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European Labour markets :
a long run view
CEPS Macroeconomic Policy Group
1989 Annual Report

by J.-P. Danthine, Ch. Bean,
P. Bernholz and E. Malinvaud *
Internal paper



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EUROPEAN LABOUR MARKETS: A LONG RUN VIEW

**CEPS Macroeconomic Policy Group 1989 Annual Report
January 20, 1990**

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1. Introduction

The subject of this report is the medium and long run development of European labour markets. With European economies only just emerging from the most dramatic episode in their postwar history - an episode which has its epicentre in the labour markets - it is of unquestionable importance to stand back and evaluate the prospects for European labour markets from a longer run perspective taking into consideration both the underlying demographic and technological developments and the effects that the completion of the internal market in

1992 may have.

We start with a discussion of the evolution of the underlying fundamentals of labour markets - demographic factors, participation rates and so forth - with the objective of deciding whether the unfavourable developments of the 70's and 80's were but an isolated historical event or, on the contrary, that similar developments will characterize the future as well. We argue in section 3 that the problems of the next twenty years will differ from those of the last twenty and that policies favourable to increased labour force participation are called for.

From this same long run perspective, we then discuss in section 4 the impact of continuing technological advance on the structure of employment and the relative demand for skilled and unskilled labour. Our interpretation of current trends leads us yet again to draw attention on the need for adequate flexibility in wage differentials while simultaneously adopting measures aiming at improving the skill structure of the Community workforce.

This is followed up in section 5 by a discussion of education policy in the Community. We believe that a major expansion of adult education is called for. However the method of financing such an expansion may well be different from that of current youth education. Current programs designed to foster the emergence of a truly European system of higher education should be pursued and strengthened.

One of the major impacts of the 1992 program may be

a significant increase in worker mobility. Section 6 addresses this issue arguing that exploitation of the potential gains hinges on the adoption of a deliberate strategy of eliminating all removable obstacles to the relocation of workers. We then analyse the implications of this for the structure of unemployment insurance and pension plans in the Community.

Finally, noting that recent experience highlights the importance of labour market structures and institutions for economic performance, we speculate in section 7 as to how the formation of an integrated goods and labour market in Europe might impinge on the existing national labour market institutions and the associated incentives for change. Will the completion of the internal market improve or worsen the performance of existing national institutions? To what extent is the internal market compatible with the perpetuation of a diversity of national wage-bargaining institutions? Should we expect, on the other hand, that this new environment will lead to the emergence of a single form of labour market organisation, and is it likely to be a desirable one? These issues are important because the effects of economic integration with given institutions may well be dwarfed by effects resulting from institutional changes stimulated by the creation of the Single market.

One of our goals being the identification of the potential problems of the future and a reflexion on the reforms which ought to be recommended, we introduce our discussion of these different issues with a review, in

the next section, of the principles which should guide the design of policy interventions in a federal environment. We focus on the definition of the level (local, state or Community) at which labour market regulation should take place.

2. The level of regulation

Before plunging into the prospects for the labour market and accompanying policy measures, we must first spend a few moments adumbrating some basic principles concerning the appropriate level at which policy intervention should take place. The internal market program has led to an increasing volume of regulation being initiated at the Community level, rather than by national governments, and this tendency looks set to continue as integration proceeds. This has provoked fierce resistance in some quarters, with opponents arguing that "competition between rules" is a better principle than the imposition of monolithic rules at the supra-national level. However, the principles behind the stance of the protagonists in this debate are not always as clear as they might be, with the result that it is prone to generate more heat than light.

First, let us recall that intervention is only warranted on efficiency grounds when there is some identifiable market failure or imperfection present. (We should emphasise at this point that the rubric "regulation" covers not only direct quantitative controls, but also any taxes, or subsidies, introduced to

offset the original distortion. There is some presumption in favour of the latter when they are available, as the rents associated with the policy action usually accrue to the government, rather than particular individuals.) A classic case is that of a factory producing effluent which adversely affects the environment. Left to themselves the owners of the factory will not incorporate these external costs in choosing the production methods or output levels. A pollution tax, or controls on the emission of effluent, can ensure that these external, social costs are correctly taken account of.

This example is one where intervention is clearly beneficial, but a similar principle operates in other, less transparent cases. Where there is no market imperfection the case for intervention is weak - "if it ain't broke, don't fix it". But a second requirement is that when things are "broke" the government also has the means and the information required to fix them. A third requirement is that governments act in a benevolent fashion and that the intervention does not introduce offsetting bureaucratic inefficiencies (this is an issue we turn to below). Finally any intervention should bear as directly as possible on the market failure.

Suppose all these conditions are met and that there is a case for intervention. At what level should it then take place? To begin with, the appropriate amount of regulation is likely to vary between countries according to their particular circumstances. The cultural background, industrial composition and so forth differ greatly between member states of the Community.

Furthermore the national authorities are likely to be better informed about local conditions than any supra-national body. If, as generally seems to be the case, regulation at the supra-national level is also associated with uniformity of regulation across countries, there is a presumption in favour of regulation at the national level, or indeed at even lower administrative levels.

In that case why should there ever be regulation at the supra-national level? The answer follows the same logic as that behind the original case for intervention, namely the existence of some market failure, although this time operating at the national level rather than that of the individual producer or consumer.

An example should make this clear. Consider the case of health and safety at work regulations. There are at least two reasons for these. First, some of the costs of accidents at work and occupational illnesses are borne by society at large, rather than the firm or the worker¹; there is thus a clear market failure of the sort discussed earlier. Second, there is evidence that people systematically underestimate their chances of experiencing an accident or suffering illness². Consequently on both counts firms will tend to underprovide safety equipment, etc., and state intervention to enforce adequate safety levels is called for.

Now consider a national policy maker deciding on the

1. This is obviously true with a public health system. It is equally true with a health system relying on private insurance where other members of the scheme bear the costs through higher premia.

2. See G. Akerlof and W. Dickens, "The Economic Consequences of Cognitive Dissonance", American Economic Review, 1982.

appropriate level of health and safety regulation. Such regulation is not generally costless and will lower productivity and output in the economy below what it would otherwise be. The policy maker will then trade off the benefits of safer workplaces against the cost in terms of lower output. In a closed economy, the policy maker would then arrive at the socially most desirable level of regulation. However, in an open economy this need not be the case. If capital is internationally more mobile than labour then the policy maker, by requiring a somewhat lower level of workplace safety, can encourage firms to locate in his country rather than abroad. However, this neglects the adverse effects such action will have on the level of output and welfare abroad. If all countries behave in this fashion then the resulting level of workplace safety in all countries will be lower than is desirable³.

The argument here exactly parallels the argument for the international coordination of macroeconomic policies that was analysed in a previous report of the group⁴. In the presence of (non-pecuniary) external costs or benefits, coordination can improve on competitive sovereign policy making. The moral is that the level at

4. As an example of this reasoning, suppose that for two countries, A and B, output is given by:

$$y_i = (1-x_i)K_i^a \quad (i = A, B; a < 1)$$

where x_i is a measure of the level of safety regulation and K_i is the stock of capital. Capital is internationally mobile and the total world stock of capital, $K_A + K_B$, is fixed. Suppose social welfare in each country is given by $x_i^b y_i^{1-b}$. Then the socially optimal level of safety regulation (achieved with supranational regulation) is given by $x = b$. With (competitive) national regulation, however, the level of regulation is only $x = b(1-a)/(1-ba)$.

4. See J. Drèze, C. Wyplosz, C. Bean, F. Giavazzi and H. Giersch, The Two-Handed Growth Strategy for Europe: Autonomy through Flexible Cooperation, Center for European Policy Studies, Paper 34, 1987

which regulatory decisions are made should be just sufficiently decentralised to ensure that all external costs and benefits are taken account of. In practice, of course, there is likely to be a trade-off between the greater flexibility afforded by regulation at a low level, and the fuller account of external costs and benefits that takes place when regulatory decisions are formed at a high level. In some cases the need for local flexibility will be quantitatively more important. In other cases external effects between countries may dominate.

So far we have assumed that policy makers are entirely benevolent and act in the best interests of society as a whole. In practice this is not always the case, and pressure groups are likely to seek to influence decisions in order to favour themselves at the expense of other sections of society. This can be thought of as a bureaucratic inefficiency in decision making and adds an important extra dimension to the question of the level at which regulation should take place. Such "rent-seeking" activities could lead to intervention levels that are either too high or too low from a social perspective. In either case international "competition between rules" will limit the gains from such activities, if the people or firms who lose out can easily move elsewhere.

Thus suppose unions in one country successfully lobby for laws that enhance their bargaining strength and reduce profitability. This will encourage firms to relocate in other countries where the laws are not so favourable to organised labour. This in turn will reduce

living standards in the original country, and thus temper the willingness of policy makers to introduce such legislation in the first place.

This argument obviously tends to favour placing the burden of regulation at as low a level in the hierarchy of decision-making bodies as possible. However, the "competition between rules" mechanism will only work in limiting bureaucratic inefficiencies when people or firms are internationally mobile⁵, and it is under precisely these conditions that the earlier "externalities" argument for supra-national regulation applies. Since one consequence of the internal market program should be an increase in the mobility of capital and labour throughout the Community, it simultaneously strengthens both the case for supra-national regulation, and the case for competition between different national regulating bodies! A general statement that one approach always dominates the other does not seem to be possible; a case-by-case approach is unavoidable.

The discussion so far has concerned only regulation for efficiency reasons. In practice, of course, there is often an important equity element in some regulations. Thus minimum wage legislation might be justified purely on efficiency grounds where employers are in a monopsonistic position and can use their market power to force down wages. More usually, however, its primary aim is to narrow the wage distribution and, in a competitive

5. Sometimes of course, factor immobility may itself be a consequence of regulation or other policy interventions. A case in point would be regulations limiting the international portability of pensions (discussed below in section 6.3). In that case the appropriate conclusion will usually be to remove the policy restricting mobility.

labour market at least, this is likely to raise the unemployment rate for unskilled labour and have adverse effects on economic efficiency. Such equity-oriented regulations need, for obvious reasons, to be enacted at a sufficiently aggregated level to encompass all the parties concerned⁶. Thus, if the concern is with equity within a country, there is no reason for legislation to be enacted at a supra-national level, but if the objective is equity at a Community-wide level then legislation at a Community level is also called for.

Bearing in mind these principles let us now turn to a closer analysis of trends and policy options in the labour market.

3. The evolution of the workforce

In this section we evaluate the implications of changes in the size, composition and characteristics of the European workforce in the medium term. The determining factors are partly demographic - the size and composition of the population - and partly cultural - participation rates among the young, elderly and women.

3.1 A "greying" population

Since 1960 the growth rate of the population has been decreasing in the industrialised world. Furthermore, this trend has been more pronounced in Europe than elsewhere. Between 1973 and 1988, the EC population

6. Equity-oriented interventions are ofcourse subject to the same qualifications as those introduced above in the case of efficiency-oriented regulations.

increased by only 5%. The comparative figure for the USA and Japan respectively is 16% and 13%⁷. This evolution is due to three factors: a decrease in the birth rate - since the 1970's the average number of births per woman (fertility rate) has even slipped below the critical level (2.1) necessary for population renewal; a reduction in immigration flows from outside the community; and a slowdown in the rate of increase in life expectancy.

Barring major changes in immigration flows (see next section) we do not expect to see any immediate reversal of this trend. The reduced fertility rate is largely a result of social changes which have led many women to favour pursuing independent careers ahead of marriage and raising a family. While female participation rates have risen markedly (see below), they remain relatively low in some countries, particularly in Ireland and Spain. A rise in female participation rates in these countries would be likely to be associated with a further reduction in the fertility rate. In any case, the total population size of industrialised countries, at the horizon 2010, is quite insensitive to alternative hypotheses regarding the fertility rate⁸.

Table 1 however shows that the working age population has continued to grow steadily at a rate of .6% per annum between 1950 and 1990. It is estimated, and this is the relevant statistic from our perspective, that, although the absolute number of people in the 15-64 age group will soon be decreasing and their average age

7. See J.C. Chesnais, *Population Trends in the EC, 1960-1986*, *European Journal of Population*, vol.3, 1987

9. *Employment Perspectives*, OECD, 1988

will be growing, the share of this age group in the total population will remain stable at around 66%, at least until 2010 (possibly 2020).

The relative stability of the population of working age, in the absolute, and as a proportion of the total population, is to be contrasted with the increasing proportion of the population aged 65 and over, expected to rise from 15.9% in 1980 to 17.3% in 2010 with sizable differences across countries: France, 16.3%; Germany, 20.4%; and UK, 14.6%, for instance⁹.

3.2 The immigration prospects

Increased immigration might provide an offsetting factor to falling fertility rates. Could it prove quantitatively sufficiently significant to provide an overall increase in population growth rates? Before the recent events in Eastern Europe a negative answer to this question could have been provided with some confidence. Indeed the political climate in most EC countries appeared geared toward a continued slow-down rather than an acceleration in immigration from outside the Community. Things have changed in the last few months. The number of East Germans who have immigrated into West Germany in 1989 is estimated at about 350,000¹⁰. In that year the total number of immigrants coming from the East into West Germany is estimated to have exceeded 700'000 individuals, of which 400'000 were of working age. This corresponds to an increase in the labour force of about

¹³ Le vieillissement démographique: conséquences pour la politique sociale, OECD 1988; Non weighted EC12 average.

¹⁰. The Economist, December 23, 1989

1.3%. The key question is whether immigration flows from the East will continue at the present or even greater pace (as appears to be the case at the time this lines are written- January 1990) and whether they will spread to countries other than East Germany, or whether they will soon subside leaving 1989 as a unique event providing only a temporary respite from the downward trend in population growth.

The answer to this question is unclear at the moment. However the fact that the political factors behind emigration flows are gradually being replaced by economic considerations suggests that the market may help to prevent them presenting a major unemployment problem for the West for such flows should rarify if ever the probability of employment in the receiving country becomes too low. In other words, the very fact that these flows should be responsive to economic conditions leads us to be fairly sanguine about their overall impact on European labour markets.

3.3 Varying participation rates

Another offsetting factor to the "greying" of the population might be an increase in participation rates. At the aggregate level, the average participation rate has been quite stable in the EC in the recent past, standing at around 64%, although with very different patterns of evolution from one country to the next. From 1973 to 1988 for example, it decreased from 71.6% to 65.5% in Portugal, while it increased from 59% to 65% in Italy. Note that participation rates are somewhat lower

in Europe than in either the US (1988: 76%) or Japan (1988: 72.5%)¹¹. More instructive observations can be made at the disaggregated level.

The rate of participation of the young is primarily determined by the duration of education for a given individual as well as participation rates in higher education. The age of entry into the labour force has risen almost everywhere since the 1960's, with the notable exception of the US and Canada, in conformity with the observed tendency for increased education and training. In some countries this movement has been exacerbated by the difficulties encountered by young people in finding jobs in the presence of high unemployment. There are forces which are likely to pull in both directions in the future. They are likely to approximately offset one another and lead to a stabilization in participation rates of the young. First, participation rates will probably increase as labour markets tighten. Second, the increased rapidity of technical change means that skills are likely to become obsolete more quickly (see below). The reduced repayment period for investment in human capital may well lead to reduced time spent by a given individual in vocational training at the start of the life cycle in favour of periods of reskilling and retraining later in life. Against this, the apparent bias in technical change towards increased use of skilled labour and away from unskilled labour (again see below) is likely to lead to increased participation in technical and higher

12. Le marché du travail dans la Communauté, Commission des Communautés Européennes, Economie Européenne, 38, 1988

education.

Participation rates of mature workers in the labour force are tied to the age of retirement. They have decreased everywhere since the 1960's. Table 2 shows their precise evolution for a sample of EC countries since 1965. What we observe is in part the result of early retirement measures that have been adopted by governments as a way to fight unemployment in the last decade. It is also the product of a natural desire for increased leisure in the face of rising income levels. This latter tendency would be expected to continue if it was not for the impact of the "greying" of the European population and the strains this fact imposes on social security systems. In this context, one expects to see, and indeed can already observe in some countries (e.g. the US), a reversal of the trend toward early retirement accompanied by greater individual freedom in choosing one's retirement date. We thus think it likely that the decline in participation of older workers will come to a halt.

Finally, it is worthwhile noting that the stability in aggregate participation rates hides two conflicting trends for men and women. Women's participation has been on the rise (from 45.3% in 1975 to 50% in 1986 for the EUR12¹²) as documented in Table 3. One notices the wide disparity across countries with female participation rates in 1986 as low as 34% in Spain and as high as 78% in Denmark. By comparison with the latter, or even with participation rates in the US (64.9% in 1986) or in Japan

14. Le marché du travail dans la Communauté, see footnote 12

(57.4% in 1986), there is still a large unexploited potential labour force in the EC countries. This is especially the case in Southern Europe, but is equally true for member countries in Central Europe. It is on this front that the most significant evolution may appear. Another 5 point increase in female participation rates in the EC (from 50% to 55%) over the next decade would correspond to 5 million new entrants into the labour force. The key issue here is not only whether such a development will materialize or not, but also, if it does, whether it will take the form of an exogenous cultural and social evolution to which labour markets will have to adapt or rather it occurs as an (appropriate) response to tensions arising from increases in the demand for labour.

3.4 Summary and policy implications

From this discussion, we might highlight three important facts and take note of two major uncertainties. On one side the future development of the population is already determined by past fertility rates. From this we know that the population of working age will stabilize as a proportion of the total population, that it will be getting older on average, and that it will have to provide for an increasing number of elderly people. The effects of the ageing of the workforce cannot be described with precision, but are generally thought to be mostly unfavourable in terms of a reduction in dynamism, entrepreneurial spirit and the willingness to take risks. The increasing number of people beyond retirement age

could also create financing problems for social security plans in some countries and, more generally, will impose a rising tax burden on the working population that will be only partially offset by the reduced proportion of children in the population.

On the other side, immigration flows are difficult to predict at the moment, and it is equally difficult to say if (and how) the potentially large increase in the workforce that would result from further increases in female participation will materialize. Yet with the flow of young new entrants set to fall one of the major challenges the European economies have faced unsuccessfully - the problem of youth unemployment - should not repeat itself. In our view the most likely scenario is one where the main task for the European economies will not be one of absorbing a large number of new entrants to the labour force but rather one of finding ways to minimize the increasing burden imposed on the working population by the non-participants.

As we have already observed, changing birth rates would have no influence on the workforce over the horizon we are considering (20 years). This should not however prevent us from thinking about the very long run. In principle one could devise taxes and other incentives in order to raise the birth rate and ultimately in the face of the long-run prospect of a quickly ageing and decreasing European population we may have no choice. We do not want to engage here in a debate over the effectiveness of pro-natalist policies¹³. Let us simply

15. See, e.g., J. Morsa, Les facteurs économiques de la fécondité et les motivations à la parenté, Etudes démographiques, 3, Conseil de

note that equity and efficiency considerations may converge in providing support for policy measures tending to minimize the adverse financial consequences of having and raising children. This means increased public subsidisation of day-care centres and the like as well as appropriate design of income tax systems. There is no reason, however, why this needs to be initiated at a supra-national level.

Of more immediate importance is the possibility of intervention in order to increase participation rates. We believe pursuing this objective is justified in the light of the rising number of people aged 65 and over. Indeed, education, health expenses and unfunded retirement allowances for the old are, in all EC countries, at least partially financed from the proceeds of distortionary taxes¹⁴. The weight of these distortions is bound to rise unless the burden is spread among a larger number of active workers, via an increase in the participation rates of the working age population (or in immigration flows). In other words, the practice of financing expenditures on, and transfers to, the non-working population through progressive taxation of those in work confers a public good attribute on the decision to enter the labour force, and that attribute should be taken into account in the design of the social security system.

In light of our previous discussion, this principle

1/Europe, 1979, or, C. Höhn and R. Mackensen, ed., Determinants of Fertility Trends: Theories Re-examined, Ordina editions, 1982

16. This logic fails in the case of fully funded pension plans or unfunded schemes where workers' contributions correspond to the benefits they will receive when they themselves retire. This may be the case if the population of retirees is a constant fraction of the working population.

is especially relevant in the case of women and older workers. Its application strengthens our call for removing the financial and practical penalties often confronting women with children when they want to work. In the case of older people, this means that the trend towards earlier retirement, although it may be viewed as an intrinsically desirable social objective, should not be encouraged further by the authorities.

In fact the discussion in section 2 raises doubts about the wisdom of legislating on this issue. There does not seem to be any reason for the government to take a major role in dictating the choice of an individual's retirement date. Instead the choice of retiring should be largely a matter of individual taste, taking account of the (private and social) opportunity cost of not working and so forth. Greater individualisation of the decision to retire would permit the expression of different individual preferences for leisure¹⁵. However, to take account of the public good nature of the decision to participate and the possibilities offered by improving health levels and lengthening life expectancy, individual choices ought to be guided towards later retirement by introducing appropriate incentives into social security payment schedules. A fortiori, governments should resist the calls, made on social grounds, for retirement schedules tilted in favour of earlier retirement.

4. More skills required

17. This greater flexibility should, however, also extend to firms who would be allowed to specify retirement dates in labour contracts so as to ensure an adequate turnover of staff whose skills might be short lived.

In the last section, we focused our attention on the likely trends in the overall size of the European labour force. We now address the complementary question of the quality of that labour giving special attention to the likely development of the relative demand for skilled and unskilled labour in the EC.

A common view is that Europe's unemployment problem is, to a significant degree, the result of a structural mismatch between the supply of, and demand for, different skill types. This has resulted from changes in both technology and the international pattern of competition. In particular, advances in robotics, the information technology revolution, etc., have reduced the need for unskilled labour in many branches of industry and simultaneously raised the demand for certain types of skilled labour.

Similarly the emergence of the NICs and other developing economies, with their access to large pools of cheap, unskilled labour, has eroded the competitive position of the traditional heavy and mass production industries in which Europe used to have a comparative advantage. Again, the consequences is a fall in the (relative) demand for unskilled labour.

We first assess the validity of the view that there has been a structural break in the relative demand for skilled and unskilled labour, then derive its implications on the evolution of wage differentials. This analysis leads us to recommend an extension of adult and vocational education (section 5).

A first observation in favour of the "structural break" hypothesis is that the highest levels of unemployment over the last decade have been concentrated amongst the unskilled. The ratio of the unemployment rate for males with schooling to only a lower secondary level to the unemployment rate for those with higher education has, in many countries, risen in the seventies while it has stabilized at a high level in others. In 1988, it was as high as 4.8 in Germany and 4 in the United Kingdom, for instance¹⁶. Thus while unemployment rates for all categories of workers rose, those for unskilled and poorly educated workers have been especially high, so that, in absolute terms, the rise in unemployment has tended to be especially concentrated amongst the unskilled.

By itself this observation is not significant, for at least three reasons: the presence of labour hoarding; the "ladder" effect; and shifts in the structure of wages. Labour hoarding matters because it is likely that in the face of significant hiring and training costs for skilled labour, firms will be more likely to choose to hoard skilled labour than unskilled labour during temporary downturns in activity. Consequently cyclical unemployment will be concentrated amongst the unskilled.

The "ladder" effect works as follows. Consider a fall in labour demand that affects all categories of labour equally, at the existing wage rates. Initially there will be an equal rise in unemployment at all skill levels. However, those who become unemployed at the top

18. Economic Outlook, OECD, 1989

of the skill distribution may then end up accepting slightly less skilled jobs, thus displacing, at unchanged wage rates, workers in this lower skill bracket. They then replace workers yet further down the skill "ladder" and so on. Finally the people who enter the pool of relatively long-lived unemployment are at the bottom of the skill distribution, even though the initial shock to labour demand was evenly distributed throughout the skill ladder. If the initial shock were reversed then workers would be sucked back up the skills ladder, with the poorly skilled unemployed getting jobs at the bottom of the distribution.

Both of these are essentially cyclical phenomena, which will disappear as unemployment falls. However, there is a more fundamental difficulty in trying to assess whether there has been an exogenous technological shift in favour of skilled labour from movements in the skill structure of unemployment alone because this is also affected by movements in the relative cost of skilled and unskilled labour. Thus a semi-permanent increase in the relative importance of unskilled unemployment may reflect an exogenous narrowing of the wage differential between skilled and unskilled workers, rather than any exogenous technological developments. Conversely changes in technology may not be reflected in the structure of unemployment if they are accompanied by appropriately offsetting movements in wage differentials. For this reason it is not appropriate to look at the behaviour of survey data on shortages of skilled labour either.

For this reason, it is more instructive to look at the joint evolution of employment and wages of different sorts of labour. Unfortunately internationally comparable data on these variables is not readily available for many countries. Figure I, however, reports some evidence drawn from the UK General Household Survey. On the vertical axis is the ratio of the average wage for those with a graduate qualification to that for those with no formal schooling qualifications whatsoever, while on the horizontal is the ratio of employment of the sorts of labour. Between 1974 and 1979 (both business cycle peaks) there is an apparent inverse relationship between the two, consistent with

substitution away from unskilled labour due to reduced wage differentials. However, in the early eighties there is an apparent outward shift in the relationship consistent with there being a technological shift in favour of an increased demand for skilled labour relative to that for unskilled labour.

Although it is not easy to repeat this exercise for all EC countries, Table 4 confirms the general picture for Germany at least. This gives an indicator of the educational level of the workforce by broad industrial sector, together with the change in the share in total employment of that industry, for Germany as well as the United Kingdom. While the relationship is by no means perfect, there is a distinct tendency for (relative) employment growth to be concentrated in industries where the educational level of the workforce is relatively high (Financial and Other Services). While the existence of on-the-job training, etc., means that there is not a one-to-one correspondence between skill levels and the duration of education, the table is certainly highly suggestive.

All in all, we are inclined to agree that there has been a structural shift in the relative demand for skilled and unskilled labour. Furthermore, we see no obvious reason why the trend towards an increased relative demand for skilled labour should reverse or even slacken in the future. Of course, as noted above this need not be associated with a rise in the unemployment rate of unskilled labour if it is accompanied by a fall in the cost of that labour. Previous reports of this group have called attention to the need for greater differentials in labour costs, both regionally and across

occupations if unemployment is to be kept at acceptable levels. In practice incomes policies, minimum wage legislation, the financing of social security, and the activities of trade unions all seem to have acted to squeeze differentials since the start of the seventies¹⁷, a trend that might continue under some peoples' conception of the "social dimension" of the Single Market.

In this regard, a comparison with the United States since the start of the decade is instructive. There, strong output growth has been achieved through sustained employment growth made possible by a wide, and possibly widening, wage distribution. In the European Community, by contrast, most of the output growth of this period has been associated with productivity growth achieved through the substitution of capital for labour and a low degree of relative wage flexibility. While Americans may envy the Europeans their productivity performance, it is rather the American employment "miracle" that should be envied. For while productivity growth through capital deepening is entirely desirable in the presence of full employment, when there are unutilised resources of labour it is wasteful.

This suggests that it is important for policymakers not to put new obstacles in the way of increased relative wage flexibility, as well as removing existing ones. In the short run this will help to ensure the full employment of low quality labour. These considerations then imply that, unless adequate changes take place on the supply side, one will observe an increasing degree of

19. See the Employment Outlook, OECD, September 1987

income inequality between skilled and unskilled workers. Such a development would, however, probably be seen to be inequitable and could well provoke measures - such as a strengthening of minimum wage legislation - to prevent it. While this might help to maintain the incomes of those in work it would however inevitably lead to increased unemployment amongst the unskilled and a progressive marginalization of some sectors of the workforce. It is much better to confront this problem through the tax and social security systems, while simultaneously seeking to raise the skill levels of the workforce. Such a policy would lead to an increase in the quantity of skilled and a decrease in the quantity of unskilled labour. Furthermore, greater wage dispersion will help to provide the necessary market incentives to encourage workers to acquire the appropriate skills.

5. Developing education in Europe

This naturally leads us to the issue of training and education and the role of the public sector therein, whether at the national or supra-national level. It is useful to start by listing the difficulties confronting a purely private system of education and training. First, the principal beneficiary of an educated workforce - private firms- cannot be relied upon to provide the socially optimal amount of education. This is due to the fact that individual firms cannot be sure that the returns to any investment in the (non-firm specific) skills of their workforce will accrue to them. Education

and training are classic public goods. This does not mean that a substantial amount of employer-financed training and education programs does not take place; only that these cannot be relied upon to constitute the core of an education system¹⁸.

On the demand side, several issues limit the prospects for a pure market-driven solution to the problem of providing an adequate supply of skills. To see this, suppose initially that there is no discrepancy between the social and the private return to education. Then there is no reason to suppose that this return cannot be fully appropriated by the student or the trainee. Any problems now arise on the financing front.

Think of a private institution (a bank or an insurance company) being solicited for a student loan. First, it will find it extremely difficult to evaluate the intrinsic default risk of lending to a particular individual¹⁹. Second, the bank may experience substantial difficulties in collecting repayment of the debt. Experience in the US and Canada suggests that the default rate on privately-provided student loans is as high as 10% or more²⁰. Because of these information and incentive problems, one observes banks and similar private institutions being excessively cautious in lending to

18. Note, in anticipation of the next section, that this non-appropriability problem is the more acute the higher the degree of labour mobility.

19. The default risk could furthermore be altered by the effect of the terms of the loan contract on the conscientiousness of the student: he may be lead to choose excessively risky programs of studies or to decrease his overall effort level (there is thus a "moral hazard" problem).

20. Tod-up loans for Students, Annex C, H.M. Government CM.520, 1988. The corresponding figure for government-financed schemes is only 1-2%.

prospective students.

Furthermore the financing of education should contain an element of insurance. Some individuals will simply be unlucky in ending-up in low-paying jobs, and this possibility may reduce their willingness to train in the first place. A well-functioning private insurance market for such risks is, however, unlikely, not only because of the collection difficulties already mentioned, but also because actuarially fair insurance rates might discourage the best risks, i.e. the students most likely to complete their studies and obtain a good job thereafter (there is an "adverse selection" problem).

It is time now to drop the assumption that the social and private return to education are identical, for the acquisition of knowledge generally confers significant benefits on society as a whole. The social value of knowledge extends beyond the specific skills which are of direct value to the employer and any private benefits enjoyed by the graduate. These external benefits are greater the less specific the type of education, so that primary, secondary and tertiary education creates more externalities than vocational training.

For all these reasons a fully private solution to the problem of financing education is not practicable. Instead we recommend a publicly-funded student loan scheme coupled with a "graduate tax" which links the size of the loan repayment to postgraduate income and is collected as an income tax surcharge. This would both minimize default rates and permit some degree of insurance. Because of the public good nature of education

and the adverse selection problem, repayment rates would not be actuarially fair and the system would thus not be self-financing.

Finally, the output of the education system is not limited to the transmission of knowledge between individuals and generations, but also extends to the production of new knowledge, a clear public good. Fundamental research in all scientific and human disciplines has to be publicly funded. This is well recognized and need not be elaborated further.

Our purpose here is not to propose a fundamental revision of the existing secondary and higher education systems of the Community (although the above principles should guide their continued development). Rather the "greying" of the working population, continued technological change and the necessity of systematically improving the skills of the Community's labour force are reasons for encouraging a sizable expansion in adult education: retraining programs, continuing or recurrent education, etc. Exactly the same principles apply to the development of these activities as operate in the case of higher education. One thus faces the issue of how to finance this expansion in adult education. A fully market-driven solution is again impractical. We recommend the introduction of a program of "adult-student" loans programs organized locally or nationally and designed after the model above. Again such a program would not be entirely self-financing notably because of the public good nature of education.

Admittedly, the problems we have identified above

might be less acute in the case of adult education. This is because, firstly, adults will probably have accumulated some savings and thus be less dependent on outside financing, and, secondly, adult education is likely to be more job-specific and have less of a public good component than general education. However, there are other considerations, in particular the fixed cost associated with the decision of quitting the labour force and taking study leave, which suggest that, in the absence of appropriate incentives, investment in retraining and continuing education will be too low.

Note that while we believe that there is a major role for the public sector in financing education, we have not argued that it must be publicly produced. Indeed, even though public education systems are the rule in the EC countries, a well-designed system coupling private production with public subsidies might function just as well. Indeed competition in the supply of education would encourage greater efficiency. The large number of students (and thus the cost of administering a program of subsidies) and the public good nature of general education may perhaps justify it being provided by the state²¹. These obstacles are much less significant in the case of adult education. Thus, while the public authorities have a major role to play in financing adult and continuing education, as well as in quality control and certification, the development of such facilities within the Community should also leave room for private

21. The creation of the Single Market is also likely to foster competition and thus greater efficiency between state-run higher education systems (see below).

institutions. This requires that public and private institutions in the field of adult education compete on a level playing field in the sense of both being subject to the same regulations and economic conditions. Any subsidisation is thus best administered on the demand rather than the supply side of the market.

Should public intervention in education such as an increased supply of loans and the associated graduate tax, and the funding of fundamental research, be organised at the Community level or at the national level? Following section 2, there is at least some case for Community involvement. International labour mobility implies that the returns to investment in educating the workforce cannot be fully appropriated by the country that finances it. At the same time, student mobility within the Community opens the possibility of countries "free riding" in the provision of education: "Let our neighbours bear the cost of educating our workforce". The former problem would justify the provision of subsidies from the Community to counteract the tendency it induces for underprovision of education and training by individual countries. The latter could be tackled by requiring transfers between member countries, computed on the basis of the net flows of students and the (marginal) cost of education.

However, the significance of these problems should not be overestimated. Natural impediments to worker mobility (see the section 6) are likely to make the leakages from national investment in education rather small. Moreover, nationals of one country also benefit

from the expansion and diffusion of their culture when it is carried abroad by educated migrants. Finally, a successful higher education system generates important positive externalities that are likely to outweigh the benefits of a policy of free riding. Thus we do not believe there is a compelling case for Community intervention of the type described above.

This is not to deny that there may be a role for Community action in education. On the contrary we strongly approve of the current measures encouraging mobility amongst students and researchers. These actions should be extended and reinforced with the aim of promoting the emergence of a truly European system of higher education. That is, a system where, across the Community competition between universities and other institutions of further education pushes them to exploit their comparative advantages, and where students (young or adult) can choose where to study on the basis of their assessment of the strengths and weaknesses of the various institutions. Improvements in the coordination of research activities and in the flow of information are also called for. While language differences will inevitably retard progress in these areas, the potential gains from the better exploitation of the rich diversity of existing institutions of higher learning make the effort worthwhile. Programs such as the Community's ERASMUS project have an important part to play in this effort.

6. Towards more mobility

One cannot discuss the future of labour markets in Europe, without also addressing the implications of the increased worker (and firm) mobility that is likely to follow from the completion of the Single Market. We start by reviewing the costs and benefits of increased labour mobility and then examine two of the major obstacles on the road towards more mobility.

6.1 The benefits of mobility

Is increased labour mobility necessary to reap the full gains from the 1992 program? In theory, the answer is no, for the free mobility of goods and capital alone ought to be sufficient to achieve the equalization of factor returns and the efficient allocation of production and consumption. No further gains can be expected from the relocation of workers.

In support of this theoretical view some have pointed out to the convergence of hourly wages that has occurred in the last decade in Northern Europe, as reflected in Figure II. The same conclusion can be drawn from the data in Table 6 which suggests that wage differences in the "Northern" part of the EC have more to do with wage differences between regions and industries within a country than with differences between countries.

This evidence is however partial as it does not cover all member countries. More importantly, it is limited to prices (wage levels) which, in a period of significant unemployment, tell a very incomplete story. Furthermore this evidence reveals that even within

individual countries where capital and goods mobility is as high as one can expect, wage equalisation does not generally materialize. Other more telling examples (the U.K. or Italy) of sizable wage, productivity and unemployment differences within a country could be chosen to illustrate this point.

This reality which can be explained by the presence of indivisibilities, returns to scale, frictions of all kinds supports the layman's view that there are unquestionable static efficiency gains to be expected from an increased degree of mobility in Europe. These gains would result from an improved match between the supply and demand of labour at the continental scale, both in quantity and in quality.

This does not mean we either foresee or favour the relocation of masses of workers. Only a relatively small number of people whose skills are scarcer in another region or in (temporary) oversupply in their own are likely to be involved.

One should not rely only on labour mobility to achieve these efficiency gains. Worker relocation entails significant personal costs and, to a large extent, mobility of capital may be a better substitute. The relevant question is whether the choice between the two alternatives - capital moving to labour or labour moving to capital- involves any additional social costs or benefits. We believe these are likely to be minimal. The location decision for a firm, or its subsidiary, is complex, entailing a large number of variables and parameters. Yet, the private costs of relocation should

be adequately reflected in the wage premium necessary to attract foreign workers and induce them to leave their country. And a firm will naturally compare these extra wage costs against those of setting up a production plant where the pool of skills is available, i.e. displacing the capital and, probably, some of the management²².

The possibility of an inefficient allocation of managerial expertise resulting from tax differences between countries cannot be totally discounted however. In time this would lead to pressure to reduce tax rates and a more efficient international distribution of tax burdens. However the cost of this competitive process could be substantial and there are good reasons to try avoiding them altogether by anticipating the necessary coordination of national tax codes, and thus eliminating the inefficiencies that would motivate these relocations.

This dynamic viewpoint raises another important question. Increased worker mobility is unambiguously good for a firm if it implies access to a larger pool of workers with the appropriate skills. It is not so good, however, when it means an increased probability of losing its own workers (and the investment made in their training and education) to competitors. In other words, worker mobility exacerbates the problem of the non-appropriability of a firm's investment in human capital, and the consequent tendency for underinvestment, discussed in section 5. There could thus be too much mobility in principle.

22. This argument does not rule out the existence of "thick market" externalities justifying public intervention (e.g., in the form of infrastructure investment) to induce firms to locate optimally.

In reality, we do not think the problem is acute. On the one hand, the basic tendency to underinvest in skills can be effectively countered by public actions targetted at the individuals who would benefit from additional training as outlined above. On the other hand, the multiplicity of languages and cultures in Europe is a substantial barrier to mobility that makes it highly unlikely that the point of excessive international labour mobility will be reached. It follows that continued efforts should be made to remove obstacles to the mobility of European workers. This has implications for the international coordination of social security, health and tax systems. We illustrate the issues by addressing in turn the problems raised by unemployment insurance and pension plans.

6.2 Unemployment insurance and mobility

Why should there be any unemployment insurance in the first place? Aside from equity considerations, there is a straight insurance argument that workers, especially those with firm or occupation specific skills, should be compensated if they are unlucky enough to lose their jobs, in return for paying an insurance premium when they are in work. It might seem that the most desirable scheme would then simply involve a lump-sum payment when a worker loses his job in order not to discourage him from finding a new job quickly.

However, there are at least two reasons why this might not be best. First, unemployed workers will differ in their ability to find work and the scheme needs to be

tailored so as to give greater compensation to those who will naturally experience more difficulty in finding a job. Second, the process of matching unemployed workers to unfilled vacancies involves an externality. When a worker decides to search for work he raises the likelihood of firms being able to make a good match. The private calculus of whether to accept a job offer or continue searching ignores this, and thus time spent searching for a good match will generally be too low. Conventional unemployment benefit paid out periodically can correct this inefficiency²³.

Table 5 documents the key features of the level and duration of unemployment benefits across the European Community, as well as some other countries. As can be seen there are marked variations across countries. How important are these in explaining international differences in unemployment experience and what can be said about optimal benefit rates?

To begin with, what evidence is there that the generosity of unemployment benefits played a significant role in the rise in European unemployment in the last decade? The answer is not clear. In theory high levels of unemployment benefits discourage the taking of lowly-paid jobs and prolong search activity by workers. They also make employed workers more willing to risk pricing themselves out of a job, and thus lead to increased wage pressure. However, a large number of empirical studies,

21. There is also a countervailing externality. When a worker searches he reduces the chances of other unemployed workers finding a job. The optimal level of unemployment compensation trades off these two externalities. See C. Pissarides, *Unemployment and Vacancies in Britain*, Economic Policy, 3, 1986.

at both an aggregate level and using individual data have failed to isolate quantitatively strong effects from benefits onto wages. Given that replacement ratios did not rise dramatically in the late seventies and early eighties, high benefit levels cannot be singled out as the culprit for the recent rise in European unemployment.

There is however evidence to suggest that the structure of unemployment benefits does have significant effects on the persistence of unemployment. Cross-country studies suggest that even if differences in average unemployment levels are not strongly related to existing benefit levels, there is a relationship between the benefit system and the persistence of unemployment. In particular the duration for which benefits are payable seems to have an especially significant effect on persistence²⁴.

The possibility that excessively generous unemployment benefits end up discouraging job search is a serious issue. Taking account of the observation made above that the duration for which benefits are payable appears to be a key factor in generating persistent unemployment, it seems that an optimal scheme would feature generous benefits for a relatively short period of time, say six months.

Is there any role for the Community to seek to standardise unemployment insurance schemes across Europe? Our previous report advocated introducing a Community element into the funding of unemployment benefits, as

22 See C. Bean and J. Symons "Ten Years of Mrs. T.", NBER Macroeconomics Annual, 1989 and O. Blanchard et al., World Imbalances, WIDER, 1989

part of the mechanism for redistributing resources between regions. However, that was only a minimal scheme, which left individual countries free to top it up, so that schemes would still differ between countries. Clearly one would not wish to enforce the same absolute levels of benefits across countries as this would imply excessively high replacement ratios in low wage countries. This problem could be avoided by regulating replacement ratios, i.e., ensuring benefits were related to previous earnings or contributions, rather than benefit levels per se.

Attention must be also paid to the appropriate way of linking national systems of unemployment compensations to foster mobility of both employed and unemployed workers. In principle, an unemployed worker should be allowed to move abroad temporarily, without losing his rights, if the prospects for his type of skills are better in another country. This however raises several problems.

There is first a problem of control if the country of origin remains responsible for the payment of the unemployment allowances of a worker residing abroad. It is also true that an unemployed worker accepting a job offer abroad should not lose any of his rights in the event he finds himself unemployed again. However the latter event should not be encouraged, which might be the case if a worker receives the right to draw unemployment compensations from his new (more generous) country of residence immediately after relocating. Finally, there is also the possibility of a particular country attempting

to export its unemployment by setting excessively low compensation levels. "Competition between rules" could then lead to the generalisation of the lowest level of unemployment allowances or replacement ratios.

This tour of the problems shows that the issue is not trivial and that, although it does not seem reasonable to call for the harmonisation of regulation in this area, there is a definite role for the Community in coordinating the different national systems and establishing a set of rules to foster mobility. These could be defined along the following lines. Each member country is responsible for the unemployment allowances of its nationals until employment has been held in another country for a given period, say 2 years. At that time responsibility is transferred to the country of residence. In the interim period, the social security agency of the country of residence is in charge of monitoring the activities of the unemployed and of paying the allowances he is entitled to in his country of origin. These payments are then the object of periodic clearings between national social security agencies. Obviously the specifics of the proposed linkage between social security systems may differ from those outlined above. The necessity of such linkages however appears inescapable.

6.3 Mobility and the design of pension plans

This is another complex issue whose importance should not be underestimated if mobility is not to be restricted to workers at the start of their career or to

intra-firm mobility. The "greying" of the working population described earlier makes this problem all the more pressing.

The objective is simple: pensions should be made fully portable in the sense that a worker changing job and country would carry with him total credit for the retirement contributions accumulated on his behalf. This could follow from a full legal recognition that contributions made to pension funds by a worker, as well as by his employer, are nothing other than deferred wages, and that this principle also applies to accumulated dues under an unfunded system of social security. In practice, however, even assuming this principle is fully recognized, differences between existing social security systems will make its implementation a non trivial matter. As an example, a French worker's retirement allowances are covered mostly by an unfunded public social security scheme, while the UK relies more heavily on funded pension plans administered through private institutions. A British worker moving to France should be able to carry with him the full value of the contributions made on his behalf (i.e., by himself and by his employers). He should then be allowed to apply this sum towards covering an entry fee, depending on his age and salary, into the French social security system. Conversely, a French worker taking a job in the UK should receive from the French authorities either the capitalised value of his accumulated credit toward pension payments or a voucher corresponding to these payments that would allow him to

apply to a program of reduced contributions into his new (British) pension fund. Working out the legal details of such linkages is beyond the scope of this report. Let us emphasize again however the importance of this for reaping the full rewards from the construction of the Single European (Labour) Market²⁵.

7. The formation of wages²⁶

In this section, we address the more speculative question of the impact of economic integration in Europe on the institutional arrangements prevailing in labour markets. Specifically, we shall focus on the impact of the degree of centralisation in wage bargaining on wages and employment, as well as other indicators of macroeconomic performance.

7.1 Corporatism or competition?

Calmfors and Driffill²⁷ note that in some respects the best employment performance in recent years seems to have been registered by those countries who either have highly centralised wage bargaining structures (Austria and the Nordic countries) and, in that limited sense, might be labelled "corporatist", and those who, at the other extreme, have strongly decentralised labour market

25. Our call for a greater individualisation of the choice of one's retirement date is also of relevance here. To the extent that it is implemented in each country it removes all interest in the activity of searching for the country that permits taking retirement at the date closest to the one desired, a source of inefficiency in the decision to locate.

26. The material in this section and the appendix was developed in collaboration with Jennifer Hunt.

24. Calmfors L. and J. Driffill, Bargaining Structure, Corporatism and Macroeconomic Performance, Economic Policy, 6, 1988

institutions (Japan, the U.S., Switzerland). By contrast, economies falling "in between" (including most of the European Community) appear to have performed less satisfactorily. In short, extremes seem to work best. To illustrate this, Figure III plots the change in the average unemployment rate between 1963-74 and 1974-85²⁸ for seventeen OECD economies ranked according to the degree of centralisation. The more centralised (Austria and the Nordic countries) are on the left, while the least centralised (Japan, North America) are on the right. There is indeed some evidence of a hump-shape relationship.

At this point we should acknowledge that the notions of corporatism and centralisation are somewhat slippery. Some countries, e.g. Australia, may have institutional structures which may outwardly seem quite corporatist, but in reality fail to function in this manner. Again some countries may be relatively corporatist at some times and not at others e.g. the United Kingdom functioned much like a corporatist economy during the "Social Contract" of 1976-78 while Germany, usually classified as one of the more corporatist of the Community economies, probably became less so after the mid-70's. Centralisation in wage bargaining is a more precise concept. However it cannot be totally isolated from the general notion of corporatism. As was pointed out by Giavazzi "... a neo-corporatist system is one in which unions share a vision of economic policy similar to that of the government, and try to enforce it in the

28. The conclusions here are fairly robust to minor variations in the sample period.

labour market. In order to work, such a system needs two conditions: consensus (the sharing of objectives), and enforceability. [...] Centralisation is crucial for enforceability, but centralisation without consensus may not work"²⁹.

While the concepts are imprecise, there are good economic reasons to expect an empirical relationship of the type illustrated in Figure III. Most economists would be willing to accept the notion that a properly decentralised competitive economy should function well, harnessing as it does competitive forces to keep wages and prices in check. At the other extreme, at a high level of centralisation, wage (and price) setters, recognizing the adverse consequences of wage (and price) increases on inflation and unemployment, will naturally tend to moderate their demands. That neither logic operates in the "in-between" case would then help to explain why members of the European Community appear to have registered a less satisfactory performance. Freeman³⁰ reaches a similar conclusion by focusing on the correlation between employment performance, on the one hand, and wage dispersion and union density on the other.

More precisely, the proposition that the relation between centralisation and real wages is hump-shaped is founded on the interplay of two forces working in opposite directions. On the one hand, as wage bargaining gets more centralised, i.e. in the hands of unions that encompass more workers and employers associations that

27. Comment on Calmfors-Driffill, Economic Policy, 6, 1988

25. Freeman R. B., Labour Market Institutions and Economic Performance, Economic Policy, 6, 1988

incorporate more firms, labour unions acquire more market power and are able to secure higher wages. At the same time, employers are freer to absorb wage increases through higher prices and they will put up less resistance to workers' demands for higher wages. Thus increased centralisation on the one hand tends to lead to higher wages and prices and lower output and employment. On the other hand, at this higher level of centralisation, negotiated wage increases and the consequent price rises have a larger impact on the general price level. This decreases the benefit expected from wage increases (as it cuts into the real value of wages) and thus tends to soften wage demands. This may also stiffen employers' resolve to resist those demands as it affects the real value of their profits.

These ideas have been formalized for a closed economy by Calmfors and Driffill. Our contribution here is to extend their analysis to a multi-country setting and ask how increased international competition and economic integration would affect the conclusions. The model underlying this analysis is described in more detail in an appendix. Loosely speaking, however, it contains the following elements. There are two countries, each producing a range of products. Increased economic integration, as in the Single Market program, makes the products of one country closer substitutes for those of the other. In the limit where there are no barriers to international trade in goods, competition is at its most intense and goods prices are identical across the two countries.

In addition wage bargain can take place at various levels. The most decentralised case is where there is an union per firm, setting wages in isolation. More centralisation corresponds to greater co-ordination between unions so that in the limit it is as if there is but one union setting wages for the whole economy (the Scandinavian model). Union bosses are

faced with two adverse effects of higher wages. First, they directly decrease employment in the industry (or industries). Second, higher wages also lead to a higher general level of prices which to some extent offsets the original wage increase. The first effect is more pronounced when a single union is involved than when wage bargaining is centralised. The second effect is more significant when bargaining is relatively centralised. In the middle, however, neither force may be strong enough to restrain wage demands. Hence the "hump".

7.2 Economic integration and the hump

The first question that must be raised is whether there is any likelihood that a fully integrated Europe could pursue the corporatist route, i.e. wage bargaining would become sufficiently coordinated at the European level to ensure that the externalities in the wage formation process are internalised, and if it is possible whether it would be desirable. It might seem obvious from our earlier discussion that either some form of Euro-corporatism or extreme laissez-faire are both valid models for Europe to aim at. Furthermore the quasi-corporatist nature of existing institutions and the "social dimension" of the Single Market program might both be expected to push the Community towards the former (perhaps with a little bit of resistance from the UK). But would Euro-corporatism work as well as the existing Austrian and Nordic models? Probably not, for in terms of sheer size the two would be very different. Euro-corporatism might well lead to increased pressure for reduced wage differentials within the Community. Within a small country where regional wage differentials may not be too pronounced this might not matter very much, but pressure to pull the level of wages in Southern Europe up to the current levels of the North would be a recipe for increased unemployment in the South. Euro-corporatism might thus well lead to a worsening of the regional problem.

Fortunately, however, the emergence of a Euro-corporatist structure seems to us rather unlikely. Not only the size of the European

Community but also the economic, cultural and political diversity of its component institutions preclude the degree of centralisation and, most of all, cohesiveness that is necessary for an efficient corporatist organization. Unions are organised on craft lines in the UK and industrial lines in Germany for instance, and it is difficult to see the emergence of a cohesive European union movement. The existing Austrian and Nordic models of corporatism have, in terms of not only size but also cohesiveness, very little in common with the European Community. Having thus ruled out the possibility of pan-European corporatism, we ignore in what follows the results obtained with full European-wide centralisation.

A first look at the results suggests the presence of a significant interaction between economic integration and the degree of efficiency of the wage bargaining structures. Table 7 records the unemployment rate that obtains in our stylised two-country world as the degree of centralisation and the degree of integration vary. The hump-shaped pattern is observed at all levels of economic integration. Reading down each column, one sees that the unemployment rate increases, reaches a peak and then decreases. Thus intermediate forms of wage bargaining generate more unemployment than the extremes. This is the Calmfors-Driffill result.

However the hump is less accentuated as one moves rightward toward a more integrated world economy. Bargaining at the "wrong" level in a world that is only imperfectly integrated can be very costly in terms of employment, but it becomes less damaging as integration

proceeds. The difference between the highest and the lowest level of unemployment decreases from 9.5% in the first column (from a high of 14.8% to a low of 5.3%) where there is a low degree of integration to 2.9% (with a high of 8.2% and a low of 5.3%) in the last column corresponding to the highest level of integration. This result arises because, as competition intensifies, the trade-off between wages and unemployment deteriorates, i.e., the price to be paid for a given increase in wages is higher in terms of lost markets and unemployment. Self-interested unions will then be naturally less inclined to choose high wages. It leads to the rather optimistic conclusion that *increasing economic integration should make unionised economies less unemployment prone.*

Another implication of these results is that the (already efficient) fully corporatist economies as well as those characterized by very decentralised wage bargaining structures have less to gain from economic integration than those in the inferior "middle ground". It is for the latter that the extra dimension of competition brought about by international trade is the most useful³¹.

Finally, observe that the peak of the hump is moving towards the decentralised extreme as the degree of economic integration is increased. This means that being close to, but not at, the corporatist extreme can be very

28. It is important, when interpreting the results, to realize that, in this world, there is no international specialization and the gains from exchange are limited to those attributable to the effect of increased degree of competition implied by opening one's borders to international trade.

costly in a situation with limited integration, but that it becomes much less so in a highly integrated world. On the contrary, in the next best position at the decentralised end the effect of a changing degree of integration is much less perceptible.

This result helps bring out one of the more fundamental insights one may obtain from the exercise we have performed. Opening up a corporatist economy to international competition has in itself a discrete negative impact in its level of efficiency. When two fully centralized economies integrate, one moves from two economies, each with one encompassing union able to internalize all the relevant externalities, to an economy with two unions imposing external effects on one another. One thus goes one step down the corporatist scale with the unfavourable consequences described by Calmfors-Driffill. This negative effect can however be undone if the force of international competition is sufficiently strong in which case the margin for manoeuvring left to the unions is considerably diminished and the discipline of the market substitutes for the advantage of the global vision.

7.3 Asymmetric labour market structures

Is the completion of the internal market compatible with the perpetuation of different national labour market institutions? Or on the contrary, is a process of convergence of institutional structures inevitably engaged? This question is perhaps not too important at present because current EC members are not too far apart

on the corporatism scale. However it may be a more crucial issue in assessing the implications of admitting new members to the Community (Scandinavia?) with sharply different institutions. Thus we have to face the question of whether competition between alternative models inside the Single Market is likely to produce desirable results or not.

The results from the model, reproduced in Table 8 provide a mixed set of answers to this question. First, it can be seen that, at low levels of integration, a corporatist economy suffers significantly from the competition of a more decentralised one, and is, in fact, quite sensitive to the wage bargaining structure of the economy with which it competes (e.g. the unemployment rate of a centralized economy competing against another with 2 unions is 10.8% while it is 12.4% if its competitor is fully decentralized - column 2; line 1/2 vs. line 1/32). On the contrary, the performance of a decentralised economy is left practically unaffected by international competition and it is insensitive to the wage bargaining structure of its partner. In this sense, one may infer a greater fragility of corporatist institutions in a process of opening-up to international competition.

However, the key determinant of the level of unemployment appears to be the degree of economic integration rather than the level at which wage bargaining takes place. And here the main result of the previous section is confirmed: the employment losses associated with bargaining at the "wrong" level diminish

as integration proceeds. Under full integration, an extreme (national) corporatist economy performs as well as the most decentralised one and it is much less sensitive to the institutional arrangement prevailing in its partner economy than when integration is less close.

One also observes, rather curiously, that two economies with opposite structures (one fully corporatist with one national union, the other fully decentralised with 32 unions) have a joint performance that is better than the performance of two "middle of the roaders" (2 unions in one, 4 in the other). The "extremes work best" motto remains valid although it here takes on a different dimension. The differences in unemployment rates are quite small here. Yet, this result is important as it suggests that, provided the process of economic integration is pushed sufficiently far, there should be no problem in the co-existence of different national systems of wage setting in an integrated Europe.

Finally it is important to observe that behind the numbers of Table 8 showing closely similar performance for the two types of wage bargaining structures are concealed quite different processes of adapting to increasing economic integration. This is revealed in Table 9 which shows the evolution of prices and wages in the two types of economy as economic integration proceeds. One sees that the path of economic integration requires more adjustment from the corporatist economies than from the decentralised ones. This is due to the fact that the increasing degree of competition that accompanies the integration process conflicts with the

logic behind attempts to achieve a corporatist solution, while it is of course much closer to the logic of a decentralised economy. In that sense, one should be cautious interpreting the results. The rational trade unions of the model may be much more flexible and adapt much faster to the new reality of increased international competition than their real world counterparts. If this is so, the effects of economic integration on the unemployment level of fairly centralized economies given in the Tables is likely to prove too optimistic during the transition period.

7.4 Corporatism, growth and inflation

The analysis so far has focused on the link between the degree of centralisation of the wage-bargaining process and the equilibrium level of unemployment. We now turn to the possible relationship with other macroeconomic indicators.

A high degree of centralisation is usually associated with a large public sector (and hence with high tax rates). This is often a quid pro quo for gaining union moderation in wage demands. Thus total taxes in each of the Nordic countries, Finland excepted, exceeds 50% of GDP, while in the U.S. and Japan it is as low as 30%. The higher marginal tax rates in the former set of countries imply lower output and greater welfare losses through disincentive effects than would otherwise be the case. In addition these high tax rates may act as a disincentive to risk-taking and a reduction in growth³².

29. See e.g. R.E. Lucas Jr., The Mechanics of Economic Development, Journal of Monetary Economics, 1986

Is there any evidence that this is indeed the case?

Figure IV plots the average growth rate over 1974-85 for the seventeen countries appearing in Figure III. Once again they are ordered from the most centralised to the most decentralised, running from left to right. Although there are many factors which will affect average growth rates, there is no obvious inverse relationship between the degree of centralisation and the rate of growth of output over the period in question.

Figure V plots the mean rate of inflation (GDP deflator) over the same period against the degree of centralisation. There are at least two mechanisms one can imagine which might produce a relationship between inflation and the structure of wage bargaining. First, a high degree of centralisation usually goes with a greater redistribution of income towards labour and away from capital. To the extent that inflation tends to hurt the owners of capital (holders of non-indexed debt) more than labour, centralised or corporatist economies may display a greater tendency to inflation in the face of adverse supply shocks like OPEC I and II. This would imply a positive relationship between centralisation and inflation over the sample period, although it need not imply higher average inflation over the long run.

The second mechanism suggests that countries with intermediate levels of centralisation will tend to exhibit higher trend inflation rates. The argument here is that countries with high equilibrium unemployment rates are more likely to attempt to inflate the economy

and hence reduce unemployment³³. If the Calmfors-Driffill hump-shape hypothesis is correct, then it follows that there is also likely to be a hump-shaped relationship between centralisation/corporatism and the average inflation rate, other things equal. Of course other things rarely are equal, and in particular this argument depends on the ability of the government to manipulate the level of nominal demand. In countries like Germany, with a largely independent central bank charged with maintaining the purchasing power of the Mark, this option is not readily available.

Figure V suggests there may be some truth in both these arguments. Leaving Germany (and Benelux) aside, the countries with an intermediate degree of centralisation exhibit the highest average inflation rates, followed next by the most centralised countries, while the least centralised countries seem to have experienced the lowest inflation. Of course, the imprecise and multi-dimensional nature of the corporatism notion, coupled with the fact that many other factors may be relevant in determining international differences in inflation rates makes us take these findings with a (very large) dose of salt. They are, however, suggestive. It could also be argued that corporatist economies are more likely to engage in macroeconomic stabilisation in the face of shocks, which would imply a lower variability of output growth and a higher variability of inflation in more centralised economies. There is, however, no obvious relationship with either over the sample period in question. This may,

30. See e.g. R.J. Barro and D.B. Gordon, A Positive Theory of Monetary Policy, Journal of Political Economy, 1983

of course, simply be a reflection of the rather limited information contained in the sample.

8. Conclusions: the challenges of the future

Our tour of European labour markets has led us to identify four major challenges confronting EC economies in the near and more distant future. First, while the recent past was characterised by the demands created by a rapidly growing labour force, the next 20 years will be marked by a progressive "greying" of the working population. We have noted that the decision to enter or to leave the labour force contains an externality whose importance will grow with the increasing burden imposed on the working population by expenditures on and transfers to the non-working. This justifies measures to facilitate entry into (by married women especially) or encourage later exit from the labour force (by older workers). Tax incentives to encourage later retirement should be married with allowing greater freedom of choice in the decision of when to retire.

Second, a careful study of the recent past has led us to conclude that a technologically induced shift in the relative demand for skilled versus unskilled labour has occurred and is likely to continue. This change creates a major challenge for education policy in the Community. Among other measures, an expansion of adult education is called for. This expansion should be achieved through a greater use of the competitive mechanism than is currently the case in youth education.

To this end we recommend competition between public and private institutions in the supply of education coupled with a subsidised public adult-student loan program.

One major component of the future of European labour markets should be an increase in the degree of worker mobility. While there can, in principle, be excess mobility, our view is that cultural and language barriers are sufficient to prevent this possibility, and that removing other obstacles to the mobility of workers, including the unemployed, will be beneficial. Attention should however be paid at removing international tax distortions that could motivate inefficient relocations of highly specialized labour. We have further underlined the fact that this call for mobility has important implications for the coordination of social security schemes and have illustrated the issues by focusing on the necessary linkages between national unemployment insurance and pension schemes.

Finally, analysing the impact of integration on the performance of alternative labour market structures, we arrived at the generally optimistic view that whatever inefficiencies have been linked to the structure of wage bargaining, these inefficiencies should tend to disappear under the process of economic integration. This is the fourth challenge we identify as we observe that some types of institutional arrangements are fragile under incomplete integration. Adapting to a more competitive, integrated, world will generate great strains for some economies and a lack of flexibility could lead to significant costs during the transition process, a point

already made in the last annual report of the CEPS
Macroeconomic Policy Group.

TABLE 1 : EC 12

Age structure of the population

in millions	1950	1980	1990	2000	2010	2020	2030	2040	2050
0-14	64.00	69.25	60.78	60.10	54.12	51.94	52.77	51.58	51.50
15-64	171.25	204.91	217.41	216.48	215.72	206.50	190.79	178.33	172.90
65 +	24.21	43.56	45.51	49.38	53.65	58.97	66.36	69.15	62.82
Total	259.47	317.68	323.68	325.94	323.48	317.43	309.89	299.08	287.23

in percent	1950	1980	1990	2000	2010	2020	2030	2040	2050
0-14	24.67	21.80	18.78	18.44	16.73	16.36	17.03	17.25	17.93
15-64	66.00	64.50	67.17	66.42	66.69	65.05	61.57	59.63	60.20
65 +	9.33	13.71	14.06	15.15	16.59	18.58	21.41	23.12	21.87
Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source : Fichier «Démographie» de l'OCDE : projections établies avec la variante de fécondité moyenne.

Table 2 : Participation rates of individuals aged 55 and over

(in selected countries, in percent)

Country	Men		Women	
	55-64	65 +	55-64	65 +
France				
1965	76.0	28.3	36.9	11.5
1970	75.4	19.5	40.0	8.6
1975	68.9	13.9	35.9	5.8
1980	68.5	7.5	39.7	3.3
1985	50.1	5.3	31.0	2.2
Germany				
1965	84.6	24.0	30.2	7.8
1970	82.2	19.9	29.9	6.5
1975	68.1	10.8	24.8	4.5
1980	65.5	7.0	27.2	3.1
1985	57.5	5.2	23.9	2.5
Italy				
1965	54.8	18.4	14.3	4.7
1970	48.2	12.9	10.6	2.6
1975	42.4	10.4	8.5	2.1
1980	39.6	12.6	11.0	3.5
1984	38.2	8.9	10.5	2.1
Netherlands				
1965
1971	80.8	11.4	14.9	2.3
1975	73.0	8.0	14.3	1.8
1980	63.6	4.8	14.3	0.9
1985	53.8	4.0	14.5	0.7
Spain				
1965
1972	84.2	25.9	22.0	7.7
1975	79.8	18.8	23.0	6.3
1980	75.7	12.3	21.2	3.8
1985	66.3	5.9	20.0	2.1
United Kingdom				
1965	92.7	23.7	35.6	6.5
1970	91.3	20.2	39.3	6.4
1975	87.8	15.8	40.3	4.9
1980	81.8	10.5	39.2	3.6
1985	66.4	7.6	34.1	3.2

Source : "Le vieillissement démographique, conséquences pour la politique sociale", OECD, 1988

Table 3 : Participation rates of women

(working population as a proportion of the total female population between age 15 and 64)

Country	1970	1975	1979	1982	1985	1986
Belgium	40.2	44.1	47.4	49.4	50.5	51.3
Denmark	57.9	62.8	70.2	73.6	76.4	78.2
Germany	48.1	49.6	49.6	50.0	50.3	51.1
Greece			32.7	36.4	41.8	
Spain		32.4	32.3	32.3	33.1	34.0
France	48.5	51.0	54.5	54.7	54.9	55.3
Ireland	34.1	34.7	35.0	36.9	36.8	36.8
Italy	34.0	35.4	39.2	40.7	41.8	43.0
Luxemburg	33.7	37.9	39.9			
Netherlands	30.5	32.0	34.4	39.4	40.9	41.1
Portugal		48.9	52.8	55.6	55.7	54.5
United Kingdom	50.8	55.3	57.9	57.0	60.3	61.0
EUR 12		45.3	47.0	47.8	49.0	50.0
USA		51.1	58.9	61.8	63.8	64.9
Japan		54.0	54.7	57.2	57.2	57.4

Source : "Le marché du travail dans la communauté", Economie Européenne, 38, 1988.

TABLE 4 : EDUCATION AND EMPLOYMENT GROWTH

Sectors	GERMANY		UNITED KINGDOM	
	share of (*) "uneducated" workers	employment growth (**)	share of (*) "uneducated" workers	employment growth (**)
Agriculture	50.6	-2.4	74.7	-1.5
Mining&Quarrying	29.9	-1.4	56.2	-4.1
Manufacturing	26.9	-1.0	57.5	-2.7
Electricity, Gas&Water	14.3	1.2	42.6	-1.4
Construction	23.8	-2.0	46.6	-0.8
Retailing	23.7	0.2	71.9	0.9
Transport	19.5	0.0	62.5	-0.4
Financial	11.3	2.4	49.8	3.8
Other Services	16.3	2.2	46.9	1.7

(*) Proportion of employed labour force with less than upper secondary education, 1988, (not comparable across countries).

(**) Change in industry share in total employment 1973-87 (in percent)

Source : OECD, Employment Outlook, July 1989

Table 5 Benefits proportional wages under insurance in 1988
the case of an unemployed person aged less than 50 with no dependants

country	initial period		subsequent period		Total potential duration of payment	ceiling on insurable wages	taxable benefit
	Rate (per cent)	maximum duration (per month)	rate (per cent)	duration (in month)			
Austria	80-40	3-7		unlimited	3-7	1.6	no
Belgium	60	12	40		unlimited	0.8	yes
Canada	60	2.5-12			2.5-12	1.0	yes
Denmark	90	1-30			1-30	0.8	yes
Finland	90	10	79	14	24	no ceiling	yes
France	75-57	3-19			3-19	5.0	yes
Germany	63	4-22			4-22	1.7	yes
Greece	65	2-8			2-8	0.7	no
Ireland	up to 85	15			15	1.2	no
Italy	7.5	6			6	0.7	yes
Japan	80-60	3-8			3-8	0.9	no
Luxembourg	80	6	80-64	6	12	3 times the min. wage	yes
Netherlands	70	6-36			6-36	1.8	yes
Norway	62	19			19	1.2	yes
Portugal	60	6			6	2.6	yes
Spain	80	6	70	6	24	0.9	no
Sweden	80	14	60	12	14	1.1	yes
Switzerland	70	4	70-66	4	4-12	1.7	yes
United States	50	2-9	70-63	4	2-9	0.6 to 1.2	yes

Source : OECD, Employment Outlook, 1989

Table 6

Relative wages, 1983 (average=100)		
Belgium	101	
Denmark	134	
Germany	116	
Hamburg		129
Bavaria		107
France	82	
Ireland	82	
Italy	81	
Netherlands	110	
West		116
South		106
United Kingdom	93	

Source : V D. Norman, Comments on D. Neven, The Gainers and the losers of from 1992, Economic Policy, 1990 (forthcoming).

TABLE 7 : Symmetric wage structures

Unemployment in %

Degree of integration		Less integrated ←--			More integrated --→	
		col. 1	col. 2	col. 3	col. 4	col. 5
Degree of centralisation	1	5.3	5.3	5.3	5.3	5.3
	2	14.5	10.5	7.3	6.0	5.4
	4	<u>14.8</u>	<u>13.3</u>	<u>11.0</u>	8.9	7.0
	8	11.2	11.0	10.5	<u>9.7</u>	<u>8.2</u>
	16	8.6	8.6	8.5	8.4	8.0
	64	6.5	6.5	6.5	6.5	6.5

The elasticity of substitution between the baskets of goods produced by the two countries (the parameter θ_1 of the appendix) takes the following values :

Col. 1 : $\theta_1 = 1.5$, Col. 2 : $\theta_1 = 2.5$, Col. 3 : $\theta_1 = 5$
 Col. 4 : $\theta_1 = 10$, Col. 5 : $\theta_1 = 25$.

TABLE 8 : Asymmetric wage structure

Unemployment in %

Degree of integration	Less integrated ←--			More integrated -->	
	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
Degree of centralisation i.e. Number of unions in each country respectively					
1	14.7	10.8	7.5	6.1	5.5
2	14.6	13.2	11.0	8.9	7.0
1	15.0	11.3	7.7	5.9	5.1
4	10.8	10.8	10.4	9.7	8.2
1	15.4	11.9	8.4	6.3	5.1
8	8.3	8.3	8.4	8.3	8.0
1	15.6	12.4	9.1	7.1	5.7
32	6.4	6.4	6.4	6.5	6.5
2	15.2	13.5	11.0	8.9	7.0
4	11.0	10.9	10.5	9.7	8.2
2	15.6	13.7	11.1	8.9	7.0
8	8.3	8.4	8.4	8.4	8.0
2	15.9	13.9	11.3	9.0	7.0
32	6.4	6.4	6.4	6.5	6.5
4	11.5	11.2	10.7	9.7	8.2
8	8.5	8.5	8.4	8.3	8.0
4	11.7	11.4	10.8	9.8	8.2
32	6.4	6.4	6.4	6.5	6.5
8	8.7	8.7	8.6	8.5	8.0
32	6.5	6.5	6.5	6.5	6.5

The different columns correspond to the same value of the elasticity of substitution as in Table 7

Table 9 : Price and wage levels for different degrees of integration

Degree of integration	Less integrated More integrated ←-- value of index ---→				
	Col. 1	Col. 2	Col. 3	Col. 4	Col. 5
PA	0.519	0.511	0.503	0.497	0.490
PB	0.507	0.506	0.502	0.497	0.490
WA	0.565	0.548	0.528	0.512	0.497
WB	0.447	0.447	0.442	0.434	0.422

In this illustration country A has 4 unions while country B has 8.
Each column corresponds to the same value of θ_1 as in Table 7.

Figure I

GHS Data for Males

(Degree+Subdegree)/(No Qualifications)

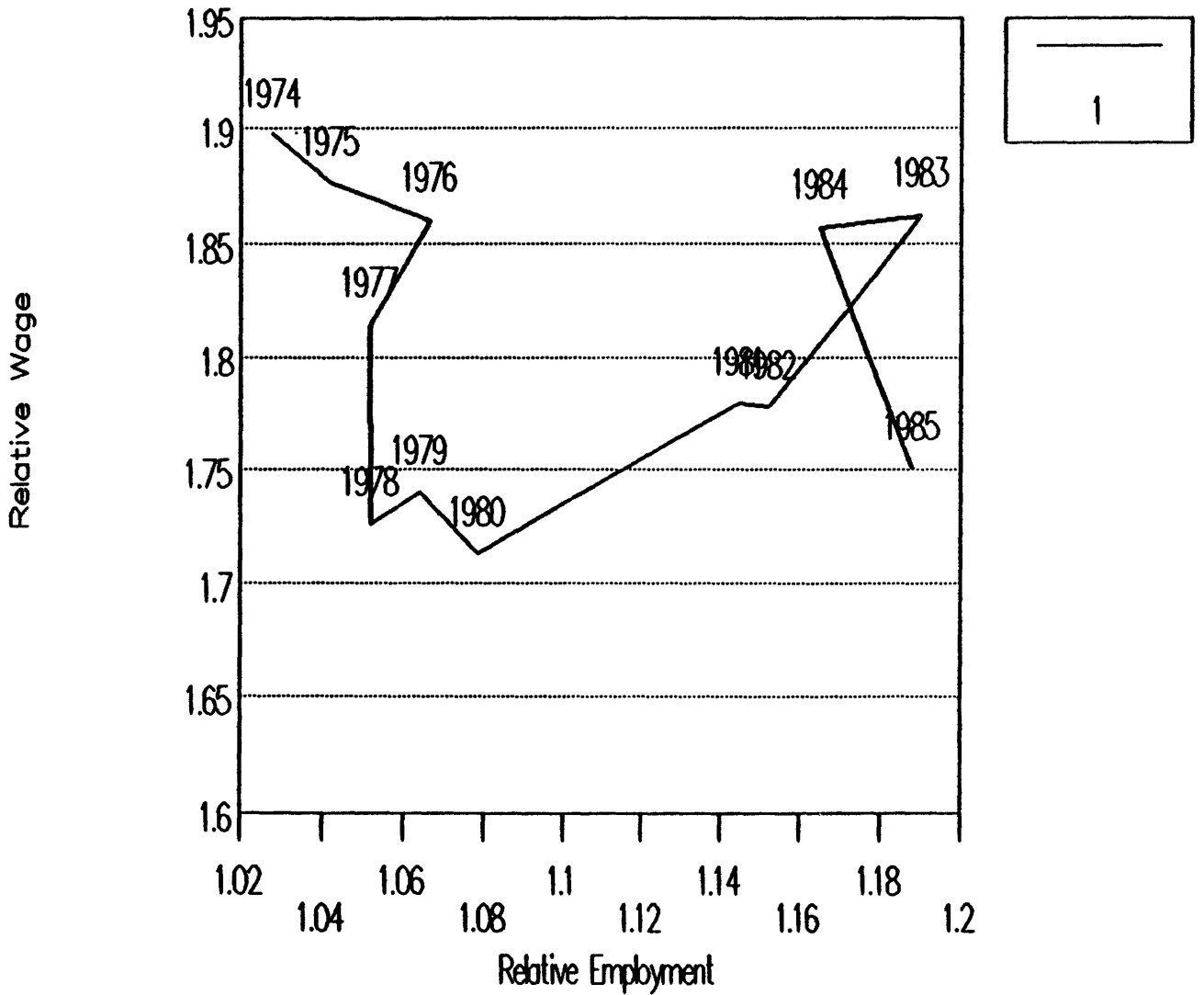
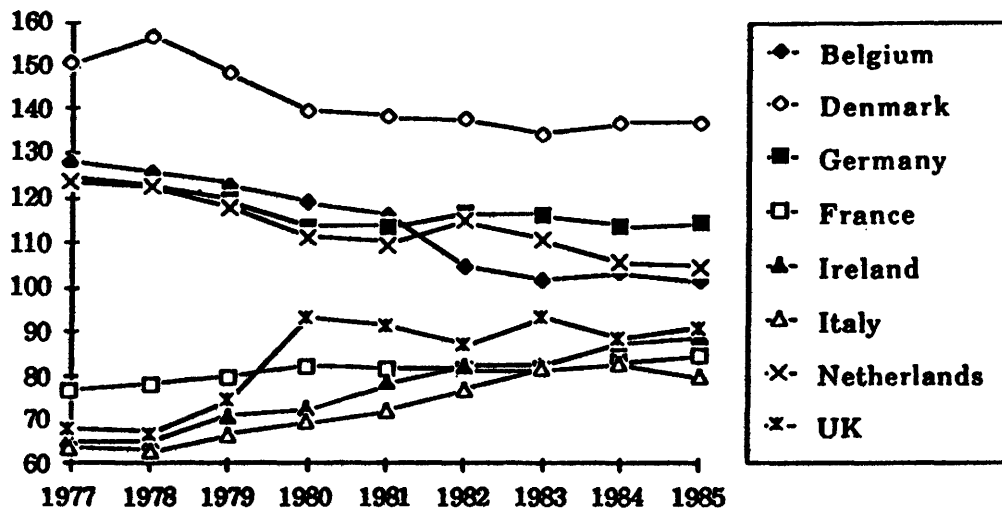


Figure II

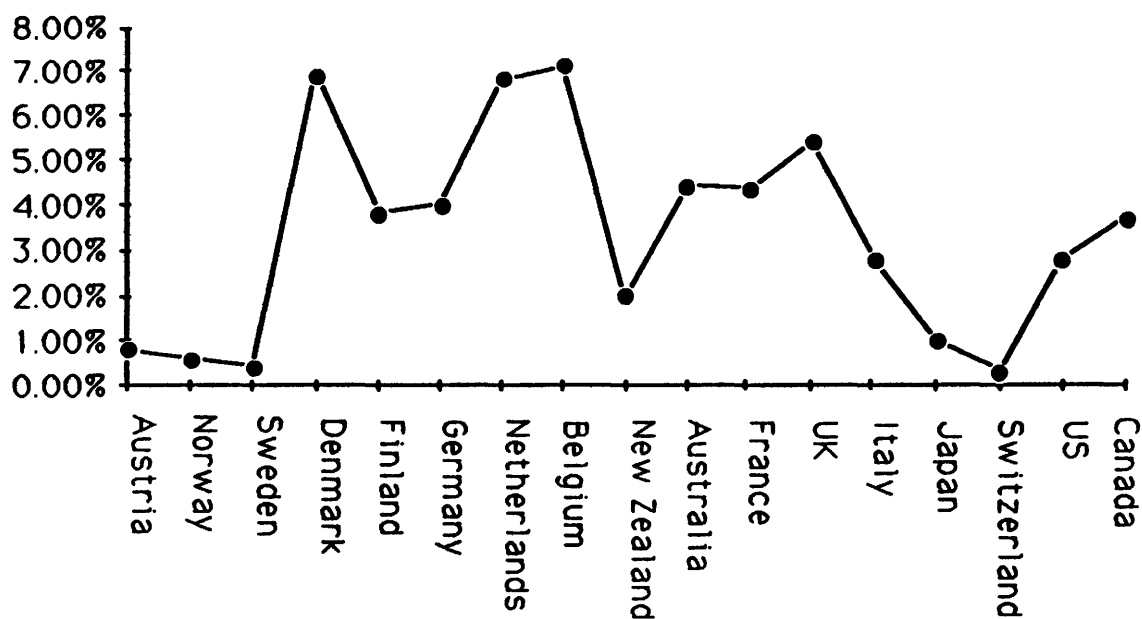
Relative hourly wages, 1977-85
(Hourly wage all industries, converted to ECU; average each year = 100)



Source : V. D. Norman,
Comments on D. Neven, The Gainers and
the Losers from 1992,
Economic Policy, 1990. (forthcoming)

Figure III

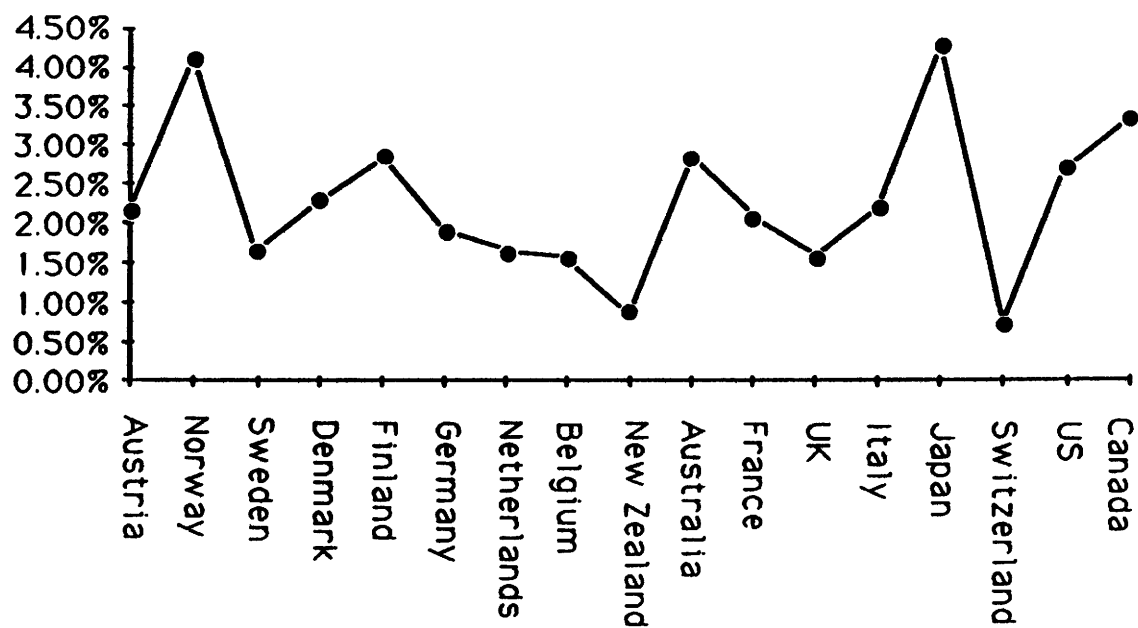
Change in unemployment rate between 1963-74 and 1974-85 averages, for seventeen countries ranked according to degree of centralisation.



Source : Calmfors and Driffil,
Bargaining Structure, Corporatism and
Macroeconomics Performance,
Economic Policy, 6 1988.

Figure IV

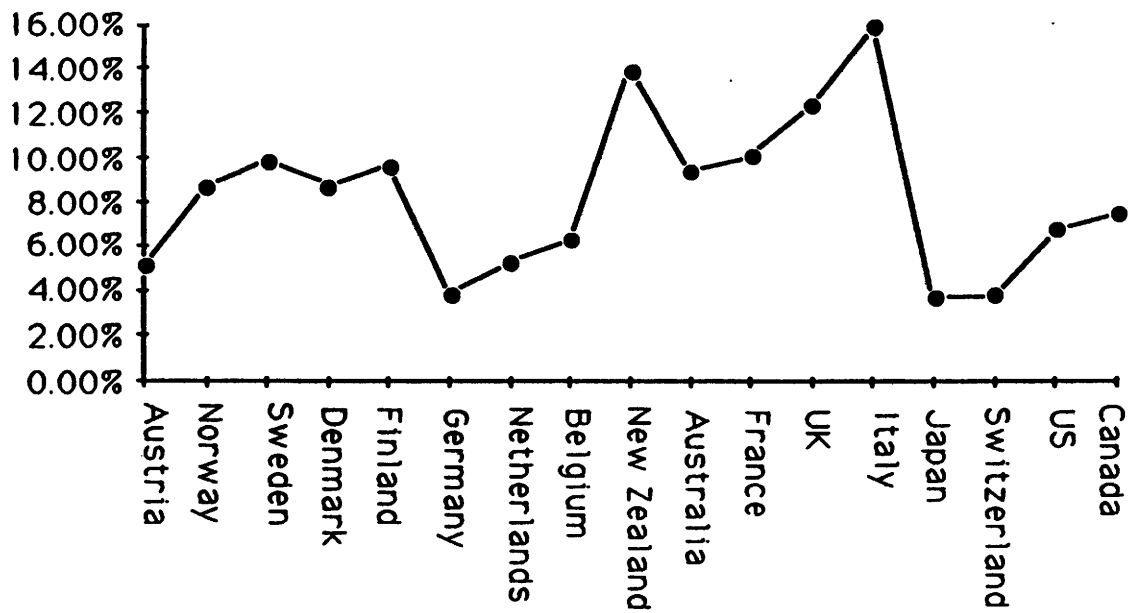
Average growth rates for seventeen countries ranked by degree of centralisation 1974-1985.



Source : Various OECD Annual Reports.

Figure V

Average rate of Inflation for seventeen
OECD countries ranked by degree of centralisation
1974-1985.



Source : Various OECD Annual Reports.

Appendix

The model underlying our discussion in section 7 can be described as follows. There are two countries with wage bargaining structures that are more or less centralised. Their economies may be more or less closely integrated. One can thus evaluate the impact of integration (the Single Market) with given institutions, as well as trace out how changes in those institutions affect the gains from integration.

There are two key elements in the model. First the degree of economic integration between the two economies is represented by a variable willingness to substitute between goods produced at home and abroad. Each country produces 32 national products (giving 64 in total). In the limit, when the goods produced in each country are perfect substitutes, which we mean to represent the total absence of trading costs, price competition is at its extreme and the price structures of the two economies cannot differ. At the opposite end of the spectrum, when the goods are not so readily substituted across national borders, the weight of international competition is lighter and producing at high price and high cost is a viable alternative. We interpret the latter as corresponding to the present, and the former to the Community after 1992.

In addition, wages may be negotiated at different levels. There is one union in each industry which sets the nominal wage. The unions' monopoly power is the source of unemployment in this model. Each union may act in isolation and set the wage with regard to the interest of its members only, or it may act in cooperation with other unions, taking account of the welfare of the workers in all the industries concerned. The trade-off facing a typical union (or a confederation of unions) is the following. Higher wages, while benefiting employed members, have two adverse consequences: first they directly decrease employment in the industry. Second, higher wages also lead to a higher general level of prices which will offset to some extent the original wage increase.

Each country produces, under national brands, 32 products (64 in total). At the limit of economic integration, the baskets of goods produced in the two countries will be considered to be perfect substitutes. In each of the 32 national industries there is a large number of price-taking firms with identical production functions. The production possibilities of industry i ($i = 1 \dots 64$) is summarized by

$$(1) \quad v_i^p = AK_i^p + (1 - A)L_i^p$$

where the industry capital stock K_i is fixed and will be normalized at 1, L_i is the quantity of labour input used in the industry, A and ρ are fixed parameters. At given wage w_i (set by monopoly unions, see later) and given market clearing output price p_i , industry i 's labour demand resulting from profit maximization is

$$(2) \quad L_i = \left[\frac{1}{A} \left(\frac{1}{1-A} \frac{w_i}{p_i} \right) \frac{\rho}{1-\rho} - \frac{1-A}{A} \right]^{-\frac{1}{\rho}}$$

while the output level y_i satisfies:

$$(3) \quad p_i = (1-A)^{\frac{-1}{\rho}} w_i (1 - A y_i^{-\rho})^{\frac{1-\rho}{\rho}}$$

For each industry, the equilibrium price results from setting

$$x_i = y_i,$$

where x_i is the consumers' demand for product i .

Consumers are alike in the two countries. There is no build-in preference for the home goods. Consumers' preferences are represented by a nested CES utility function [Dixit Spence preferences] with five levels (indexed $j = 1 \dots 5$) and elasticities of substitution θ_1 (at the most aggregate level, i.e. between the two countries indices) to θ_5 (at the least disaggregate level). See figure A for a schematic representation. Thus if consumption of good j at level i is $x(i, j)$,

$$(4) \quad x(i, j) = \left[x(i+1, 2j-1)^{\frac{\theta_i-1}{\theta_i}} + x(i+1, 2j)^{\frac{\theta_i-1}{\theta_i}} \right]^{\frac{\theta_i}{\theta_i-1}}$$

With $x(1, 1)$ the individual's consumption of the most aggregated good, his utility is a constant elasticity function

$$(5) \quad u(x) = \frac{x(1, 1)^{1-\alpha}}{1-\alpha}$$

where α is the relative rate of risk aversion. Each worker has only his wage income if he is employed; he receives unemployment benefits amounting to a fraction r of the full employment real wage w_f if he is unemployed. Total nominal demand in each country is denominated by M_i and normalized at 32. Letting p_A be the price vector prevailing in country A: $p_A = (p(6, 1), \dots, p(6, 32))$ and p_B similarly the vector of prices for the products of country B: $p_B = (p(6, 33), \dots, p(6, 64))$, then the worldwide demand for goods is equivalent to that of a representative consumer with nominal income $M = M_A + M_B$, facing the price vector (p_A, p_B) and with the utility function above. Let it be

$$(6) \quad x = x(p_A, p_B, M)$$

With this utility function, the relevant price index for commodity $x(i, j)$ ($i = 2, \dots, 5$) is

$$(7) \quad p(i, j) = \left[p(i+1, 2j-1)^{1-\theta_i} + p(i+1, 2j)^{1-\theta_i} \right]^{\frac{1}{1-\theta_i}}$$

for $p(i+1, 2j-1)$, $p(i+1, 2j)$ the appropriate price indices at the lower level. Similarly for level 6. Price $p(2, 1)$ then is the overall price index for the goods produced in country A while $p(2, 2)$ is the index for the goods produced in country B. The relevant consumer price index then is

$$(8) \quad P = \left[p(2, 1)^{1-\theta_1} + (p(2, 2))^{1-\theta_1} \right]^{\frac{1}{1-\theta_1}}$$

There is one union per industry. It acts as a monopoly imposing a nominal wage independently or in cooperation with other unions. The utility of industry i union is given by

$$(9) \quad u^i = L_i v(w_i/P) + (\bar{L}_i - L_i) v(rw_f)$$

where $v(w_i/P)$ is the (indirect) utility of a representative worker with wage w_i , \bar{L}_i is the labour force affected to industry i (set equal to 1) and P is the consumer price index. Note that we assume that labour is industry and country specific. While the first part of this hypothesis is innocuous since the unemployment rates will always be identical across different industries of the same country, the second part is not, as unemployment rates may differ across countries. We can defend this assumption as being in line with our discussion on the effectively limited degree of international labour mobility in Europe. Relative to the model, the post-1992 EC should have significantly more capital and a little more international labour mobility. However it will have less intra-country labour mobility and less perfect mobility of goods. Given that different factors and goods mobility are substitutes in a model like ours, we believe the effective forces leading to equalization of factor prices and unemployment rates are not underrepresented here.

The model is closed by assuming that each union maximizes (9) independently or in cooperation with other unions (starting with unions in neighbouring industries and going up the trees represented in figure A). The solution to this problem can be shown to be an industry wage satisfying

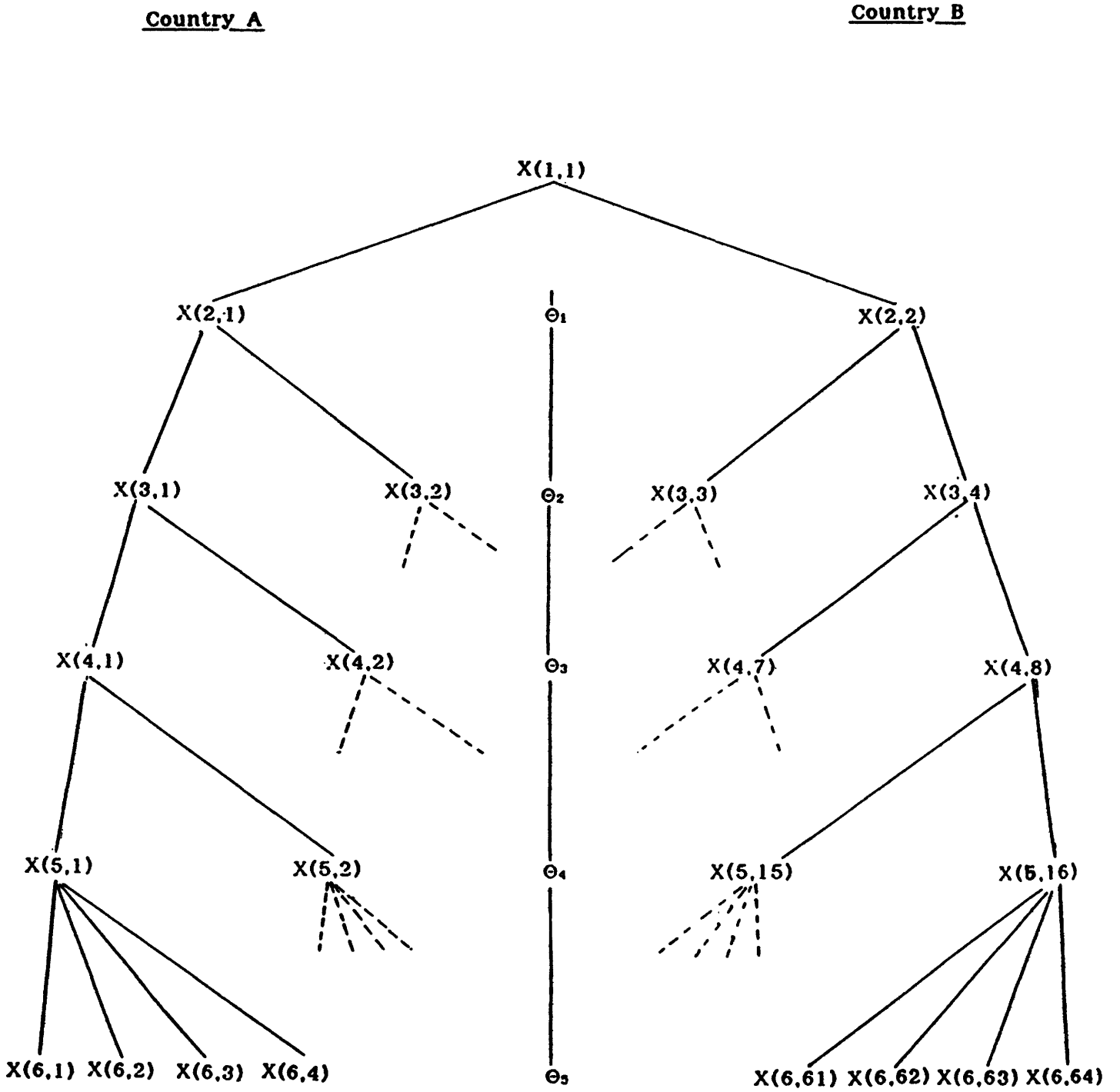
$$(10) \quad \frac{w_i}{P} = (.57w_f) \left[\frac{(1 - \alpha) \left[1 - \sum_{k=1}^{64} s_k a_{ki} - \sum_{j=2}^J \sum_{k=1}^{64} s_k a_{kj} \right]}{\varepsilon_i (1 - a_{ii}) - \sum_{j=2}^J \varepsilon_j a_{ji}} + 1 \right]^{-\frac{1}{1-\alpha}}$$

where J is the number of unions cooperating and

$$\begin{aligned} a_{ji} &= \frac{d \log p_j}{d \log w_i}, \quad \forall j, i \\ s_k &= \frac{p_k X_k}{M_A + M_B}, \quad \forall k \\ \varepsilon_i &= \frac{\partial L_i}{\partial w_i} \cdot \frac{w_i}{p_i} = -\frac{\sigma}{A} \left(A + (1 - A) L_i^\rho \right), \quad \forall i \end{aligned}$$

Equations (2), (3), (6) and (10) define the equilibrium of the model. This system cannot be given an analytical solution. Rather the equilibrium is computed under the following parametric assumptions, all borrowed from Calmfors-Driffill for comparability (see the original article for a justification) : $A = 0.3$; $\alpha = 2$; $\sigma = \frac{1}{1-\rho} = 0.33$; $\frac{w_i L_i}{p_i Y_i} = 0.7$. The results are given in Tables 7-9.

Figure A



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