and Growth Pact, should not adversely affect unemployment in the medium-term. Quite the contrary, fiscal consolidation will improve employment prospects by leading to a more stable macroeconomic scenario characterised by lower and less volatile real interest rates. In these circumstances, public investment will pick up, positively influencing output and employment prospects.

A stronger degree of economic integration may impose more discipline on wage setters. However, harmonisation of labour legislation could worsen already badly-functioning labour markets.

In sum, while the differing fiscal positions and macroeconomic structures of the member states suggest that fiscal consolidation efforts over the next few years may have different impacts on their economies, any potential short-term costs of fiscal consolidation on economic activity will be minimised - and even reversed - if budgetary adjustments are carried out in an appropriate and credible fashion, especially, if accompanied by structural labour market reforms. Furthermore, credible progress along fiscal consolidation would contribute to improving the overall macroeconomic mix in the EURO-zone. This will contribute to reducing the constraints that the pursuit of nominal stability places on national monetary policies, and thus to lower real interest rates. Finally, given the state of public finances in some EU countries, the reduction of budget deficits and public debt is not only a desirable policy in its own right, but also a precondition for avoiding financial unsustainability problems which might jeopardise the chances of achieving balanced economic growth.

3.2 Effects on price and wage setting

EMU will deepen economic integration through the consolidation of the Single Internal Market. Furthermore, the elimination of exchange rate uncertainty and the transparency brought up by quoting prices in the same unit will promote the mobility of firms across EMU countries. As a result of enhanced competition, we should expect lower price mark-ups from EMU and, if anything, downward pressure on long-run unemployment. Nevertheless, the size of these effects is uncertain.

It may also happen that the stronger degree of economic integration ends up imposing more discipline on wage setters. Across EU countries, wage setting is mostly done by collective bargaining. Even if the regulation of collective bargaining is unchanged, the wage-elasticity of labour demand will be affected by higher economic integration, and as economies become more open and integrated, wage outcomes will be less sensitive to the bargaining regimes (see Calmfors, 1994, Danthine and Hunt, 1994). However, while accepting that EMU may improve the degree of competition in labour markets over the medium run, we are not very optimistic regarding how significant this effect will be in the short-term. Furthermore, there may also be other effects in the opposite direction.

Indeed, regardless of the peculiarities of the wage determination process in each of the EMU member countries (regulation of collective bargaining, levels of negotiation, etc.), wage moderation should not be taken for granted. The experience of the ERM shows that the discipline effects of further economic

integration on wage determination are, if anything, rather small. Furthermore, there are at least three reasons to expect changes in the wage determination process that may go in the opposite direction. First, the recent experience in Germany following unification suggests that there may even be a perverse “wage catching-up” effect, at least initially and in the relatively backwards countries, resulting in wage pressures and less wage flexibility. Second, there is the danger that unions will not internalise, to the extent that they have been doing when facing their respective national central banks, the reaction function of the new ECB. The ECB will be setting monetary policy in terms of the overall inflation rate in the EMU-area. To the extent that national wage raises will carry less weight for the inflation rate of the whole EMU, national wage setters may perceive that wage increases are less likely to be counteracted by the monetary policy of the ECB. Finally, the development of another leg of EMU, the Social Chapter, also carries some risks. So far, the Social Chapter has not affected much of the labour legislation of EU countries. But it may happen that some harmonisation of labour legislation could worsen the already badly-functioning labour markets of some EU countries.

To sum up, since there is no guarantee that EMU will set forces in motion that would automatically lead to a better functioning of European labour markets, it is of paramount importance that the authorities pursue policies aimed at removing existing structural rigidities in product and - especially - labour markets so as to bring unemployment down.

4. Concluding remarks

As concerns the impact of EMU on European unemployment, insofar as EMU leads to more stable monetary and non-monetary policies and to a higher degree of economic integration, it may have, if anything, a favourable impact on unemployment across the EU in the medium-term. Nevertheless, since the size of these effects is uncertain, we should stress that - quite apart from EMU - the fight against unemployment must necessarily involve removing the structural obstacles to the good functioning of product and, in particular, national labour markets.

EMU membership should be accompanied by structural reforms to improve the functioning of markets and, particularly, that of labour markets.

Thus, fears that EMU may result in higher average unemployment and/or higher national unemployment differentials are grossly exaggerated. In this paper we have provided some basis for this claim:

1. There is a significant common component in European unemployment which may even increase by the enhancing effects of EMU on financial and economic integration. As regards unemployment, in “normal times” common shocks are likely to prevail.
2. The evidence on the very limited role of nominal exchange rates in addressing macroeconomic imbalances, the scant response of real exchange rates to nominal exchange rates, and the small influence of real exchange rates on employment, suggests that the short-run costs of forgoing nominal exchange rates are rather small in employment terms.
3. In the medium-term, what really influences employment creation is sustained, non-inflationary growth. In this respect, it is to be expected that a well-managed EMU and Stability and Growth Pact will lead to more stable macroeconomic policies, which will promote growth.

This notwithstanding, it must be recognised that in those countries with more differentiated economic structures, which makes them more likely to be exposed to asymmetric shocks, EMU membership should be accompanied by structural reforms designed to improve the functioning of goods and factors markets and, particularly, that of labour markets.

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Investment stimulation, with the example of housing



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European unemployment is the sign of a significant underutilisation of resources.... The crux of the matter is inadequate aggregate demand.

1. Introduction

1.1 Growth and employment in Europe

This paper is a follow-up to the recommendations made by Jacques Drèze, Edmond Malinvaud and colleagues in 1993 (Drèze, Malinvaud *et al.*, 1994). The key arguments that are of interest for discussion here are paraphrased below:

"For almost 20 years now, West European unemployment has been a major social problem and the sign of a significant underutilisation of resources at a time of substantial unfilled needs...."

The crux of the matter is a situation of inadequate aggregate demand, at a time when there does not seem to exist any leeway for fiscal expansion. The way out of this dilemma has been correctly identified by the European Commission, namely to find ways of stimulating investment without falling back too much on national budgets for funding. The emphasis on social and public investment is natural at a time when unused capacities limit the immediate prospects for business investment (which, moreover, would be labour saving).

Of course, needs, meaningful projects and funding possibilities vary between countries. But there is scope for social and public investments on a scale commensurate with a genuine revival. Many of these investments need not require long planning periods and could thus be implemented well before the current and expected levels of unemployment are eliminated. In particular there are major needs in the field of private housing, especially housing for low-income families. This is also an area where investment projects are relatively labour intensive, and where unskilled labour can be mobilised, if the costs of on-the-job-training of unskilled workers are duly subsidised. Recourse to initially unskilled workers could also be important since one wishes to avoid inflationary pressure on building costs.

The main incentive that we propose for the contemplated investments is in the form of employment subsidies, coupled with improved access to capital markets.

The principle of employment subsidies is to approve specific projects, or project areas, and to grant a subsidy proportional to the labour content of those projects. In comparison to interest or capital subsidies, our proposal has the merit of reducing further the wedge between the private and social cost of labour, and of slowing down the wasteful substitution of capital for labour."

Subsidising specially identified investment projects entails some administrative costs. But such an approach seems necessary if one wishes to concentrate the subsidies on projects which would not otherwise have been undertaken, and which yield adequate social returns.

This paper has been shortened by the editors from a longer report that is available from the authors.

From the macroeconomic viewpoint, investment is the key element of sustained growth.

Private lenders will, of course, be interested in financing some of these subsidised investments, but for projects with long pay-back periods, such as those considered here, market imperfections remain significant. That is why banks experienced in public sector funding should be given the responsibility of financing a good proportion of the investments. The European Investment Bank (EIB) and national long-term credit institutions, such as Crédit National, KfW, IML, etc., could be able to provide a significant sum. In the case of the EIB, a first step should be to extend its role, so as to encompass private housing.

In short, let us try to put involuntarily unemployed Europeans to work on worthwhile investment projects, such as housing or urban renewal. Temporary subsidies geared to the share of labour costs, accruing in any case to the Treasury should be (i) self financing, and (ii) instrumental in inducing private investors to step up investment. From a macroeconomic viewpoint, investment is the key element of sustained growth. But in order for the macroeconomic impact to be felt, the program should be carried out on a large scale. It should therefore be co-ordinated and implemented simultaneously in all member countries in the EU-15.

Building upon several recent studies (1), this paper is structured as follows. In Section 2 we develop the case for employment subsidies, with the example of housing. In Section 3, we review the main problems of implementation. In Section 4, we conclude with a look at the possible role of the EIB.

1.2 Timeliness of a European initiative

After averaging 3.3 percent per year over the period 1986-1990, GDP growth in the EU-15 has slowed down to 1.5 percent for 1991-96. The Autumn 1997 forecasts of the European Commission are more optimistic, being close to three percent for the period 1997-1999 (2). Employment is expected to increase by 2.6 percent and unemployment to abate by 1.2 percent, receding from 10.9 percent in 1996 to 9.7 percent in 1999. Budgetary deficits "at unchanged policies" are expected to come down further from 4.3 percent in 1996 to 1.8 percent in 1999. These forecasts are based on a more favourable assessment of prevailing conditions, characterised by sustained export growth, continued budgetary consolidation, appropriate wage trends, returning consumer confidence, and the high profitability of investment.

This is the background against which we are suggesting to step up investment. Is it really necessary? Is it timely? Our answer is that it is definitely useful; it might well prove necessary; and it is by all means timely to start preparations.

It is definitely useful, because the forecasts for 1997-1999 remain only moderately optimistic (3). A growth rate of three percent translates into some one percent for employment, and a decline of some 0.5 percent for unemployment. This is obviously very modest. A faster abatement of unemployment, calling for faster GDP growth, would certainly be welcome. If it can be achieved at unchanged, or only slightly affected, inflation and deficits, it would be definitely desirable.

1) Drèze and Gollier (1993), Drèze and Sneessens (1994), Sneessens and Shadman-Mehta (1995), Shadman-Mehta and Sneessens (1996), and Drèze (1997).

2) "The Community Economy in 1997-1999", document II/554/97-EN, October 14, 1997, p. 4.

3) The 1999 forecasts obtained on the basis of unchanged policies suggest there may be a need to take additional measures to achieve the medium-term objective of close to budget balance or surplus.

It might well prove necessary. There are three reasons to interpret the above forecasts with prudence. They are based on unchanged policies. But these policies remain contractionary, as evidenced by the expected budgetary consolidation of 2.5 percent between 1996 and 1999. The country forecasts include the domestic impact of domestic consolidation. But it is doubtful that they internalise the spillover effects on other EU members of the consolidation at work in a given country. And the consolidation is at work simultaneously almost everywhere (except in Denmark, Ireland and Luxembourg, which together account for three percent of EU-15 GDP). An optimistic bias in the forecasts cannot be ruled out on this score. More importantly, if it turns out that the 1997 deficits exceed the forecasts, emergency measures might be taken to bring the deficits in line with the EMU reference level of three percent. Such measures would again be contractionary, and entail spillover effects. The Stability and Growth Pact signed in Amsterdam will ensure that this issue does not disappear even once EMU is launched.

Second, the new European Central Bank will, with high probability, be eager to establish its credibility in forestalling inflation, and perhaps also in defending the exchange rate of the EURO against such currencies as the yen and the dollar. Contractionary monetary policies cannot be ruled out.

It is by all means timely, accordingly, to adopt general policies favouring investment, in particular policies of low real interest rates, but also to consider policies targeted at specific investments, which entail lags in preparation. We regard starting this preparatory work as a matter of urgency.

1.3 Investment as a tool for economic management

The Annex gives a more detailed theoretical framework explaining the logic that underpins the stimulation of investment.

We conclude from these theoretical arguments that policies aimed at stimulating aggregate activity and supporting more optimistic expectations may be needed to achieve faster growth, in particular of employment, when a relatively closed economy (like the EU-15) is suffering from persistent under-utilisation of resources. It should however be realised that such policies are not to be considered as pump-primers setting into motion a path of adjustment towards a self-perpetuating full employment equilibrium. Rather, they should be considered as the remedy to a co-ordination failure, which, even if remedied now, remains apt to reoccur at later dates. This is not a happy situation. In particular, under high levels of public indebtedness, it would seem unwise to attempt stimulating the economy through budgetary deficits (fiscal expansion), since there is no guarantee that the additional debt can be retired once the expansion has taken momentum. A safer course of action consists in identifying social needs that could be met through investment, and to speed up the realisation of these investments. That is also the approach suggested by Drèze, Malinvaud *et al.* and investigated further here.

An ambitious approach would call for the preparation of a portfolio of worthwhile investments, to be realised at times of unemployment. Thus, the pace of investment could be stepped up when employment stagnates, and slowed down when growth accelerates. That approach may seem exceedingly ambitious and suspect on grounds of "fine tuning". The more immediate agenda is to step up investment for the next few years, hoping that several years of sustained growth may bring unemployment back to a more tolerable range.

An ambitious approach would be to prepare a portfolio of investments, for implementation at times of unemployment.

2. Labour cost distortions and employment subsidies.

A situation of severe unemployment entails two severe distortions. First, there is a wide gap between the private and the social cost of labour. Second, there is a gap between the private and the social cost of advancing the use of idle resources.

2.1 The labour cost distortion

This distortion is well known, and well documented. Once more it is useful to restate the observations of Drèze, Malinvaud *et al.*

"The nature and extent of the gap between the private and social cost of labour must be properly understood. At times of full employment, the opportunity cost of labour to one firm is the productivity of labour in other firms, and there is no distortionary wedge. At times of underemployment, the opportunity cost of an unskilled worker is simply that of putting an unemployed person to work (a cost that ultimately could even be negative, if some unemployed workers would rather be employed, at unchanged net income). For other categories of workers, the situation is more complicated. Some categories are fully employed at their own skill level, so that the full employment rule applies. Other categories include workers employed below their own skill level, so that the opportunity cost should be evaluated (recursively) at the lowest skill level of actual employment for that category.

A rough measure of the wedge is given by the share in the private labour costs of social insurance contributions (SIC) and income taxes, possibly augmented by unemployment benefits (or a fraction thereof, to reflect the fact that only a fraction of new jobs go to the unemployed - a fraction typically of the order of one half). Table 1 gives an indication of the share of SIC and income taxes in labour costs at mean earnings - a share that ranges between 30 and 50 percent in Europe. (As is well known, it is distinctly lower in the US and Japan.). Including an element of unemployment, the wedge falls in the range of 40 percent to 50 percent."

Table 1. Social insurance contributions and income tax at average earnings (blue collar workers), 1991 (in percent)

	SIC Rates		Average Income Tax Rate	Wedge as a percentage of private cost
	Employer	Employee		
Belgium	41.9	12.1	11.6	46.2
Denmark	0.0	2.5	36.0	38.5
France	43.8	17.1	1.0	43.1
Germany	18.2	18.2	8.7	38.1
Ireland	12.2	7.8	16.4	32.4
Italy	50.1	9.0	14.2	48.9
Netherl	10.8	10.7	32.5	48.8
Portugal	24.5	11.0	0.9	29.2
UK	10.4	7.6	15.5	30.3
US	7.7	7.7	11.3	24.8
Japan	7.6	7.0	2.4	15.8

Source: OECD (1993).

In Box 1 we attempt a rough application of our proposal to residential housing in Belgium. The share of direct labour costs in value-added of residential construction is of the order of 50 percent, that of indirect labour costs (4) of the order of 20 percent; (see Durré, 1997). Using a range of 40 to 60 percent for the wedge between private and social labour costs, we conclude that total private costs (value-added, to a first approximation) exceed total social costs, on this score, by a factor of between 20 percent (i.e. 40 percent of direct labour costs) to 42 percent (60 percent of direct plus indirect labour costs).

2.2 The discounting distortion

The second distortion is less familiar. If the government gives up its tax revenue of labour, it does not lose the full amount, but only the discounted amount from the future date when the investment would have taken place. Obviously, the importance of this issue depends upon the size of the tax wedge, but the result is that the social discount rate is less than the private discount rate.

The reasoning just advanced does not, however, imply that housing should be financed at low interest rates when there is unemployment. To see this, consider the ancillary decision about the mortgage duration. A low rate would induce house owners to extend this as much as possible: they get a cheap loan, whereas they could invest their savings productively (5). So to correct the distortion, one *should distinguish between the real issue of advancing investment in time, and the financial issue of how the investment is funded.*

If one wished to correct the discount rate distortion through an interest subsidy to home owners, it is hard to see how the subsidy should be defined. Thus if the concern was to move forward next year's investment, a subsidy equal to one year of interest would do. But if one were concerned to advance investment from year five to year zero, the required subsidy would be five years of interest. How is one to distinguish between the two cases?

We conclude that subsidising the labour content of additional investment makes sense as a way of correcting a distortion in the pricing of labour.

The only practical solution is to eliminate the wedge through subsidising construction, but to leave the financing by home owners/occupiers alone.

We conclude accordingly that subsidising the labour content of additional investment makes sense as a way of correcting a distortion in the pricing of labour, in addition to helping overcome the macroeconomic co-ordination failure reflected in slow growth and high unemployment.

3. Guidelines for implementation of a European investment program

The foregoing sections have presented the case for subsidising the employment content of additional investment. Assume that one could: (i) identify investment projects that are not regarded as profitable at market prices, but would be undertaken if the subsidy scheme is implemented; (ii) identify the labour-costs component of such investments; and (iii) measure the returns to the Treasury associated with that labour component; then one could, in principle, define a subsidy program that stimulates investment at no budgetary cost. The macroeconomic benefits would come free. Each of the three conditions may be difficult to meet exactly, but could well be met approximately. No more can be expected from macroeconomic policies generally.

4) Labour costs embodied in intermediate inputs.

5) Also, at a zero rate, they would over invest in the non-labour part of the house (insulating materials, air-conditioning,...).

Box 1. The example of low cost housing in Wallony

A precise and detailed description of the situation prevailing in the European housing sector is obviously beyond the scope of this paper. We focus here on the situation prevailing in one region of Belgium (Wallony) and use the available information to provide rough measures of unsatisfied needs and of the supply responses that might be expected from a programme of investment stimulation.

Unsatisfied needs

Output and employment in the housing sector in Belgium decreased sharply with the 1981 recession. Value-added fell from eight percent to less than six percent of GDP, and the number of workers was almost cut in half. The recovery of the late 1980s produced only a slight improvement. The 1981 recession thus created a substantial excess supply. Estimates reported in a study by Boon *et al.* (1997) suggest a demand for about 6,500 new dwellings per year over next 18 years, compared to an average of 9,000 new dwellings officially registered every year in the recent past.

There are however clear indications of unsatisfied needs for low income families. A recent survey suggests that five percent of the existing dwellings would need substantial repairs in order to be considered salubrious. At least 30 percent of the existing dwellings can be regarded as inferior dwellings in terms of equipment and facilities. And at least 30 percent of low-income families (net income below the median) live in such inferior dwellings. While other families progressively improve the quality of their house, low-income families typically remain in ill-equipped houses during their entire lifetime. The cost of housing represents up to 40 percent of their income compared to about 15 percent for families with net income above the median.

Marginal projects

Programmes funded by the region to provide low-income households with access to low-cost housing are too limited to meet all demands. The investment programme decided by the regional government of Wallony means that less than 500 additional low-cost houses will be provided each year over the next five years, while the number of pending demands officially registered is 43,000*. This stock of unsatisfied needs represents an amount of about ECU 3 billion, for a region representing about one percent of the EU population.

Labour contents

The impact of housing investment on employment may be substantial. A ECU 25 million investment (about 300 dwellings) is estimated to generate about 500 person-years (349 in construction, 151 in intermediate input sectors; see Boon *et al.*, 1997). The ratio between the total and the direct employment effects so obtained (1.43) is slightly larger than the one found in the 1985 input-output table (1.33). This may reflect the under-representation of small enterprises in the latter. The total labour content in the residential sector amounts to about 70 percent (a 50 direct plus a 20 percent indirect content).

Supply response

Stimulating investment in the low-cost housing sector may thus have substantial employment effects if there are no supply bottlenecks. Looking at the effects of the recovery of the late 1980s and comparing them to the situation currently prevailing in the construction sector suggests that bottlenecks are unlikely. The recovery of the late 1980s took place without generating inflationary pressures in the construction sector, despite substantial production increases (value-added in 1991 was 30 percent higher - at constant prices - than in 1986; while its share of GDP increased from 5.4 percent to six percent). The situation prevailing today, by comparison with the late 1980s, is one of much less optimistic business expectations, reflecting under-utilised productive capacities.

Subsidy rates

The gap between the market cost of a dwelling and the cost that can be borne by prospective low-income households can be evaluated by looking at subsidy rates currently offered for low-cost housing. These rates can be approximated either by looking at the discrepancy between market and subsidised rental costs, or by looking at the subsidy received by the local associations in charge of running low-cost housing programmes funded by the region. The actual subsidy rate will of course vary from one household to the next.

Let us consider a specific case, corresponding to an average situation. The construction cost is ECU 75,000, with a total cost (including land, other charges, etc.) of about ECU 100,000.

The local association running the investment programme can borrow 90 percent of the construction cost net of charges from the region and must repay 125 percent of this amount over 30 years; the rest must be borrowed at market rates. If the latter is six percent for a 30 years loan (implying a total repayment of 218 percent), the total amount to be repaid by the local association is equal to 156 percent of the total cost. The implicit subsidy rate is thus equal to 28 percent.

Estimating the subsidy rate from rental costs leads to a similar order of magnitude. The maximum rental cost that can be charged by the local association for the type of house considered in our example is some ECU 400 per month. If we assume that the market rental cost is equal to about six percent of the amount invested, we obtain ECU 6,000 per year, or ECU 500 per month. The difference between the subsidised and the market rental costs is some 25 percent.

** This figure (cited in a report prepared by the University of Mons for the regional government) may entail double counting. A precise estimate should also take into account the number of households which do not introduce a demand through lack of information or discouragement. The existence of substantial unsatisfied needs is confirmed by heads of local associations in charge of running low-cost housing programmes.*

We propose a European programme of national employment subsidies, with an overall financial inducement coming from Europe.

With this background, we can now consider a European program under which employment subsidies would be set and funded by national authorities, with an overall financial inducement coming from Europe. We believe that a cooperative European effort is needed to maximise the macroeconomic impact.

3.1 Specific Issues

European co-ordination and incentives

The program would be limited so that marginal additions can be identified. In the discussion we draw on the example of low cost housing set out in Box 1. However, there may be other sectors where the same logic could apply.

It is expected that national authorities could prepare investment plans for, say, the next seven years. To the extent that such investments already benefit from various forms of public support, the implementation would be conditional on keeping unchanged the public support expected to prevail over the next seven years. It would of course simplify matters considerably if existing forms of support were replaced at once with employment subsidies as defined below.

A program tailored to an additional investment of ECU 150 billion to ECU 250 billion would remain well within the bounds of meeting real needs.

A remaining difficulty is that national authorities could be tempted to under-report investments that have already been decided. Perhaps the simplest safeguard in this respect is to announce national quotas for access to the program, possibly accompanied with an obligation to maintain a minimal ratio of investment outside the program.

Overall scale

The overall scale of the program can be approached from two angles: needs and means.

The current population of the EU-15 is 375 million people. The corresponding number of dwellings exceeds 100 million. Using that round figure as a reference, and using an average figure of ECU 60,000 per dwelling, it would require an investment of ECU 60 billion to improve the dwellings of one percent of the EU-15 population. Although we have not seen hard data, we feel safe in assuming that several percent of the EU-15 population occupy substandard dwellings. A program tailored to an additional investment of ECU 150 billion to ECU 250 billion would thus remain well within the bounds of meeting real needs.

How does one create incentives for member nations to participate? This could be achieved with low-interest loans from the EIB, though a special EU budget would have to be appropriated for this purpose.

The cost of the associated interest subsidies would build up rapidly. Assume that funding extends over 30 years. One percentage point of interest subsidy would mean an annual cost of ECU 750 million for ECU 100 billion invested at a six percent interest rate. This sum corresponds to three percent of the annual budget for the Structural Funds of the EU.

Adjusting scale to circumstances

Given the underlying macroeconomic motivation, it would seem appropriate to relate the scale of the program to the rate of unemployment. Given the specialisation of the program in the construction field, it would seem furthermore appropriate to relate the scale to the level of activity in construction. If a specific unemployment rate for construction workers could be defined meaningfully, that rate could be used as a single reference. Unfortunately, defining that rate meaningfully may not be feasible.

It should also be possible to tailor a programme to local unemployment and the level of activity of the construction industry in the region in question. An explicit formula including these variables could be constructed.

Such an adjustment of investment falls squarely into what is often referred to as "fine tuning", and will thus meet with standard objections on that score. Yet, the immediate intention is quite remote from fine tuning. It is to stimulate investment at a time when unemployment in Europe is shockingly high, and a long period of sustained growth is indispensable to bring unemployment down to more tolerable levels. We see no contradiction in using a "formula" to implement that program. The formula has the advantage of announcing clearly that the program is temporary, thereby reinforcing the inducement to shift investment forward, and should be non-inflationary.

National employment subsidies

It is well documented by now that the core of unemployment affects low-skilled, low-paid workers. At the same time, it is obvious that a hierarchy of qualifications are involved in building projects. If a set of new projects is initiated, it is unavoidable that some qualified workers will be displaced from other activities. Hopefully, they will be replaced there through upgrading of others next in line, until eventually vacant jobs are filled by unemployed workers. The extent of the displacements will of course depend upon the overall activity in the construction industry.

In order to provide maximum incentives for low-skilled employment, we suggest issuing subsidies per person-year, irrespective of wage levels. The overall amount of the subsidies for a project would be based upon the wedge calculated from overall wage costs. But the disbursement would take the form of a flat amount per person-year, so as to privilege numbers over pay. The administration of this scheme may or may not be straightforward, depending upon the extent to which actual employment on a given project can be monitored, and upon the number (hence average size) of projects at stake. The goal is to define a simple, easily monitored scheme. (Note that monitoring has equal difficulty whether the subsidies are proportional to wage costs or to person-years.)

In order to provide maximum incentives for low-skilled employment, we suggest issuing subsidies per person-year, irrespective of wage levels.

As a practical guideline, we offer the following suggestion. For a firm being awarded a building contract under the program, the average labour cost can be measured from the record of social insurance contributions, say over the last two fiscal years. Call that average cost, w' . Let the subsidy per person-year amount to x . If the total labour costs corresponding to the building contract are L , the subsidy will be set equal to xL/w' . This method automatically favours firms which rely more on unskilled labour, i.e. for which w' is relatively low.

An additional incentive for deepening the recourse to unskilled labour could be introduced by inviting firms to justify that average labour cost within the proposed building contract is below w' . But the burden of the proof would then lie with the firm.

Such a scheme would go a fair way towards favouring labour-intensive investments. It should prove straightforward to monitor, since the only variable to be checked is aggregate labour costs, and other items could be given in the tenders.

Targeting beneficiaries

Since the houses to be constructed would be sold (or rented) at below market rates, there is the issue of rationing demand. One could imagine a number of schemes including private builders, though there would be the risk that some of the benefits of the state subsidies would accrue to builders rather than the poor. A simpler method would be for the state to take responsibility for construction, by expanding its normal schemes for low cost housing. In this case, competitive tendering is, of course, essential to contain costs.

Public housing programs in different countries use different criteria to define priorities for occupancy (6). Income (or sometimes wealth) is a common criterion. It would seem preferable not to depart too much from national practices, with only broad guidelines agreed upon at the European level.

3.2 Summary

Summarising this section, we may now define somewhat more precisely the outline of a program aimed at stimulating investment in housing.

- The program should be a cooperative European effort (for macroeconomic impact); inducements to participate could take the form of low-cost funding for participating countries; a special budget should be appropriated; the size of that budget would *de facto* define the scale of the program; that scale could be big; it could be adjusted over time as a function of the rate of unemployment and of the level of construction activity.
- The program should be implemented in member countries through approval of investment projects and the issue of labour subsidies; these subsidies would take the form of a flat amount per person-year of employment on the approved projects; the flat amount should be such that overall subsidies correspond to the share of private labour costs accruing to the Treasury.
- The program would stipulate upper limits to the access of individual member countries to EU funding; it would delegate to national authorities the conditions of eligibility to occupy the dwellings.

Investment stimulation seems to be a natural approach, but our conviction does not seem to be shared by European political leaders.

4. Concluding remarks

4.1 On political feasibility

Political feasibility of a European program as outlined here remains doubtful on several scores.

- The starting point of the proposal is the conviction that slow growth and stagnation of employment in EU-15 reflect in part a macroeconomic co-ordination failure. Investment stimulation seems to be the more natural approach to overcoming that co-ordination failure, but our conviction does not seem to be shared by European political leaders and their advisors. This is evidenced by the lack of attention to the co-ordination of macroeconomic stimulation at the Luxembourg Employment Summit. A major revision of policy attitudes would thus seem to be called for, and there are no signs that such a revision is forthcoming.

6) See Coloos (1997) for an overview.

- The program we are advocating should be decided by the European Council, presumably subject to unanimity approval; there is no indication that unanimous support could emerge for a new program of this kind.
- An interest subsidy of 50 to 100 basis points on an overall investment of ECU 150 billion to ECU 250 billion would call for a budgetary appropriation of ECU 0.5 billion to ECU 2 billion per year over the next 30 years. There may arise difficulties to appropriations extending over such a long horizon, and there is the issue of how the corresponding revenue would be raised. This is an aspect not covered in the present paper.
- Participation of the member countries in the implementation of the program is essential, but the willingness of the Member States to organise and implement the suggested employment subsidies, and response of the sector to these incentives, are untested.

The present paper is an attempt to bring forth these problems and an invitation to study them. In a sense, we are simply charting out some of the ground to be covered if the Amsterdam request to the EIB is to materialise (7). The more ambitious goal of Drèze, Malinvaud *et al.* was to assemble a portfolio of investment projects, the realisation of which could be adjusted to macroeconomic circumstances. Given the lags involved in the construction of such a portfolio, we still feel that this should be undertaken at once. This task could be carried out by the EIB.

4.2 A role for the EIB

Regarding the role of the EIB itself, we offer the following suggestions:

- We urge the EIB to extend our investigation into the feasibility of stimulating investment in housing across the EU-15. Such an investigation should survey the situation in the different member countries, along the lines that we have followed for Wallony. Simultaneously, the operational way of fitting such a program into existing European programs could be investigated, and a detailed blueprint, covering both the financial incentives to participate, and the internal implementation within member states, could be prepared by the EIB.
- Our paper has concentrated on housing. The Drèze, Malinvaud *et al.* proposals also covered other aspects of urban renewal, together with urban transportation and investments in trans-European networks and environment protection. These other areas could also be investigated by the EIB.

These suggestions invite the EIB to exercise initiative in launching these studies and reporting to the European Council. Presumably, this was the purpose of the Amsterdam resolution.

We urge the EIB to extend our investigation into the feasibility of stimulating investment across the EU.

7) At the Amsterdam European Council, the Resolution of the European Council on Growth and Employment urged the European Investment Bank to step up its activities "in creating employment through investment opportunities in Europe".

Annex

Why stimulate investment? A theoretical framework

Outline

To set the stage, we review briefly a (non-standard) theoretical case for demand management, based upon contemporaneous thinking about incompleteness of markets. The argument proceeds in three steps: (i) incomplete markets justify price and wage rigidities as a second-best compromise between productive efficiency and risk-sharing; (ii) incomplete markets are conducive to co-ordination failures which, in the presence of price and wage rigidities, result in multiple equilibria, possibly accompanied by substantial underutilisation of resources; (iii) a multiplicity of equilibria in turn strengthen the incentives for downward price and wage rigidities, endowing the underemployment equilibria with persistence.

In this argument, incompleteness of markets refers to the pervasive absence of markets for futures and contingent contracts, in particular for labour services, but also for aggregate demand, hence for co-ordination of expectations.

Wage and price rigidities

We begin with wage rigidities, following Drèze and Gollier (1993) (8). In an economy evolving over time, under uncertainty about the future state of the environment, an efficient allocation of resources is not sustained by sequential clearing of spot markets (by a sequence of temporary equilibria). Insurance markets, or substitutes thereof, are required for an efficient allocation of risk bearing. Financial markets and insurance contracts serve that function, within limits. For labour services, multi-period contracts as studied in the theory of implicit contracts (9) offer scope for risk sharing between workers unable to diversify their human capital and shareholders holding diversified portfolios. In contrast, future job applicants (the young, the unemployed, the future re-entrants after dismissal or temporary withdrawal) have no access to insurance. They are left to bear the risk of labour market-conditions at the time of (re-)entry. If spot markets for labour contracts (both temporary or long-term contracts) cleared competitively at all times, the wages stipulated in these contracts would be subject to extreme fluctuations; in particular, they would fall to the reservation level of marginal workers under cyclically depressed markets. The resulting uncertainty for prospective job applicants would be severe. And yet, other agents (workers under contract and owners of non-human wealth) could theoretically provide insurance on mutually agreeable terms. But markets to that effect (markets for contingent labour contracts) do not exist. The resulting inefficiency (in risk sharing) can be alleviated, at some cost, through downwards wage rigidities (in bad states) and progressive labour taxes (in good states). A second-best allocation is achieved when the benefits from risk sharing just offset, at the margin, the costs of productive inefficiency (involuntary unemployment associated with the downward wage rigidities) (10). The reasoning justifies minimum wages or some forms of union wages coupled with unemployment benefits. A superior, but more sophisticated and less prevalent alternative would combine the minimum wages with employment subsidies, see e.g. Drèze and Sneessens (1994, Section 3.2) or Phelps (1997).

8) See also Bean (1984).

9) See Azariadis (1975), Baily (1979) and Gordon (1974), or the survey by Rosen (1985).

10) The second-best analysis assumes financial equilibrium, i.e. equality of the present values of unemployment benefits and of labour taxes, adjusted by a risk premium corresponding to the requirements of financial markets.

The corresponding argument for prices aims at explaining downward price rigidities in the face of underutilisation of capacities. The following statement is borrowed from Drèze (1997):

"Investment in productive capacity generates fixed costs. Under incomplete financial markets, these must be covered by surviving firms at all date-event pairs; this will typically require competitive firms to practice average cost pricing in states of depressed demand, thus explaining the downward rigidity of prices in the presence of excess capacity."

Co-ordination failures

Turning to co-ordination failures, consider an economy with price vector $p = (p_1, p_2)$, where 1 denotes a set of commodities (goods or services) with flexible prices and 2 a set of commodities with rigid prices. Let $p_2 = p'_2$ be given. A supply-constrained equilibrium is a price vector $p = (p_1, p'_2)$ and a physical allocation such that markets for 1-goods clear competitively whereas the markets for 2-goods clear through quantity constraints rationing excess supply (unemployment and excess capacities). It is shown in Drèze (1997) that, under standard assumptions and for arbitrary given p'_2 , there exist supply-constrained equilibria with arbitrarily severe quantity rationing of the supply of 2-goods (11).

There are two new elements in this result, relative to the literature of the 1970s on equilibria with quantity rationing. First, the result holds for arbitrary prices p_2 , hence also for prices p_2^* which, together with some p_1^* , form a competitive price vector p^* ; there is thus scope for excess supply at competitive prices, a phenomenon which is most naturally interpreted as a co-ordination failure. Firms do not hire due to lack of demand; unemployed workers do not buy due to lack of income; excess capacities build up and discourage investment. And yet, full employment of resources is attainable *at the same wages and prices*. Second, the extent of rationing is arbitrary, on theoretical grounds; the prevailing extent is apt to be path-dependent, and largely driven by expectations. Under pessimistic expectations about future relative prices and/or quantity constraints, firms do not hire or invest, resulting in low levels of activity and employment today. Yet, the expectations may be rational, i.e. realised tomorrow. There is no market mechanism to coordinate expectations and trigger adjustments of expected future prices and quantities towards full utilisation of resources today.

Persistence

The prospect of underemployment equilibria reflecting pure co-ordination failures helps understand the resistance of wages in the face of unemployment. Indeed, the same degree of unemployment is logically compatible with lower wages. There is no guarantee that lower wages will result in more employment, and no immediate evidence that prevailing wages are incompatible with higher employment. Policies aimed at overcoming the co-ordination failure through demand stimulation and support of more optimistic expectations define a superior alternative, especially from the viewpoint of workers. The wage resistance is thus understandable, even though the persistence of co-ordination failure equilibria is related to price and wage rigidities.

11) Technically, for any vector s'_2 of quantity constraints on the supply of 2-goods, there exists a supply-constrained equilibrium with constraints $s_2 < s'_2$.

Econometric confirmation

The theoretical analysis summarised above may be related to empirical work validating the presence of multiple equilibria, for instance Lubrano *et al.* (1996) or Shadman-Mehta and Sneessens (1997), following earlier alternative formulations by Blanchard and Summers (1987) or Manning (1992).

Lubrano *et al.* (1996) use Johansen's FIML method to analyse the econometric relationships between all the variables entering a theoretical model of wage and unemployment determination under imperfect competition and real rigidities. The model was estimated on Belgian data over the period 1955-1988. The advantage of the Johansen procedure (compared to equation-by-equation methods) is that it considers the system of dynamic equations as a whole, and allows us to test the status of each variable (exogenous or endogenous) as well as the number of independent cointegrated (structural) relationships. As expected from the theoretical model, the wage share, the unemployment rate and the capital gap (12) emerge as endogenous variables; all the explanatory variables of the theoretical model are weakly exogenous. The model satisfies all stability tests. However, one obtains only two cointegrating relationships. The dynamic system has thus no unique long-term equilibrium unemployment rate (NAIRU); the equilibrium unemployment rate is well defined only at a given capital stock (or capital gap). The value of this short-term equilibrium unemployment rate depends on past investment rates and/or on expectations about future sales (not explicitly modelled, but incorporated in the system's dynamics). Short-run equilibria are extremely (locally) stable, i.e., large shocks are needed to have a permanent effect on the path followed by the economy. Simulation exercises show that both demand and supply shocks have real effects on equilibrium unemployment.

Shadman-Mehta and Sneessens (1997) develop this analysis further by examining under what conditions such a continuum of under-employment equilibria can be obtained in a model with quantity constraints of the *EUP* type (see Drèze *et al.*, 1990). The crucial point is the effect of capital gaps on wage formation. As the unemployment rate and the capital gap progressively increase, the wage rate becomes less sensitive to the unemployment rate (i.e., the gap between labour supply and actual employment) and more sensitive to the gap between the capacity and the actual employment levels (i.e., the degree of capacity utilisation). It then suffices that prices be determined by a mark-up on costs (as in standard monopolistic competition models, with possibly a capacity utilisation effect) to obtain a continuum of equilibria indexed by the capital stock; the latter determines the "size" of the economy. The model is thus a particular case of Drèze (1997). Estimation of the model over the period 1955-1994 yields the same results as in Lubrano *et al.* (1996).

12) The capital gap is a combination of the unemployment rate and the degree of capacity utilisation. The three endogenous variables can thus alternatively be written as the wage share, the unemployment rate and the degree of capacity utilisation

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The employment effects of investment projects



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1. Introduction

With some 19 million people out of work, unemployment has become one of the biggest problems facing the EU today. Over the last decade, job creation has been unable to keep up with the increasing size of the active population, leading to a trend of rising unemployment rates for many EU member states. The causes of unemployment in Europe are complex and manifold, but proposals for tackling the problem have so far mainly focused on the supply-side with the aim of making labour markets more flexible. However, the problem may also lie with the demand for labour. Taking into account the fact that investment rates in the EU have declined over the last decade, a focused attempt to stimulate labour demand through investment should also be considered.

The relationship between investment and employment creation raises two key questions. First, how much does investment - in the form of an additional ECU one billion, say - actually increase the demand for labour? Second, is it possible to define the kind of investment required to obtain the maximum effect?

Answering these two questions requires quantitative analysis, and the relationship between investment and employment creation has been addressed in this paper on the basis of three different models, which are differentiated by the uses to which they can be put: The first concerns the construction phase of investment projects; the second looks at the effect of productive capital in the operational phase of investment projects; while the third analyses the structural equilibrium effects combining construction and operational effects for the particular case of public investment spending in Spain. The models are further differentiated by their underlying methodologies: The construction phase is assessed by an input-output model (IO); the operational phase by a vintage capital model (VCM); and the equilibrium effects by a so-called structural vector autoregression (SVAR) (1).

In attempting to see what can be said regarding the additional employment generated by investment, the paper is organised as follows. The next section assesses the employment creation potential during the construction phase of investment projects in different sectors of the EU-12 aggregate with the IO model. Section 3 then considers employment generated over the lifetime of capital in the manufacturing sector of five countries.

This paper draws on work carried out in the Chief Economist's Department of the EIB for the IO and VCM models. It also summarises research with SVAR models by Professor Charles Bean of the London School of Economics on behalf of the European Commission. This work (see Bean, 1997, for details) was presented at the conference on "Employment in Europe", 15 January 1998, at the EIB. The authors would like to thank Joseph Heuschling at EUROSTAT and Professor Jörg Beutel at the Fachhochschule Konstanz for their help and assistance.

1) All the data used in the IO and VCM calculations were provided by Eurostat. For the IO model, these were 1985 and 1991 IO tables for ten EU member states and the EU-12 aggregate. Greece and Luxembourg were not looked at on an individual basis due to data problems with the former and the small size of the latter. For the VCM, Eurostat data on the capital stock and gross fixed capital formation for three capital goods (machinery, transport equipment and building) in five representative EU countries were used.

Section 4 looks at the SVAR methodology, which has recently been used to evaluate the impact of public investment projects in Spain. The fifth section offers a summary of the key findings and provides a few policy conclusions.

2. Employment effects in the construction phase: an input-output (IO) analysis

First comes a look at a simple demand shock with the help of the IO methodology (2). The IO model - involving large matrices that give a snapshot of all the goods and services flowing through the economy - is a standard technique for analysing the effects of such shocks. A technical description of the model can be found in Box 1. It is worth bearing in mind that the IO model assumes that there are no capacity constraints and that labour and capital are complementary in fixed proportions.

In the IO approach, increased investment augments the demand for labour during the construction phase. The magnitude of this employment creation on the basis of 1997 figures was estimated for the EU, with the economy divided into 25 sectors, encompassing, among others, metal products, agricultural and industrial machinery, office machines, electrical goods, building and construction and inland transport services. These are the sectors most affected during the installation of the great majority of investment projects.

Table 1. Employment effects of an ECU one billion final demand shock by sector (in 1,000 person-years)

Sector	Direct effect	Indirect effect	Total effect
Metal products	11.1	9.2	20.3
Agricultural and industrial machinery	8.7	9.9	18.5
Office machines	11.0	9.8	20.8
Electrical goods	9.5	8.8	18.2
Building and construction	11.7	8.7	20.5
Inland transport services	15.0	6.7	21.7

An investment of ECU one billion creates about 18,000 to 22,000 person-years of jobs in the construction phase.

As can be seen from Table 1, an investment of ECU one billion in the EU-12 in 1997 created approximately 18,000 to 22,000 person-years (3) of jobs in the construction phase (4). Up to half of the employment effect is indirect, i.e. it accrues due to an increase in demand for intermediate goods and services.

2) For IO calculations of the employment impact of Trans-European Transport Networks, see Commission of the European Communities (1997).

3) The person-year unit of employment stands for the amount of labour that one worker provides during one year. A temporary increase in construction investment by ECU one billion spread over one year would need roughly 20,000 additional workers over the same period (i.e. 20,000 person-years).

4) The 1997 IO table was calculated by the authors by extrapolating the changes between the 1985 and the 1991 IO table into the future. The technological changes in the six years between 1985 and 1991 were assumed to continue in the six years from 1991 to 1997. Estimates for the 1997 IO table were produced by both exponential and linear extrapolation. As only minor differences were found between these two approaches, the 1997 projection appears rather robust.

The IO model presents a snapshot of the flow of goods and services throughout the economy at a particular point in time. Comparing the 1985, the 1991 and the forecasted 1997 IO table, employment creation was found to decrease by about 1.5 to 2 percent annually. An ECU one billion final demand shock in the construction sector generated 25,100 person-years of employment in 1985, 22,900 person-years in 1991, and 20,500 person-years in 1997.

The sector where the investment project occurs does not really matter very much.

Due to the existence of important sectoral spillovers, all sectors show similar total employment effects, and the sector where the investment project occurs does not really matter very much at this level of aggregation. An industrial project may thus generate as much employment in the construction phase as does investment in infrastructure.

Box 1. A description of the IO model

The IO method represents the economy as a set of n sectors, each of which has a linear production function with complementary factors of production. The production system is written as

$$\begin{aligned} a_{11}X_1 + a_{12}X_2 + \dots + a_{1n}X_n + F_1 &= X_1 \\ &\vdots \\ a_{n1}X_1 + a_{n2}X_2 + \dots + a_{nn}X_n + F_n &= X_n \end{aligned}$$

where the X_i represent the output of the i th sector of the economy, a_{ij} represents the amount of the i th commodity used in the production of one unit of the j th commodity and F_i represents the final demand for the i th commodity ($i, j = 1, \dots, n$). The total output of the i th sector is thus split into the amounts which are used in the production of all the other commodities (known as intermediate demand) and that which is finally consumed (known as final demand). The model is thus able to capture the interrelationship between sectors.

In matrix algebra, the system can be written as

$$AX + F = X$$

where A is the matrix of input-output coefficients, a_{ij} , X is the vector of outputs of commodities, AX is the vector of intermediate demands and F is the vector of final demands.

The impact of a final demand shock, ΔF , on total output, X , is given by

$$\Delta X = (I - A)^{-1} \Delta F$$

where I is the $(n \times n)$ identity matrix. The final demand shock is met by additional output, ΔX , which in turn implies an employment effect of

$$\Delta L = \ell \Delta X = \ell (I - A)^{-1} \Delta F$$

where ΔL is the additional employment created and ℓ is the vector of labour coefficients for the economy.

This employment effect can be decomposed into a direct and indirect effect, equal to

$$\Delta L_{\text{direct}} = \ell \Delta F \quad \text{and} \quad \Delta L_{\text{indirect}} = \ell ((I - A)^{-1} - I) \Delta F$$

The drawback of the IO model is that since it assumes that the a_{ij} are fixed, the same linear relationships must exist over time. In addition, labour and capital are assumed complementary in fixed proportion. It must also be the case that there are no capacity constraints in the economy. This makes the IO model totally demand driven and - as supply is fully elastic - what is demanded will be supplied.

At least a quarter of the employment effect is in services, chiefly due to increased intermediate demand.

The IO model also allows examination of other aspects of employment creation, including the sector in which the jobs are created and how employment creation varies across EU member states.

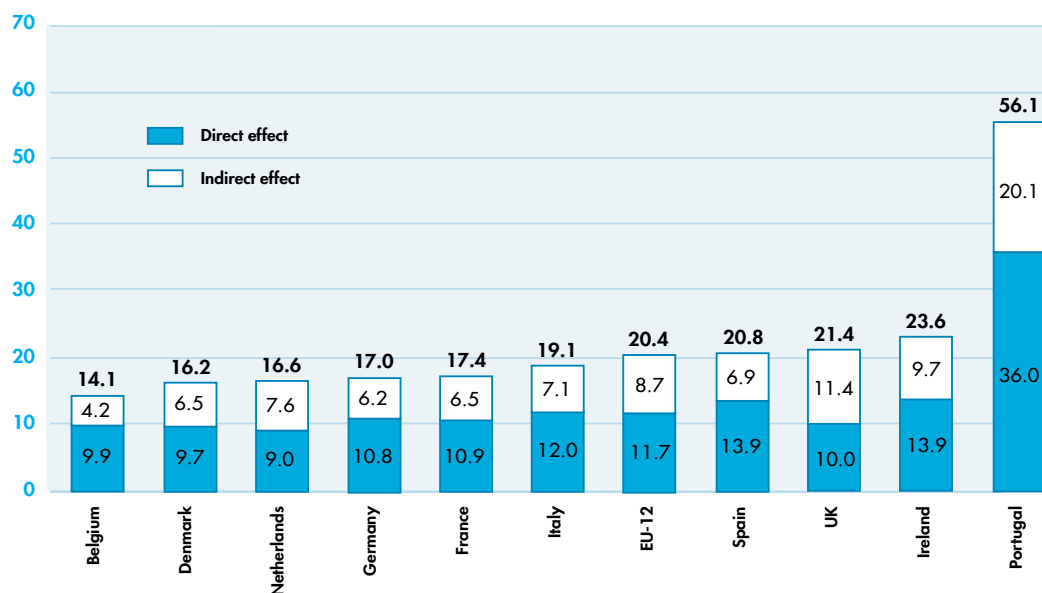
Starting with the sectoral distribution of jobs, the secondary "multiplier" effects are illustrated in Table 2. While the biggest benefits accrue in the sectors where the direct demand shock occurs, at least a quarter of the employment effect is in services, chiefly due to increased intermediate demand.

Table 2. Employment effects of an ECU one billion final demand shock in selected sectors, decomposed into four sector groups, 1997 (in 1,000 person-years)

Sector	Agriculture	Industry	Construction	Services	Total
Metal products	0.2	14.8	0.1	5.2	20.3
Agricultural and industrial machinery	0.1	13.3	0.1	5.0	18.5
Office machines	0.1	14.9	0.1	5.6	20.8
Electrical goods	0.1	13.5	0.1	4.7	18.2
Building and construction	0.1	3.4	12.5	4.5	20.5
Inland transport services	0.1	1.5	0.2	19.9	21.7

The analysis of the EU-12 aggregate can be extended to the national level. The country results are shown in Figure 1. Not surprisingly, given differing wage rates, capital structures and international leakages (i.e. purchases of intermediate goods and services from other countries), employment effects in the home country vary significantly across countries. In most of the EU, the domestic employment generated by ECU one billion falls within the relatively narrow range of 16,000 person-years in Denmark to 24,000 person-years in Ireland. Non-domestic employment effects for highly developed countries with high import-to-GDP ratios are likely to be large for small countries. This is the case for Belgium, where only 14,000 Belgian person-years of employment are created for each ECU billion. Portugal, with a less capital intensive production structure lies at the other end of the employment spectrum. This result may partially be due to the sectoral averages used by the model. In the past, typical investment in Portugal may have been relatively smaller-scale and more labour intensive than elsewhere.

Figure 1. Domestic employment effects of an ECU one billion final demand shock in the building and construction sector, 1997 (1,000 person-years)



The question of what happens to the investment project after its completion is addressed in the next section with a look at the linkages between sustained employment and the capital base in the economy.

3. Employment effects in the operational phase: a vintage capital model (VCM)

Another way of calculating employment multipliers takes as its point of departure the ratio of the capital stock in (a sector of) the economy to the (sectoral) labour force (5). However, calculating the capital stock - an unobservable variable - is a difficult endeavour. Instead, flows of investment, together with assumptions about capital retirements, are used to determine the amount of capital in the economy. The VCM provides a method of calculating the capital stock of an economy, a technical description of which can be found in Box 2.

In the subsequent analysis, the emphasis is placed on the manufacturing sector in five EU member states (France, Germany, Italy, the Netherlands and the UK) during the period from 1960 to 1995. With a share of the total capital stock of around 15 percent for all countries, manufacturing represents not only an important sector in the economy, but is also a "classic" sector for investment.

Figure 2 presents an overview of employment, the capital stock and their ratio (the average labour-to-capital ratio) in the manufacturing sector of the five countries.

The average labour-to-capital ratio has been falling over the last three decades.

With roughly unchanged employment levels and an increasing capital stock, it is not surprising that the average labour-to-capital ratio has been falling over the last three decades (from an average of 20,000 jobs in 1960 to 10,000 jobs per ECU one billion in 1995). The drop in employment in the manufacturing sector has been especially marked for the UK, where - in contrast to the other European countries - labour shedding has taken place. As a result, the average 1995 labour-to-capital ratio for the UK is almost 1.4 times as high as the European average. This higher labour intensity could also be due in part to more flexible labour markets in the UK. The Italian capital stock in 1995 ECU, on the other hand, has remained almost unchanged since the late 1960s, so that the decline of the average labour-to-capital ratio has been less than in the other countries (6).

A first glimpse of employment creation can be provided by the average labour-to-capital ratio, indicating the average amount of labour per unit of capital. Looking simply at the ratio of employment to the capital stock, it can be seen that a capital stock of ECU one billion in the manufacturing sector in 1995 is associated with an average of about 10,000 jobs. This is equivalent to a cost of ECU 100,000 per job. Interestingly, there has been a strong convergence between countries over time (7).

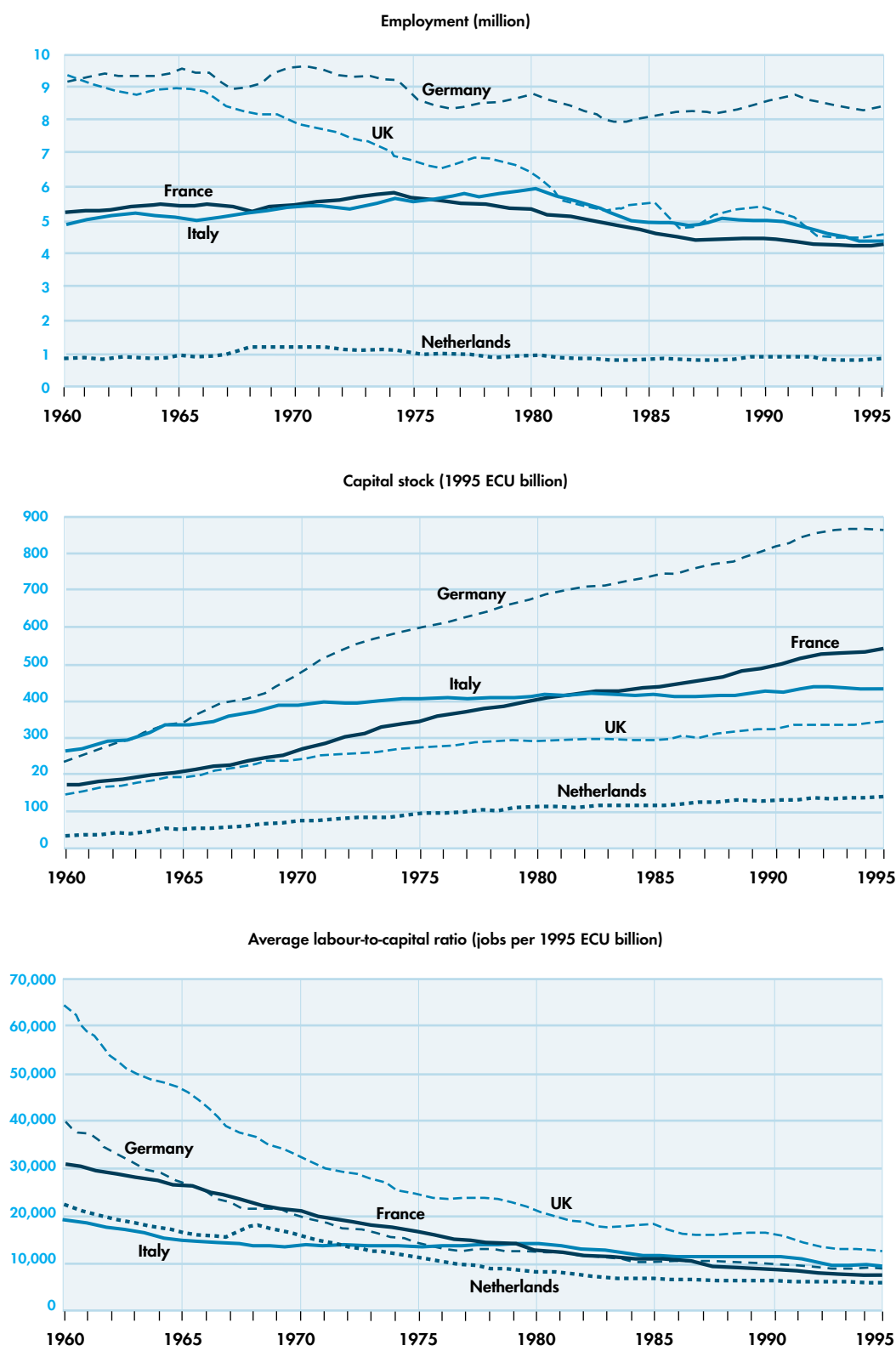
However, it has to be said that the average labour-to-capital ratio is a relatively simple step in the direction of quantifying employment creation. New investments do not necessarily mirror the average labour intensity in the economy and there are general equilibrium effects that are ignored. One way to proceed a little further is to calculate the marginal labour-to-capital ratio with the VCM. At least this will provide some idea of the actual employment multiplier for investment projects in a particular year.

5) For a table of the historical development of the EU-12 real gross capital stock per occupied person for six aggregate sectors of the economy, see Eurostat (1997, p. 29).

6) Of course, another explanation could be problems with the survival function for the Italian manufacturing capital stock, such as the simplifying assumption of a constant functional form. Equally, estimates of the capital stock in the UK may be distorted if investment scrapping during the 1980s is not captured.

7) As already mentioned, one exception is the UK.

Figure 2. Employment, the capital stock and the average labour-to-capital ratio in the manufacturing sector of five EU member states, 1960-1995



The calculation of the marginal labour-to-capital ratio requires a linkage between labour and capital (see Box 2). This is achieved by making the - very strong - assumption that capital and labour are complements, i.e. one unit of labour sticks to one unit of capital throughout the lifetime of capital in fixed proportions. The assumption of fixed complementarity between inputs is similar to that of the IO analysis. Figure 3 shows the calculated marginal labour-to-capital ratios in manufacturing as well as their trends for the five countries.

Box 2. A description of the VCM

1. Estimating the capital stock

The capital stock of an economy is not directly observable and has to be estimated from annual investment data. As investment represents the acquisition of capital goods at a given point in time, the durable goods acquired at different times can be referred to as different vintages of capital. The gross capital stock is then calculated as the sum of the remaining parts of all previous capital vintages, which is equivalent to cumulating past investment and deducting the cumulated value of investment that has been retired as well as to the cumulative value - at prices as if they were new - of past investment still in use. No weight is given to whether the capital goods are actually used in the production process or stay idle.

2. Using the VCM to estimate marginal labour-to-capital ratios

Just as the (gross) capital stock (GC) at time t can be calculated as

$$GC_t = GC_{t-1} + GFCF_t - \text{Retirements},$$

where $GFCF$ is gross fixed capital formation, i.e. investment, labour can be decomposed into

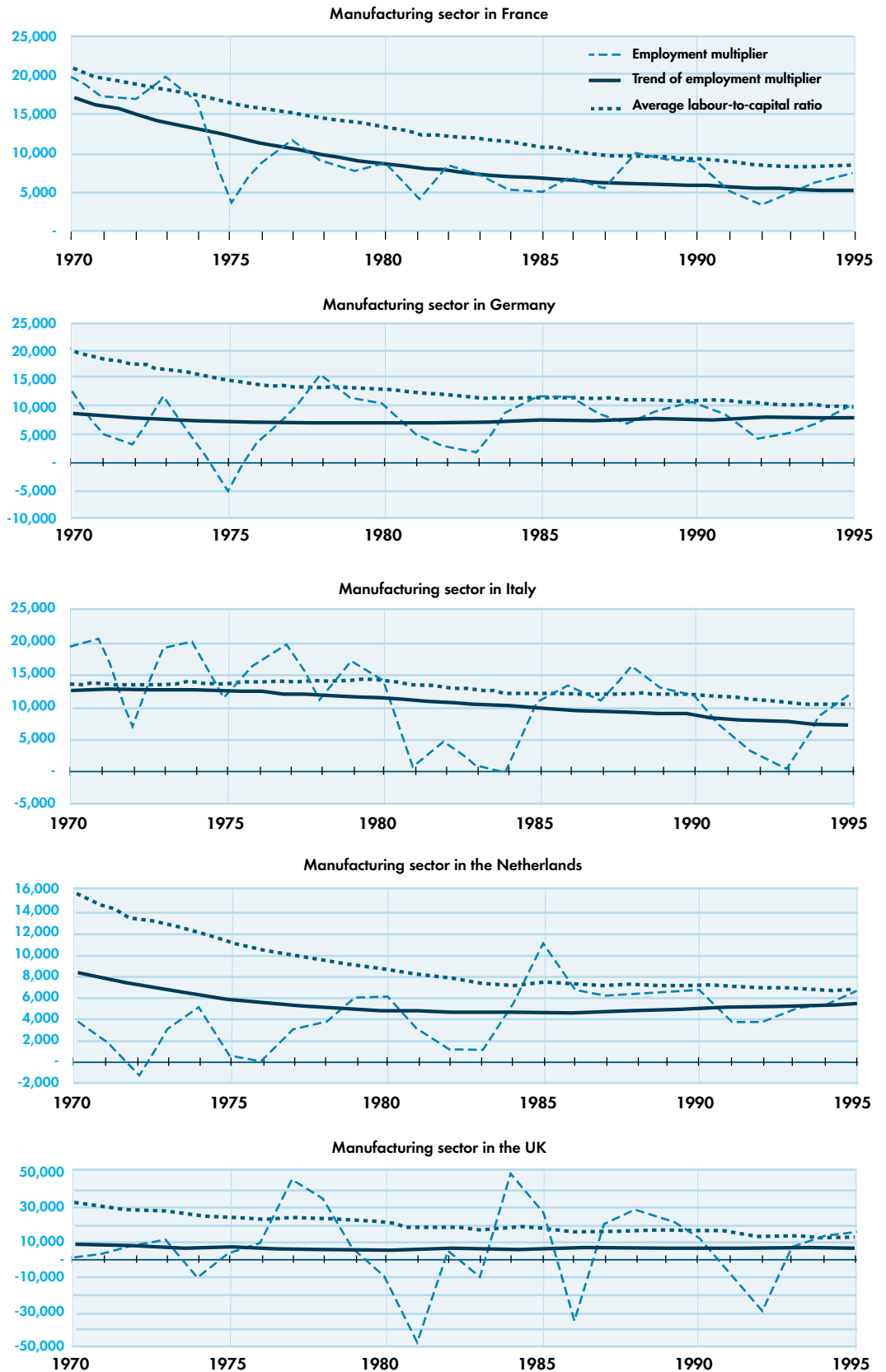
$$L_t = L_{t-1} + \Delta L_t^+ - \Delta L_t^-$$

where L_t is equal to the stock of labour in year t . The last entry, ΔL_t^- , is equivalent to labour leaving employment, and corresponds - under the stringent complementarity assumption between capital and labour - to capital retirements. The first entry, ΔL_t^+ , represents labour entering employment and corresponds to $GFCF_t$. This is the variable of interest and is calculated as the difference between the two labour stocks in years t and $t-1$, which are given, and labour outflows, which are calculated from the stock of labour and the survival function. The marginal labour-to-capital ratio for year t is thus equal to:

$$\frac{\Delta L_t^+}{GFCF_t}$$

The weakness of this approach lies with the stringent underlying assumption of complementarity between labour and capital throughout the lifetime of the capital good. The analysis also takes no account of capacity utilisation of the factors of production, the inclusion of which would probably smooth the marginal ratio. The model assumes that capacity is used at a fixed and invariable rate. A drop in demand could, however, also be met by decreasing capital utilisation rates.

Figure 3. Employment creation per year by additional investment projects in the manufacturing sector (jobs per 1995 ECU billion)



The variability of the estimated marginal labour-to-capital ratio - which can even turn negative - is seen in Figure 3. As the ratio represents the current employment multiplier, economic shocks and business cycle fluctuations enter into the calculation and are strongly reflected in the ratio. Despite the variability, however, a trend emerges for the marginal ratio (8). This lies consistently below the average, which explains the continuous decline of the latter. As the trend of the marginal ratio is still below the average, the average labour-to-capital ratio can be expected to fall further in the future.

A first estimate of the employment creation of a new investment project in manufacturing can be done with the trend value of the marginal labour-to-capital ratio. Based on this value, there are close to 170,000 person-years of employment created over the lifetime of a 1995 investment project of ECU one billion if it depreciates in the standard way (6,300 jobs per ECU billion times an average life of 26 years). Thus, if investment produced truly additive employment and the same labour intensity remained throughout the operational life, then a manufacturing investment generates direct employment equal to about eight times the jobs created economy-wide during installation and construction.

4. Employment effects of an investment project: a structural vector autoregression (SVAR) analysis

A general equilibrium model of the impact of investment would be very complex. Instead, we can use a structural vector autoregression.

The two previous analyses have been partial in the sense that they looked at particular aspects of employment creation. It is thus worthwhile to include more general equilibrium effects within the economy. However, to develop a general equilibrium model of the impact of investment on the economy would be prohibitively complex, and the calibration of such a model would probably reduce the objectivity of many of the results.

Instead, there is recourse to a structural vector autoregression (SVAR), in which historical data is used to infer relationships about investment and its consequences on several variables. The particular example presented below looks at investment in public infrastructure. With hardly any direct operating employment, this sort of investment constitutes an extreme case. As a result, all the long-run employment effects are equilibrium effects, which the previous two models are not capable of capturing. Box 3 gives a technical description of the SVAR methodology.

Bean (1997) has used this methodology to assess the economic consequences of public sector investment in Spain. The Madrid Ring Road, an investment of ECU 300 million, provides an example. From this case study, illustrative employment multipliers can be extracted. For the purposes of the analysis, the total public capital stock is treated as endogenous, i.e. determined within the model. One particular result of the calculation is that public investment crowds in private investment, which in turn generates employment.

The SVAR predicts that public investment in the Madrid region of ECU one billion generates a further private investment of ECU 2.4 billion, for a total investment of ECU 3.4 billion (9). This is paralleled in the model by an employment generation of 770,000 person-years over 22 years (equivalent to 35,000 permanent jobs). From the analysis, the ratio of labour-to-total capital is thus equal to $35,000/(1 + 2.4) = 10,000$ jobs per ECU billion. Interestingly, this is close to the figure seen in the previous analysis of the manufacturing sector.

8) This is done by using a Hodrick-Prescott filter.

9) The SVAR analysis can be extended to capture interregional spillovers.

Box 3. A description of the SVAR

A structural vector autoregression (SVAR) takes as its starting point a vector of variables observed at time t denoted X_t . In this example, the vector consists of five variables, namely the logarithm of the private capital stock (k), the logarithm of the public capital stock (g), the logarithm of employment (n), the logarithm of output (y) and the unemployment rate (u). In other words, $X = \{k, g, u, n, y\}'$. An SVAR is of the form

$$SX_t = B_0 + B_1X_{t-1} + B_2X_{t-2} + \dots + B_pX_{t-p} + e_t$$

where the B_i are matrices ($i = 1, \dots, p$), B_0 is a vector of the net effect of any deterministic variables and e_t is a vector of serially and mutually uncorrelated shocks. The individual components of e_t are the shocks driving the system. As such, $e_t = \{e_k, e_g, e_u, e_l, e_d\}'$. These are, in turn, shocks to private capital formation, public capital formation, the natural rate of unemployment, the labour force and aggregate demand. Unfortunately, due to the correlation between the endogenous regressors on the right-hand side and the error term, which is also manifested in non-zero off-diagonal elements in the matrix S , an SVAR cannot be directly estimated.

However, this is not the case for the following reduced form VAR

$$X_t = A_0 + A_1X_{t-1} + A_2X_{t-2} + \dots + A_pX_{t-p} + u_t$$

with $A_i = S^{-1}B_i$ ($i = 0, \dots, p$) and $u_t = S^{-1}e_t$, which can be estimated by Instrumental Variables.

In order to recover the coefficients of interest, B_i and S , certain restrictions are imposed on the elements of S . These restrictions are derived from either short- or long-run economic theory of the standard neo-classical variety.

There are also problems with the SVAR methodology, however. Based on time series data, this purely statistical technique has often been described as a method for "letting the data speak". In other words, the quality of the data that goes into the model is reflected in the subsequent results. In addition, the results are not only time-dependent, but also prone to false causality. A case in point is that public infrastructure gains cannot be duplicated once they have been reaped. In other words, investment in infrastructure where it has been lacking before may well lead to exaggerated effects. This is also reflected in agglomeration economics. Then there is the question of causality. The SVAR assumes a causal link between investment and employment, and disregards the possibility of investment projects as a result of historical accidents.

The results of the SVAR presented above are subject to the usual caveats concerning modelling exercises, and in particular that the SVAR methodology is a purely statistical technique. The results are time-dependent in the sense that public infrastructure gains cannot be duplicated once they have

been reaped. Investment in infrastructure today, for example, may not be as effective because a larger stock of capital already exists. In addition, the SVAR assumes a direct causal link between investment and employment, which may be either exaggerated or not necessarily true. Other factors omitted from the model, such as agglomeration effects, could also explain part of the increase in output and employment.

5. Conclusions

The above analysis has shown that the overall effects of investment on employment creation are difficult to estimate. Existing models, such as the three presented above, can only deal with specific facets of this relationship. However, the studies give some feeling for the size of the employment effects. In the construction phase, around 20,000 person-years of employment are created per ECU one billion spent. This number is roughly similar across different sectors of the economy and is falling at 1.5 to 2 percent per year. In the operational phase of an investment project in the manufacturing sector, around 170,000 person-years of employment over the average lifetime of a project are created. The average labour-to-capital ratio in this sector, roughly equal to 10,000 permanent jobs per ECU billion or ECU 100,000 per job in the first year, has also been falling. The marginal ratio seems to lie between 5,000 and 8,000 jobs per ECU billion, so the average ratio can be expected to fall further. Taking general equilibrium effects into account, similar results can be found in the structural vector autoregressions. This is also true for public investment, since this has the secondary effect of crowding in private investment. Taking all these effects into account, the net result, namely 10,000 person-years per ECU billion per year, is similar to the one found with the vintage capital model of the manufacturing sector.

The overall effects of investment on employment creation are difficult to estimate.

While the exact numbers of jobs created is prone to uncertainty, broad-based support for investment makes sense in terms of employment creation. In the construction phase, it may not be necessary to have a focused programme of public works. In fact, the employment benefits of programmes with relatively broad "eligibility" criteria may be equally large. However, an important feature of the European unemployment problem is the regional dimension, with unemployment being high in regions facing industrial restructuring. In this regard, investment is necessarily location specific and may be a particularly appropriate tool. Conversely, investment projects also require skilled labour and other inputs. As unemployment falls disproportionately on the unskilled, supporting investment may be a blunt tool for generating unskilled employment, if that is the only goal. Due to the important spillovers between sectors, it is clear that investment projects must be sound in their own right. Reliable figures on policy measures to boost employment are unlikely to be forthcoming. As a consequence, investment decisions as well as the employment benefits of supporting investment must, to a large degree, be based on economic reasoning.

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Financing young and innovative enterprises in Europe: Supporting the venture capital industry



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Small businesses have been the largest contributors to net job creation in most countries.

1. Introduction

The unemployment situation of Europe has generated a growing interest in small business finance, because young and newly created enterprises have been responsible for an increasing share of the job growth over the past two decades (1), and these firms seem to have limited access to external funds. On the one hand, studies on job creation in OECD economies show that small businesses have not only been the largest contributors to gross job gains and losses in recent years, but also to net job creation in most countries (OECD, 1997). Research on job creation in the US also points to a negative relationship between net job creation rates and the age of firms (Davis *et al.*, 1996a and 1996b). On the other hand, recent studies on the determinants of the financial structure of small and medium-sized enterprises (SMEs) indicate that they face specific problems (2). Arjona *et al.* (1998) analyse a sample of SMEs from France, Italy, Germany and the United Kingdom. They find that young companies have almost no long-term debt, and rely on short-term debt and trade-credits to finance operations, whereas older SMEs use some long-term debt but in a rather limited way (3). In addition, they note a negative relationship between the age of firms and financial leverage, as well as between firm profitability and financial leverage. These relationships are consistent with financial theories suggesting that, because of market imperfections, some firms may have to rely on internal funds to finance their activity. The financial literature points out that small firms may be unable to raise external capital because of agency costs, e.g. costs arising from conflicts of interest with entrepreneurs and imperfect information (4).

A large body of economic literature demonstrates the sensitivity of investment to liquidity constraints (5). Several empirical studies show that internal funds can have an important influence on investment (6). Hence, as investments by SMEs are likely to be hampered by their financial constraints, there is some justification for public support programs to ease SME access to external funds. This would increase investment and thereby create jobs. It should be noted, however, that various financial assistance programs in the form of loan schemes, tax concessions and grants have been created in the past, but there is little evidence that they have been successful in the long-run. Nevertheless, the dramatic rise of unemployment rates in Europe, combined with the recognition of the predominant role of *start-ups* for technological innovation (7) and economic growth, have induced governments to look for ways to promote the *venture capital industry*.

I am indebted to Chris Hurst, Eric Perée and Daphne Venturas for helpful comments and suggestions.

- 1) See, for example, Dennis *et al.* (1994) for a comprehensive survey of the job creation process in the US.
- 2) See, for example, Petersen and Rajan (1993, 1994) for the United States and Arjona *et al.* (1998) for Europe.
- 3) Over the sample period, the average ratio of long-term debt to capital was less than six percent for Italy and around twelve percent for the UK. Furthermore, some 38 percent of Italian and 26 percent of British SMEs have no long-term debt at all.
- 4) Harris and Raviv (1991) survey this literature.
- 5) This literature is reviewed in Levine (1997).
- 6) See, for example, Fazzari *et al.* (1988) and Hoshi *et al.* (1991).
- 7) Empirical evidence is provided by Kirchoff (1995), Gambardella (1995) and Audretsch (1995) for the United States, and Ghobadian *et al.* (1995) for the UK.

However, the idea for public support for the European venture capital industry raises two questions. First, which imperfections can be corrected by public intervention; and, second, when intervention is needed, how best can it be structured. The issues raised are far from easy, but the literature on venture capital has expanded over the last few years and provides some valuable insights (8). This paper, therefore, reviews this literature to provide some potential answers to these two questions.

This paper is organised as follows. Section 2 analyses the economics of venture capital finance, e.g. the oversight role played by venture capitalists and the basic structure of venture capital financing. Section 3 provides an overview of the European venture capital industry and discusses potential impediments to the development of risk-capital in Europe. Section 4 addresses the issue of a public support to the industry. It reviews the factors affecting commitments to the venture capital industry, and discusses the costs and benefits of various support schemes. The last section summarises the main findings and offers some policy recommendations.

2. Venture capital finance

Young and innovative companies are confronted by the very specific problems of few collateralisable assets, high uncertainty, and asymmetric information.

Before discussing public support for venture capital, it is necessary to review this industry and its unique features. Venture capitalists finance young and innovative companies, engaged in projects with high potential and high risk. In fact, the venture capital industry developed because such firms are confronted by very specific problems. Three aspects of start-up finance are particularly important. First, their operations are high risk, because of the uncertainty regarding the outcomes of inventions and innovations (9). Second, they often entail substantial investments with few collateralisable assets. This may be due to the extent of their R&D activities or because of the expense of financing growth. Third, the parties involved have asymmetric information. Compared to investors, entrepreneurs always have a superior knowledge of the future prospects of projects in which they are involved. Thus, the combination of these three aspects imply that start-ups have essentially no access to credit markets, and must resort to so-called *angels* (10).

The asymmetric information associated with start-up finance means that opportunistic behaviour flourishes. Venture capitalists have therefore developed control mechanisms to mitigate these problems and most venture capital deals combine *intensive monitoring* of companies and the use of *hybrid securities*, such as convertible debts and other equity-like instruments to better align the interests of entrepreneurs and venture capitalists. The rationale for these practices is explained below (11).

2.1 Monitoring

A major problem in start-up finance is that entrepreneurs may have little incentive to stop a failing project, either because they do not provide the capital, or because they are earning private benefits from the running of the company. Thus, with personal information regarding the prospects of their project, entrepreneurs may opt for an inefficient continuation of operations. This possibility requires the gathering of information and monitoring by venture capitalists. They normally have

8) Note that most of the literature is centred on the US industry, because it is the oldest and largest one in the world.

9) Note that it is unrelated to the technological content of an innovation.

10) Angels are individuals - including family members and relatives of owners - that are contributing to the capital at their risk.

11) See Sahlman (1990) for an extensive survey of the relationships between venture capitalists and investee's companies in the United States.

long-term relationships with companies, and combine the *staging of capital infusions* with an *ongoing involvement* in portfolio companies as mechanisms of *control*.

Venture finance is never one shot, but always staged. Usually, the first stage of investment (seed stage) serves to assess a new concept presented by an entrepreneur. If a project is backed by venture capitalists, then all successive stages of financing are in relation with the development of the company: the start-up stage for product development and marketing, followed by the expansion stages. The last stage of an operation is always an exit, which, for successful ventures, normally leads to an initial public offering (IPO). In practice, however, less than 20 percent of venture-backed firms are "high reward" investments. Most ventures are sold off privately or liquidated.

The staging of capital is obviously one of the most important mechanisms for controlling a venture, since it links funding decisions to the release of new information about projects. Thus, venture capitalists are able to monitor a firm's progress and, by denying capital, can force the shutdown of operations if the project appears to be a bad investment (12). It means that only projects for which venture capitalists receive favourable feedback are funded (13).

The inefficient continuation of a firm is not the only point of concern for venture capitalists. Without any further control than the staging of capital, entrepreneurs have sufficient operating discretion to adopt other opportunistic behaviour. For example, they can take strategic decisions giving them private benefits at the expense of other investors. Therefore, venture capitalists are also active investors, and claim that their deep involvement in company management is as important as their capital investment. They normally sit on boards of directors and help the entrepreneurial team in areas such as strategic and operational planning or recruitment, even replacing management if things go badly. In addition, they help raise new money and assist successful ventures in the process of going public. According to one survey (Gorman and Sahlman, 1989), venture capitalists - although not involved in the day-to-day management of a company - show up frequently (1.5 times a month) and spend on average 80 hours per year in direct contact (e.g. on-site) with their investments.

The monitoring role of venture capitalists increases the chances of success of a firm.

It is clear that the monitoring role of venture capitalists increases the chances of success of a firm, because it serves to limit opportunistic behaviour. It also adds considerably to the value of the venture by providing it with the expertise of venture capitalists (14). Both aspects are well documented in the empirical literature. Gompers (1995) observes that venture capitalists in the US do concentrate investments in companies where informational problems are high, and that the monitoring frequency increases for industries in which expected agency costs are higher (for example, in high-technology) (15). Finally, using data on IPOs, Barry *et al.* (1990) show that the quality of monitoring

12) These aspects are documented in Sahlman (1990), Lerner (1995) and Gompers (1995). Looking at a random sample of US venture-backed firms, Gompers (1995) shows that venture capitalists invest only when they learn that a project meets a milestone and that successful ventures (e.g. firms that go public) receive on average more financing and more rounds than others firms. Since IPOs yield the highest returns for investors, this positive relationship between going public and the number of rounds or the level of investment provides evidence that venture capitalists are gathering and using valuable information during the staged investment process.

13) The role of staged finance as a control mechanism is also emphasised in the theoretical literature on venture capital, see Hansen (1990) and Bergemann and Hege (1997). The "stopping problem" mentioned above is analysed in depth by Bergemann and Hege (1997). They also point out that the venture capitalist's threat to abandon a venture creates incentives for an entrepreneur to act in a way that maximises value.

14) The value added aspect is modelled by Chan *et al.* (1990).

services is acknowledged by the financial market at the time of an IPO: there appears to be less under-pricing for issues with recognised venture-capital investors.

2.2 The use of equity-like financing instruments

Most deals between venture capitalists and entrepreneurs involve hybrid financial instruments that combine debt and equity components to mitigate incentive problems.

Another key feature of contractual arrangements between venture capitalists and entrepreneurs is that most deals involve *hybrid* financial instruments that combine debt and equity components. Very often, the capital is provided via the acquisition of *convertible preferred stock*. Like common stock, convertible preferred stock is considered equity, but does not pay a dividend on a current basis and offers a liquidation preference. However, it can be converted to common stock at the discretion of the venture capitalist, and usually carries voting rights on an as-if-converted basis. Other widely used instruments are redeemable preferred shares, warrants and convertible debts. Warrants are similar to stock options, in that they give investors the right to buy a fixed number of shares of a venture at a pre-specified price. Convertible debt combines many features of straight debt and warrants. Investors are entitled to receive interest and principal payments, have priority over stock in the event of a liquidation, and the debt can be surrendered to the firm for a specified number of new shares (16).

The financial literature suggests that the main purpose of the financial instruments used by venture capitalists is to mitigate incentive problems. The cash-flow allocation rule affects entrepreneurs' incentives because they look at their own payouts when taking decisions (17), and the systematic use of hybrid securities limits over-investment or the manipulation of information by entrepreneurs.

As pointed out by Ravid and Spiegel (1997), most standard financing instruments can provide entrepreneurs with incentives to over-invest (i.e., to initiate negative NPV projects) as they select projects that are profitable from their point of view. Take the simple case of debt financing: The entrepreneur captures most of the gain from investments yielding large payoffs, which far exceed the face value of the debt. However, if the investment fails, the entrepreneur does not bear the consequences because of his limited liability. Thus, with this type of financing scheme, the entrepreneur may benefit from "gambling" with the firm by switching to more risky, negative NPV projects. Ravid and Spiegel show that, under limited liability, the only way to deter entrepreneurs from engaging in any negative NPV projects is to use linear sharing rules that split the proceeds of ventures in proportion to initial investments. Then, entrepreneurs behave as if they were the sole investors in firms, since they bear both the costs and benefits from their investment choices. Thus, according to this model, venture capitalists must receive equity, or possibly packages combining equity and riskless debt. A similar result is demonstrated by Admati and Pfleiderer (1994) for the case where a venture capitalist takes over control of the project (18).

That most deals involve convertible securities instead of straight equity can be explained by two other major incentive problems. First, the value of a venture depends crucially on entrepreneurial

15) The fact that the involvement of venture capitalists increases when firms get in trouble is illustrated by Lerner (1995). He also shows that their representation on board of directors is more important in crises.

16) The difference between a convertible debt and a warrant is therefore that the former has a changing exercise price equal to the value of the debt.

17) See Harris and Raviv (1991) for a survey of the literature.

18) This model also provides a rationale for the syndication of venture capital investments. Some empirical evidence on syndication is provided by Lerner (1994).

efforts in managing the firm's resources. Jensen and Meckling (1976) argue that entrepreneurs can under-invest when they do not own the total company, since they only capture a fraction of the gain from their efforts whereas they support the integral cost. Thus, venture capitalists may want to keep "hard" claims that penalise entrepreneurs in the case of failure. The recourse to convertible debt may also serve this purpose by rewarding an entrepreneur only the case of a success (19). A second problem is that the staging of capital injections can have perverse effects on the incentives of entrepreneurs, unless a deal is carefully designed. Staged finance always provides entrepreneurs with the incentive to conceal the "bad news" in order to avoid liquidation, but, in addition, Cornelli and Yosha (1997) have demonstrated that straight equity financing can induce an entrepreneur to engage in "window dressing", i.e. in activities that artificially improve the short-term performance of a project. Convertible securities, on the other hand, can mitigate this type of incentive problem by imposing a possible cost on the entrepreneur through the exercise of the conversion options when short-term performance is good. In this case, the ownership share of the venture capitalist is larger than in the case of a pure equity financing. Window dressing then becomes a costly behaviour for the entrepreneur, because although it reduces the probability of a liquidation, it also increases the probability of the conversion of debt into equity (20). One must note, finally, that convertible securities can also give liquidity to a venture capitalist's investment. Such securities typically contain redemption rights that provide some income when a company is financially viable, but not successful enough to go public or to be privately sold off.

To summarise, the high uncertainty and asymmetric information in start-up finance make the governance of projects essential. Venture capitalists manage these problems through the monitoring of companies, the staging of capital injections, and the use of hybrid securities. Venture capitalists screen hundreds of proposals every year, but support very few of them. As monitoring is costly and projects are risky, they only fund projects with a very high potential. Thus, it is not unusual for venture capitalists to apply discount rates between 40 to 60 percent.

3. The European industry

The characteristics of the European venture capital industry can be highlighted through a contrast with the basic features of the US industry (21), because the latter is the oldest and largest in the world. In fact, conventional wisdom is that the European industry is underdeveloped compared to that of the US. However, a look at industry data gives a slightly more complex picture. Although most markets in continental Europe are clearly of a smaller relative size than the US market, the opposite holds true for the United Kingdom. Still, European markets exhibit significant - and potentially important - differences, in terms of investments or exit opportunities. These differences are presented below.

3.1 Market size

Some history may be useful. The US venture capital industry started in 1946, with the creation of American Research and Development (ARD). Whereas it developed smoothly until the end of the 1970s, the activity rose dramatically during the early and mid-1980s. New commitments to venture

19) See Bergemann and Hege (1997). Harris and Raviv (1991) survey the costs and benefits of debt.

20) Another justification for convertible securities is that an entrepreneur's managerial abilities impact on the success of a venture. Hence, as pointed out by Chan et al. (1990), conversion options may also serve to implement optimal transitions of control between entrepreneurs and venture capitalists when there is uncertainty about the skills of entrepreneurs.

21) See Gompers (1994) for the history of the US industry.

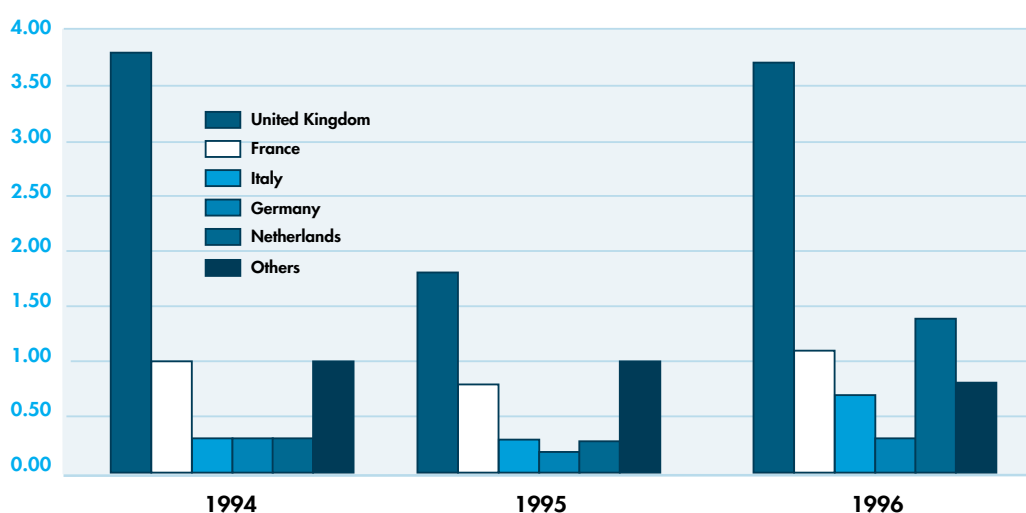
capital funds increased from less than US dollar 300 million in 1978 to over US dollar six billion in 1982, and were exceeding US dollar five billion on average during the period from 1982 to 1986. The industry "boom" was related to regulatory changes in pension funds investments, and highly correlated with the development of the US market of IPOs. Gompers (1994) observes, for example, that the correlation coefficient between the level of IPO activity and venture capital new funds commitments is equal to 0.70 for the period from 1969 to 1992. In fact, more than 900 firms were brought to the market during that same period. The "success stories" include Intel, Apple or DEC in high-technologies, Biogen or Genentech in bio-technologies, and Federal Express in services. The early-1990s saw the end of the expansion, and industry growth appears to have resumed at a steady rate, with a slight increase in commitments over the recent years. The new commitment of funds to the industry averaged US dollar 3.5 billion per year for the period 1988 to 1996.

The European industry is more recent, having started in the United Kingdom during the early 1980s. The British industry expanded very rapidly and its activity is also correlated with the UK initial public offering market. EVCA reports that venture backed companies accounted for 40 percent of all flotations on the main market of the London Stock Exchange from mid-1992 to end-1996 (22). Today, the British venture capital market displays the features of a mature industry. Conversely, the expansion of the industry has been very slow in other European countries, despite a variety of public assistance programs.

Venture capital commitments in France, Italy and Germany are still very small. However, the amounts involved for the UK are larger than those of the US when measured as a percentage of GDP.

Venture capital commitment by selected European countries is given in Figure 1. It can be seen that the relevant amounts for France, Italy and Germany are still very small, despite an increase of new commitments over the past few years. The Dutch market recently experienced very rapid growth, though the sustainability of this surge remains to be seen. The amounts involved for the UK, however, are similar to those of the US and, if new funds raised were measured as a percentage of GDP, the UK market would actually be much larger than that of the US. For example, in 1995, new funds commitments represented 0.22 percent of GDP for the UK, almost four times that of the United States (0.06 percent of GDP).

Figure 1. New funds raised in Europe (ECU billion)



Source: EVCA.

22) The European Venture Capital Association (EVCA) was created in 1983 to promote the development of the industry.

3.2 Investment patterns

The sectoral distribution of European investment totals are presented in Table 1 (23). Whereas innovative industries attract the vast majority of investments in the US, traditional industries (the consumer-related sector in particular) have received the largest share in Europe over the past few years.

Table 1. Sectoral distribution of investments in Europe (in percent)

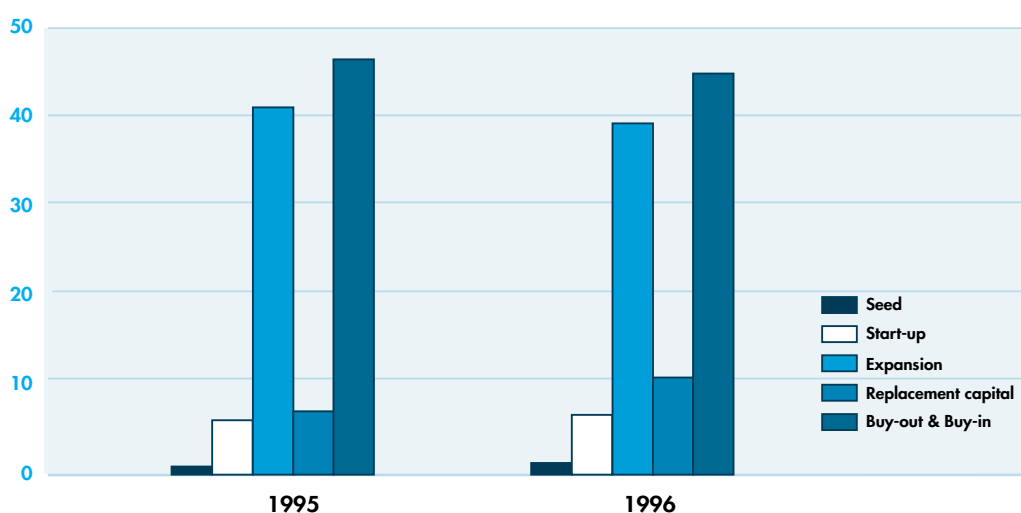
	1994	1995	1996
Innovative industries: Communications, computer-related, electronics, biotech, medical	16.3	21	19.6
Traditional industries: Consumer-related, industrial, chemicals, transportation, construction	52.2	48	45.2
Other industries	31.5	31	35.2

Source: EVCA.

Whereas innovative industries attract the vast majority of funds in the US, traditional industries have received the largest share in Europe.

Figure 2 shows the stages in the life cycle when venture capitalists intervene. There is an important bias toward late-stage financing in Europe. While seed and start-up investments increased from 12.5 to 23 percent in the US from 1988 to 1995, they decreased from 12.5 to six percent in Europe over the same period of time. Furthermore, as Figure 2 shows, most European investments are for *management buy-outs* (MBOs) and *management buy-ins* (MBIs); operations which concern the financing of a change of ownership of *existing* product lines or businesses. In particular in the UK, management buy-outs and buy-ins accounted for almost three-quarters of total investments for 1996. In the US, on the contrary, they account for less than a quarter of the total.

Figure 2. Stage distribution of investments in Europe (in percent)



Source: EVCA.

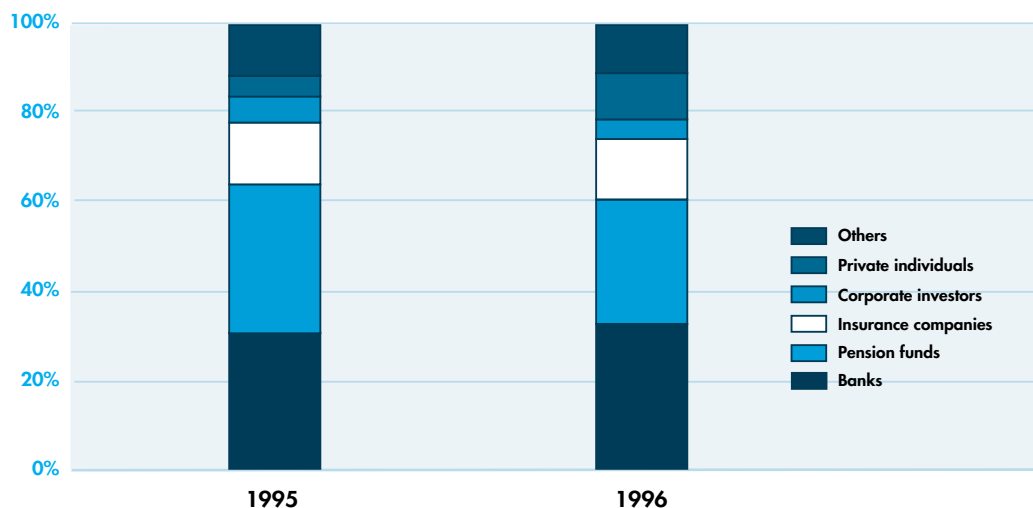
23) The amounts actually invested annually in each country follow the level of new fund commitments.

There is an important bias towards late-stage financing in Europe, due to the short-termism of institutional investors.

The economic literature suggests that the extreme bias toward late-stage investments in Europe, with the concentration on *development capital* (MBO, MBI), may be due to the sources of funds. One should note that many European venture capital companies are captive or semi-captive organisations (24). The contribution of captive and semi-captive companies to total investments exceeded 40 percent in 1995 and 1996. Figure 3 also shows that institutional investors (e.g. banks, insurance companies and pension funds) play a predominant role in Europe, accounting for more than 75 percent of new commitments.

The potential link between this characteristic of the European market and the bias toward late-stage financing lies in the *short-termism* of institutional investors. Several empirical studies indicate that most institutional investors are subject to short-term performance pressures, which have a considerable impact on their investment strategies (25). For example, pay-for-performance schemes are very common, with remuneration indexed to some indicator of profitability. This induces managers to behave myopically (26), e.g. to go for short-term lower-risk investments (MBO, rather than seed capital where it can take a decade to get results). The periodic evaluation of managers has the same effect on their activities: they must seek short-term successes. A similar incentive also applies to professional investors who have yet to establish a reputation. As the market is still uncertain about their abilities, they have a strong incentive to produce early returns (see von Thadden, 1995, and Viala, 1998) (27).

Figure 3. Venture capital raised in Europe by type of investor



Source: EVCA.

In fact, the evolution of the US venture capital industry during the 1980s gives a good illustration of the impact of short-termism on investment. This period saw the institutionalisation of the US venture capital industry, after the clarification of pension fund investment rules by ERISA (28). The 1979

24) Captive firms are subsidiaries of industrial corporations or financial institutions (mainly banks and insurance companies). Semi-captive organisations invest on behalf of their parent company, but also raise some external funds.

25) There is much empirical evidence of this type of behaviour. See, for example, Lakonishok et al. (1991) for a study on the investment behaviour of US pension fund managers.

26) See Stein (1989), for example.

27) Sirri and Tufano (1992) provide empirical evidence that the market punishes young managers who do not perform rapidly.

28) ERISA stands for the Employee Retirement Income Security Act.

regulatory change allowed pension funds to invest up to 15 percent of their assets in high-risk investments, including venture capital. This had two major consequences on the industry: a large inflow of funds during the 1980s, and an evident move to later stage financing. Whereas pension funds accounted for only 15 percent of new commitment to the industry in 1978, their share shot up to 46 percent of new funds in 1988. Over the same period, seed and start-up financing dropped from 25 percent of investments to only 12.5 percent, while LBOs increased from zero to 20 percent of investments. Note, however, that the turmoil of the IPO market towards the end of the 1980s has changed these patterns by reducing returns on investment, especially for LBOs and other late-stage financing.

3.3 Exit Routes

Although other factors might explain the state of development - or underdevelopment - of the venture capital industry in many European countries, divestment opportunities are a major determinant. Venture capitalists always invest with the objective of liquidating their portfolio holdings at a substantial gain, either through IPOs or with private sales. As IPOs are normally the best way to "cash-out" successful ventures, the existence of active stock exchanges open to small firms, i.e. second-tier markets or markets for unlisted securities, is essential for the supply of new commitments to the venture capital industry.

In fact, such markets are very active both in the US and in the UK. In the US, most venture-backed companies go public on NASDAQ. In the UK, venture-backed companies can go public on the Alternative Investment Market (AIM) (29). Interestingly, IPOs represented over 45 percent of divestments at cost (30) in the UK for 1996, while they accounted for only 21 percent of the total amount of divestments at in the European market. Trade sales and acquisitions are the main exit routes for the industry in continental Europe and it seems likely that the development of stock exchanges for small firms would benefit the European venture capital industry (31).

The existence of active stock exchanges open to small firms is essential for the supply of new commitments by the venture capital industry.

To conclude this section, let us briefly summarise the main features of the European industry. Firstly, most continental markets are less developed than the UK industry. Secondly, independently of their location, the vast majority of venture capital investments are for late-stage financing. Finally, trade sales are the main exit route in continental Europe. These features have generated a clear interest in public support to the European venture capital industry, which inevitably raises the question of the role of public intervention. Some tentative answers are provided below.

4. Public support to the venture capital industry

Governments can affect the flows of funds in two ways. They can either increase commitments to the industry indirectly, through regulatory changes and tax incentives, or they can provide the cap-

29) Most professionals claim that the growth of the UK venture capital industry during the 1980s was explained by the development of the Unlisted Security Market (USM). The Alternative Investment Market (AIM) has replaced the USM. Its market capitalisation was about US dollar nine billion in October 1997.

30) The aim of the divestment information of the EVCA survey is to attempt to keep track of the European portfolio of investments. Thus, the survey asks about the amount of divestments at cost, rather than the amounts actually realised by any sale. Therefore, the figures do not reflect the amounts actually received by venture capitalists.

31) Note that, although the market capitalisation of EASDAQ was equal to US dollar 4.1 billion in October 1997, some of the admission criteria impair the access of small firms to that market.

ital directly. Both types of schemes have been used in the recent past. The costs and benefits of these approaches are reviewed after a discussion of the role of public intervention.

4.1 Is there a role for public intervention?

This question can be restated: is there some market imperfection that can be corrected by government involvement? There are arguments in favour of that view. In general, SMEs face major problems when seeking external funds, because of information and transaction costs, and start-ups are confronted with more severe problems than mature companies, because of their high uncertainty.

The industry in continental Europe is underdeveloped, nearly inactive in early-stage financing, and mainly controlled by banking and insurance groups. This may be taken as a symptom that the industry needs support if the authorities wish it to finance the more innovative dynamic young firms that create jobs. As in any industry that is relatively young, the potential for economies of scale and of scope justifies the support of the public sector.

Since the venture capital industry is characterised by learning by doing, state involvement may foster its development.

In addition, the venture capital industry is likely to be characterised by *learning by doing*. In such a case, the productivity of monitoring and advisory activities of venture capitalists increases with aggregate investment. Then, state involvement may help to internalise spillover effects and foster the development of the venture capital industry (see Keuschnigg, 1997).

Inversely, one could also argue against support to the venture capital industry if the current state of development of the European industry reflects a lack of entrepreneurial projects, the risk-averse attitude of Europeans, or their lack of ideas. In these cases, public intervention would only add distortions. Further, the injection of capital could adversely affect the industry, by leading venture capitalists to overinvest. In fact, it is often argued that managers tend to waste "free cash-flows" on unsatisfactory projects. In addition, increased funding would also encourage the entry of inexperienced venture capitalists, leading to a drop in investment quality and monitoring, as evidenced by the US experience. According to Gompers (1994), the large inflow of funds into the venture capital industry during the 1980s generated the development of a *herd mentality*. Fund managers, either because they had too much cash or because they were inexperienced, invested simply because certain general sectors looked attractive. The result was an increase in the failures of firms.

The existence of large market imperfections is far from clear, although one cannot exclude that public support to the European venture capital industry may be warranted. Even without having a clear idea of the optimal size of the industry, policy-makers should remove impediments to expansion.

4.2 Tax incentives and regulatory changes

Tax reforms are a traditional intervention tool for governments. They can affect commitments to the industry in several ways.

For one thing, the legal and fiscal environment of an industry can severely affect the creation and development of new venture capital firms and a key objective, when structuring a venture capital fund, is to avoid double taxation for investors. Therefore, *tax transparency* is a major issue, because it can affect the location of both venture capital funds and their investments. The United Kingdom has

one of the most favourable legal and fiscal environments (32) in Europe and it is perhaps not surprising that this country also has one of the largest venture capital industries. The legal environments in which French, Irish and Dutch venture capitalists operate are also generally considered favourable to the industry, but improvements to legislation may be needed in other countries. For example, Sweden still has double taxation of capital gains, which deters the supply of venture capital.

Other tax incentives may directly affect commitments to the industry. These can take various forms, such as direct tax credits or tax breaks on capital gains. In fact, tax exemptions are already used in France, Belgium and the UK. Further, the conventional wisdom is that tax breaks which give advantages to capital gains over normal income could increase the *supply* of capital, by giving incentives to investors to favour long-term investments (including in venture capital). One must note, however, that there is a debate regarding the potential size of this effect. Poterba (1989) observes that the way a tax break affects the supply of funds depends crucially on the tax status of the investors themselves. For instance, more than 80 percent of the funding of the US venture capital industry comes from tax exempt investors such as pension funds. Thus, a change to capital gains tax rates may not significantly affect the commitment of funds to the industry. However, Poterba suggests that reductions in capital gains tax rates might increase the *demand* for venture capital finance. Cuts in capital gains taxes can create incentives for employees to set up companies and become entrepreneurs. There is some evidence of this effect in the United States (see Gompers and Lerner, 1997b).

Regulatory reform affecting savings in continental Europe should also benefit the venture capital industry.

Regulatory reforms affecting savings in continental Europe should also benefit the venture capital industry. Pension fund reforms, in particular, are expected to have an impact on fund inflows in two ways: directly, as pension funds would invest in the industry (if not excluded by prudential rules); and indirectly, via increased activity in stock exchanges, including those open to small firms. To date, private pension funds are mainly present in the UK and the Netherlands, where they are major investors in stock markets and the venture capital industry. However, one must note that even if the development of pension funds in other European countries might increase the overall size of the venture capital industry, it will not necessarily improve the structure of venture capital investments, e.g. the important bias toward late-stage financing.

4.3 Direct provision of capital

Governments can also support the European venture capital industry through the direct supply of capital. Whereas general assistance programs for SMEs have existed for some time, specific programs to supply risk capital have been developed more recently. Governments have resorted to either guarantees or the direct provision of risk capital, mainly through state-owned institutions.

Guarantee schemes

Like tax incentives, guarantee schemes are a conventional tool of public intervention. The basic idea is to expand financing for firms in targeted sectors by reducing the downside risk for investors (banks, in general). In the case of small businesses, there are two main types of guarantees. In the most frequent type, governments simply open access to the credit market by offering *loan guarantees*. The second type consists of *guarantees for the equity-capital* of private investors in venture capital

32) Most UK venture funds are structured as limited partnerships.

Guarantees are often ill-suited for young, innovative and newly created companies.

funds (i.e., a public agency guarantees a share of private investors money in a specific fund). One of the best known of these programs is the PPM scheme operating in the Netherlands from 1981 to the end of 1995.

Up to now, most attempts by the public sector to provide guarantees have not been very successful, mainly because they disregard the problems of intense monitoring and financial incentives discussed before. The scale of this problem obviously depends on the maturity of the small or medium-sized enterprise, and the uncertainty it faces. They are of greater concern for young, innovative and newly created companies. Guarantees are ill-suited in this context as they distort incentives and can provide suppliers of funds with wrong incentives. By limiting the extent of their capital at risk, they reduce the benefits to investors of screening and monitoring activities. Though debt financing and guarantees protect investors in case of bankruptcy, they also create a variety of other problems. First, they may trigger an early liquidation, because of the extreme uncertainty of the cash-flows of a young company. Second, loans limit the influence and the control of an outside investor on the development of a company, leading to opportunistic behaviours. Third, loans structure the payoffs of entrepreneurs in a way that they gain a lot with investments yielding very high returns, but - because of limited liability - they do not bear the consequences of failures. Hence, loans can seriously increase entrepreneurs incentives to "go for broke" by shifting to riskier activities.

The failure of the vast majority of Small Business Investment Companies (SBICs) in the US illustrates the problem. SBICs, created by the US Small Business Administration in 1958, had access to government-guaranteed debt to leverage their capital. They provided early-stage financing, but because they needed to make periodic payments, chose to offer debt instead of equity. Then, because of the recession after the first oil shock, many SBIC-backed companies went bankrupt. At the same time, SBICs themselves faced the same difficulties, and many were forced to liquidate.

Equity investments by state-owned institutions

The second approach for governments is to provide equity-capital directly, mainly through state-owned institutions (33). In most cases, programs are established to promote technological development or research and development. The UK, France and Germany offer typical examples. *Investors In Industry*, better known as 3i, is certainly one of the best European "success stories". 3i was created with government funds more than 50 years ago and was floated in 1994. It is today the largest investment trust in the UK and has contributed to what is known as the "Cambridge phenomenon" by promoting the commercialisation of academic research. In France, the government invests in firms involved in R&D with quasi-equity through the *Agences Nationales de Valorisation de la Recherche* (ANVAR). Typically, ANVAR's share of profits is indexed on firm turnover. In Germany, the government invests equity capital through the *Technologie-Beteiligungs-Gesellschaft* (TBG). Normally, TBG acquires an interest in the company on the basis of a silent partnership.

Although these programs are often considered very successful, it is difficult to have a clear idea of their long-run impact because of a lack of data. These schemes do seem to avoid some of the per-

33) Grants to small businesses are a third approach. The US Small Business Innovation Development Act, enacted in 1982, is a good illustration. The SBIR program mandated federal agencies to set aside a fixed percentage of their spending on external research for awards to small businesses. The long-run impact of this program is analysed by Lerner (1996). He shows that his sample of SBIR awardees grew significantly faster than a matched set of firms over a ten year period.

verse effects of governmental guarantees, though they have also their own imperfections. In particular, state-owned institutions usually have a non-profit behaviour, a possible source of investment distortions. These organisations have less incentive to closely monitor companies, possibly leading to the continuation of bad projects.

To the extent that this criticism is valid, it appears that the public sector should try to reach start-ups via the private sector. Therefore, the best vehicle for the participation of governments in the financing of start-ups may be through investment of resources in private venture-capital funds.

Investment in private funds

The public sector should try to reach start-ups via the private sector.

In the previous sections of the paper, the incentives and information problems between entrepreneurs and venture capitalists have been discussed at length. However, the relationship between venture capitalists and their financial backers can also be plagued by similar problems. This raises the question of how best the public sector should provide its financial support. The broad conclusion is that the public sector should intervene through minority interests in independent funds.

Before discussing the rationale for this, consider first how the relationships between venture capitalists and their providers of funds are typically structured. There is also an agency problem between venture capitalists, who play an active role in their portfolio companies, and other investors, who do not monitor the ventures as closely. Hence, venture capitalists must be provided with incentives to adopt value-increasing activities. This is the motivation for many contractual provisions in partnerships agreements, where venture capitalists are general partners and other investors are limited partners. Most contractual agreements specify the staging of capital injections by limited partners, and require that venture capitalists produce periodic reports on the investees' companies. Finally, venture capitalists typically receive a large part of their compensation in the form of a percentage share of the gains realised by the fund. These various provisions are designed to prevent overinvestment and ensure the proper supervision of venture-backed companies.

There is, in addition, another difficulty of venture finance arising from the high uncertainty regarding the abilities of new entrants. The easier availability of funds for the venture capital industry will lead inevitably to the entry of new venture capitalists, who may seek early returns in order to establish a track record. In fact, the innovative characteristics of most ventures imply that, in very young organisations, neither the venture capitalist nor the investors know a priori the skills that are required for a good selection of projects. Thus, parties *learn* about the abilities of venture capitalists from the results of investments (34).

From a public policy perspective, there are two key questions that should be taken into account: First, is the venture capital industry in general suffering from a shortfall of finance; and second, should public intervention try to develop those segments of the industry that are under-developed, or intervene only where there are some additional economic benefits that are not sufficiently taken into account by the private sector.

34) Empirical evidence of this learning process is provided by Gompers and Lerner (1997a), who study cross-sectional and time-series variations in the compensation schemes of 419 venture partnerships formed between 1978 and 1992. The results are consistent with the view that venture capital entrants do not have superior information about their abilities, which makes reputation concerns very important.

The public sector should avoid disturbing the way the industry deals with incentives and informational issues. This suggests only funding minority interests in private funds.

Consider first the case where the major problem is a global deficit of funds. In such an environment, the public sector intervention should strive to avoid disturbing the way the industry has come to deal with incentives and informational issues. As already pointed out, this may not be possible through state-owned or captive organisations, whereas investments in private funds normally ensure that agency problems are mitigated. However, because of the learning process, the uncertain behaviour of governments can still produce some distortions unless a partnership has a diversified ownership (Viala, 1998). This is because government representatives may value projects differently than the market and, therefore, can decide to stop funding some valuable investments. This forces ventures capitalists to seek alternative funds in the financial market. The market, less informed about the reasons for renegeing on a funding commitment, tends to interpret such events as a bad news, posing problems for new professionals lacking an established reputation. However, this problem can be overcome if a fund has a diversified ownership. Then, through the different actions of the other investors, the design of share contracts may allow the signalling of a "good" venture capitalist.

Naturally, as shown in section 3 above, the European venture capital industry is also characterised by a strong bias toward late-stage financing. This could be caused by a host of factors, but, as already pointed out, it could also result from the way the industry has developed. In order to shift the venture capital industry toward more early-stage financing, the public sector should do more than just provide additional capital. It should avoid the creation of a short-term focus for the venture capitalists. Viala (1998) shows that funding in the form of minority interests in private funds can also serve that specific purpose.

5. Conclusion

To resume the main findings, industry data shows that, contrary to conventional belief, the European industry is not "small" as compared to the US industry. Although the venture capital industry is clearly underdeveloped in continental Europe, it possesses the attributes of a mature industry in the UK. However, it appears that - all over Europe - venture capitalists essentially provide late-stage development capital, and there are few investments in start-up companies.

Even if conclusions must be drawn with caution, these features of the European industry may advocate some government intervention. Of course, public support can take different forms, such as tax and regulatory changes or direct inflows of capital. Regulatory impediments to the industry should obviously be removed. In the case of direct inflows, past experience in the US and Europe points out the inadequacy of conventional tools such as loans or guarantee schemes for young innovative companies, and suggests that investments in private funds offer a better alternative.

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