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**MONETARY UNION AND EUROPEAN
UNEMPLOYMENT**

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ABSTRACT

Monetary Union and European Unemployment*

In this paper we analyse the likely effects of Economic and Monetary Union (EMU) on European unemployment. We start by describing the current unemployment situation in the European Union (EU). In so doing, we try to assess the relative importance of European, national and regional shocks in driving national and regional unemployment rates, and also to estimate the degree of real wage rigidity across EU countries. We then discuss various factors which, in principle, may contribute towards explaining the high and persistent EU unemployment rates, focusing on several labour market institutions like collective bargaining, job security legislation and unemployment benefits. The final part of the paper analyses, in light of the above evidence, the likely impact of EMU on European unemployment in the short and medium term. We conclude that while the presently high European unemployment rates should not preclude EMU from being established, the operation of the monetary union will be smoother and its net economic benefits larger if Member countries succeed in implementing those structural labour market reforms which are needed for unemployment to go to lower, more reasonable rates.

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NON-TECHNICAL SUMMARY

During the last two decades, Western European countries have moved forward along the route to economic integration. As a result, the European Union (EU) has expanded to 15 Member States, and the creation of an Economic and Monetary Union (EMU) is envisaged to take place before the end of the decade. During the same period, unemployment rates in many of these countries have increased from about 2–3% to two-digit figures. Although unemployment has decreased during expansions and increased during recessions, the average European unemployment rate within each cycle has continuously increased. Remarkably, this evolution of unemployment is not shared by other developed countries, like Japan and the United States.

In the current situation, persistent unemployment is the most important social and economic problem of EU countries, therefore putting national governments under pressure to fight unemployment precisely at the time when they are trying to establish an Economic and Monetary Union (EMU) by the end of the decade. Thus, the following questions are being raised. What effect will EMU have on unemployment? What can the Union do to decrease unemployment? Are structural reforms needed to ease the effects of the move to EMU on unemployment? Is it in the interest of countries with a high unemployment rate to take part in EMU as soon as they satisfy the Maastricht convergence criteria, or should they wait until they succeed in bringing down unemployment?

We review what we believe are the most important features of the unemployment situation in the EU in order to examine how the establishment of an EMU could affect European unemployment, and how the latter can best be fought. The main conclusions and policy implications obtained from the paper can be summarized as follows.

First, although there are significant differences in unemployment situations across the EU, most countries have in common rather high rates of unemployment and a significant resistance of inflation to come down in the presence of such high unemployment rates. The contrast between the persistently high and drifting European unemployment rates and the much lower and stable rates observed in Japan and the United States suggests that there is a non-negligible common element in European unemployment. This impression is confirmed by the empirical evidence provided in the paper, which shows that common European forces seem to have been very important in explaining the behaviour of national rates of unemployment in the last

decades. Furthermore, it is not possible to draw a clear distinction between the so-called 'core' and 'periphery' countries as concerns the main determinants of national unemployment rates.

Second, the very persistent nature of European unemployment over many years suggests that it is mostly of a 'structural' rather than of a 'cyclical' nature. While a high rate of structural unemployment can, in principle, be affected both by supply and demand shocks and policies, our discussion seems to suggest that several labour market institutions may have been responsible for the less than satisfactory performance of European labour markets, both by contributing to sustained wage pressures, and by slowing down the speed with which wage growth decelerates in the presence of worsening economic conditions. Among the labour markets institutions discussed three stand out – collective bargaining, job security legislation, and unemployment benefits systems. It is also important to bear in mind that cyclical unemployment may become structural, given the strong persistence mechanisms observed in European labour markets.

Third, the pursuit of the convergence criteria established in the Treaty of Maastricht for entering into EMU implies implementing sound economic policies which are desirable in their own right and which would need to be introduced even in the absence of EMU. What the Treaty does is just to advance those policies. Furthermore, such policies need not be inconsistent with making progress on the unemployment front. Namely, while in some cases there may be short-run costs in terms of unemployment, these ought to be more than offset by the long-term benefits obtained. Lastly, short-term costs may be lessened – and sometimes even eliminated – if convergence policies are credibly implemented and, where applicable, accompanied by structural reforms in national product and labour markets.

Fourth, as concerns the impact of EMU on European unemployment, our analysis suggests that, insofar as EMU leads to more stable monetary and non-monetary policies and to a higher degree of economic integration, this might, if anything, have a favourable impact on unemployment performance across the Union in the medium term. Nevertheless, since the size of these effects is uncertain, it is stressed that, quite apart from EMU, the fight against unemployment must necessarily involve removing the structural obstacles to the good functioning of national labour markets, and the sooner the better.

We also explore how EMU might affect unemployment performance over the shorter term given the unavailability of the nominal exchange rate to restore macroeconomic balance. Our tentative conclusion is that the fears that an

EMU comprising a relatively large number of European countries may result in higher unemployment and/or higher national unemployment differentials are grossly exaggerated for several reasons. On the one hand, common symmetric shocks are likely to prevail once in EMU. On the other hand, the increased integration of European economies within the Single Internal Market, their relatively high degree of real wage rigidity, and the presence of self-fulfilling speculative elements in foreign exchange markets, suggest that it will be increasingly less effective in economic terms and more difficult in political terms to use nominal exchange flexibility in a macroeconomically stabilizing fashion. This notwithstanding, it must be recognized that in those countries with more differentiated economic structures, and hence those more likely to be exposed to real asymmetric shocks, EMU membership should be accompanied by structural reforms designed to improve the degree of relative wage flexibility so as to avoid future problems. These problems might, in addition, be all the more important if prevailing labour market institutions increase the persistence of the effects of those shocks.

Fifth, while we do not think that unemployment convergence should become an additional explicit or implicit requirement for entrance into EMU – as sometimes demanded – it is quite clear that countries with badly functioning labour markets, in addition to having worse growth and unemployment performance, will have more difficulties in meeting the nominal convergence criteria established in the Treaty since wage and price inflation will be stickier in a downward direction. As a result, it can be said that the convergence criteria in the Treaty already take into account, to some extent, the concerns of those who worry about starting EMU with wide unemployment differentials, and thus that no explicit or implicit amendment to the criteria should be made for this reason.

Lastly, although there is a significant common European element in the national unemployment situations of Member States, policies to reduce unemployment are – and are likely to remain – mainly the responsibility of the national authorities. Nevertheless, European-wide institutions can and should play a role in ensuring adequate coordination of national efforts to fight unemployment within the framework already established in the move towards EMU. As we have argued throughout the paper, the pursuit of nominal convergence need not be incompatible with furthering real convergence, if the coordinated implementation of sound monetary and fiscal policies, aimed at achieving nominal stability, is accompanied by the introduction of appropriate structural reforms. In this regard, the further deregulation and liberalization of non-traded goods and services sectors (when necessary), and the redesign of

labour market institutions – such as job security provisions and unemployment benefit schemes – should be among the top priorities.

High European unemployment is an important problem which (with or without EMU) must be fought directly by removing its structural roots. Furthermore, while unemployment rates around 10% should not preclude EMU from being established, the operation of the monetary union will be smoother and its net economic benefits larger if European countries succeed in implementing those structural reforms necessary for unemployment to go to lower, more reasonable rates.

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1. INTRODUCTION

During the last two decades, Western European countries have moved forward along the route to economic integration. As a result, the European Union (EU) nowadays has expanded to fifteen Member States, and the creation of an Economic and Monetary Union (EMU) is envisaged to take place before the end of the decade. During the same period, unemployment rates in many of these countries have increased from about 2-3% to two-digit figures. Although unemployment has decreased during expansions and increased during recessions, the average European unemployment rate within each cycle has continuously increased. Remarkably, this evolution of unemployment is not shared by other developed countries, like the US and Japan.

In the current situation, persistent unemployment is the most important social and economic problem of EU countries, therefore putting national governments under pressure to fight unemployment precisely at the time when they are trying to establish an Economic and Monetary Union (EMU) by the end of the decade. Thus, the following questions are being raised: What effect will EMU have on unemployment? What can the Union do to decrease unemployment? Are structural reforms needed to ease the effects of the move to EMU on unemployment? Is it in the interest of countries with a high unemployment rate to take part in EMU as soon as they satisfy the Maastricht convergence criteria, or should they wait until they succeed in bringing down unemployment?.

In order to address the above questions the paper is organised as follows. Section 2 describes the current unemployment situation in the European Union and, in particular, highlights those stylised facts that must be taken into account when assessing the likely effects of Economic and Monetary Union on European unemployment. Section 3 discusses the various factors which, in principle, may contribute towards explaining the unemployment situation, making use of the traditional distinction between cyclical and structural unemployment. This section also reviews the economic impact of several labor market institutions with a specific European flavour, like collective bargaining, job security legislation and unemployment benefits. Following the description of the main stylised facts and the analysis of the causes of European unemployment, we turn in Section 4 to analysing the potential impact of EMU on European unemployment both during the transition period and once EMU is fully established. Regarding the transition, the main issue is what impact will the fulfilment of the Maastricht convergence criteria have on

European unemployment. In other words, will the pursuit of nominal convergence help or hinder achieving real convergence, as measured, for instance, by unemployment rates? As for the impact of EMU on unemployment once it is fully established, we examine what may be the consequences of abandoning the nominal exchange rate as a tool of macroeconomic adjustment over the shorter and the longer-run. Finally, Section 5 summarises the main conclusions and policy implications derived from the paper.

2. UNEMPLOYMENT IN THE EUROPEAN UNION: THE FACTS

This section highlights those facts on European unemployment that must be taken into account when analysing the likely effects of Economic and Monetary Union². We first consider whether EU countries are in different starting positions in the path to EMU as far as unemployment is concerned. We then decompose national and regional unemployment rates in different components to ascertain the importance of common shocks across EU countries in explaining the evolution of national and regional unemployment rates.

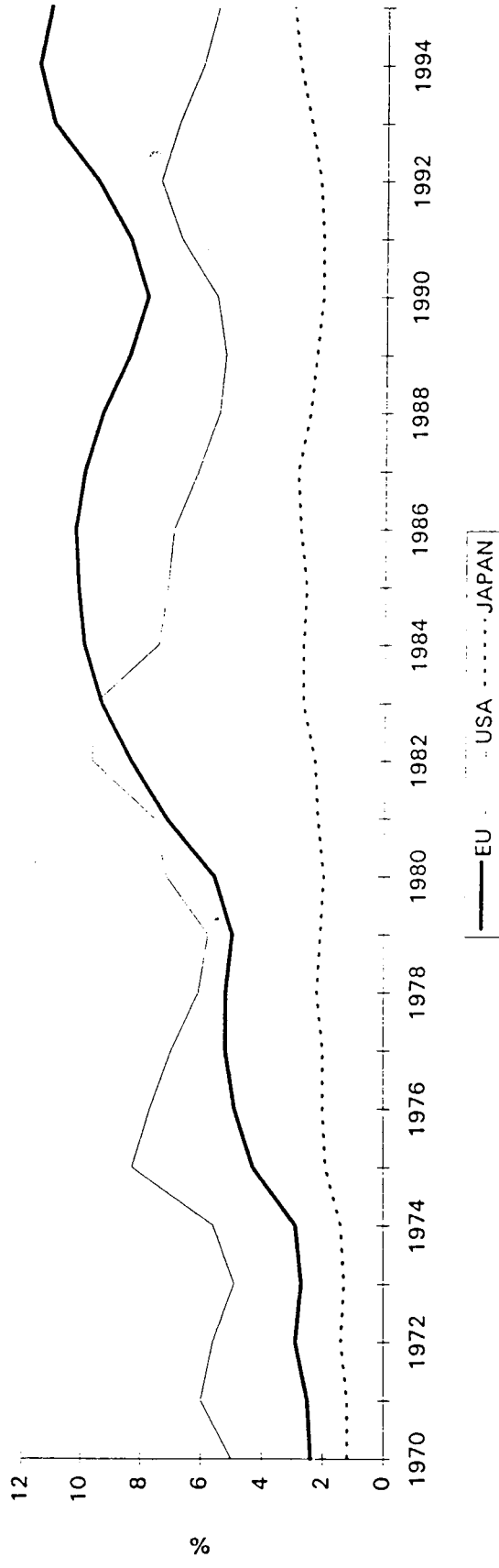
2.1 A "common" unemployment problem?

Most EU countries share a strikingly similar evolution of unemployment since the mid-seventies. Nevertheless, this evolution is rather unique when compared to the evolution of unemployment in countries like the US and Japan (see Figure 1). In particular, while US unemployment has moved up and down around an unchanged trend rate of unemployment of 5-6%, and Japanese unemployment has remained at extremely low values close to 2%, European unemployment has gone from 2.5% in the early seventies above 10% nowadays.

As concerns the present situation, unemployment rates range from near 3% in Luxembourg to near 23% in Spain (see Figure 2). However, within this very broad range there are three relatively well-defined country groupings:

² OECD (1994a), chapter 1, is a recent and comprehensive account of stylized facts on European unemployment. The survey by Bean (1994) also provides the most significant facts.

Figure 1. UNEMPLOYMENT RATES IN THE EU, USA AND JAPAN



- . a) the "low" unemployment countries (below or at 7%): Luxembourg, 3%, Austria, 5.9%, the Netherlands, 6.5%, and Portugal, 7%;
- . b) the "high" unemployment countries (between 7 and 13%): Germany, 8.2%, Great Britain, 8.7%, Sweden, 9.2%, Belgium, 9.4%, Denmark, 10%, Greece, 10%, France, 11.6%, and Italy, 12.2%; and
- . c) the "very high" unemployment countries (13% or above): Ireland, 13%, Finland, 17.1%, and Spain, 22.7%.

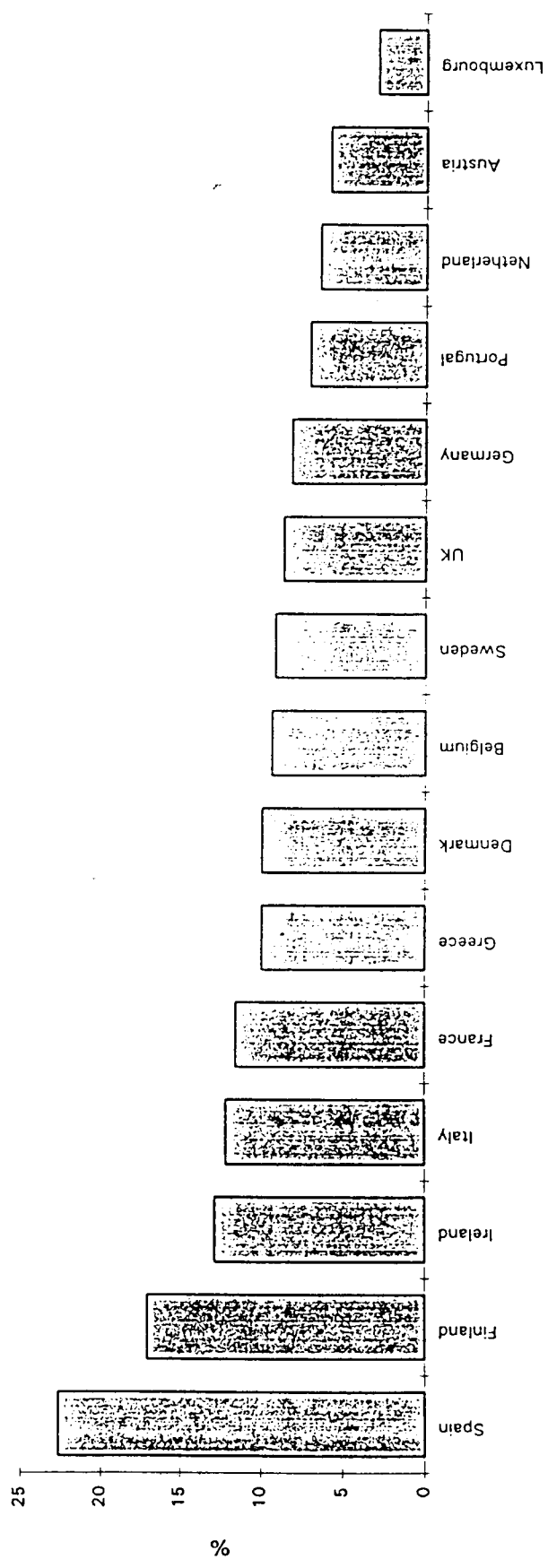
All in all, there are four countries in the "lower" unemployment group, eight countries in the "high" unemployment group, and three countries in the "very high" unemployment group. Thus, although there are significant differences in unemployment situations across the Union, 11 out of 15 countries share having either high or very high unemployment rates^{3, 4}.

With regard to the disinflationary effects of unemployment, increasing European unemployment was associated with falling inflation from 1975 up to 1990, and with rather stable inflation thereafter. A similar development took place in the US in

³ Although there has been some dispersion in labour force growth across countries, it is the different evolution of employment which constitutes the main source of disparities in unemployment across these countries. However, participation rates (labor force as proportion of working population, 15-64 years) range from about 60%, in Spain, to about 85% in Denmark, with high unemployment countries having relatively low participation rates. This means that dispersion in employment performance across EU countries, measured by employment rates, is larger than the dispersion of unemployment rates. A noteworthy feature of employment creation in EU countries is that it has been mostly concentrated in the public sector of the economy. On the contrary, in the US and Japan, employment growth has been driven by the private sector (see OECD (1994a), chart 2.2).

⁴ The incidence of unemployment across different population groups also varies across countries. Generally speaking, female unemployment and youth unemployment are relatively higher in Southern European countries, where these population groups account for a sizeable proportion of unemployment. However, in most countries there is a close relationship between the evolution of total unemployment and male adult (25-55) unemployment. The difference of the male adult unemployment rates between EU countries and the US is not as large as the difference of total unemployment, but both show similar patterns and evolve accordingly.

Figure 2. UNEMPLOYMENT RATES IN THE EUROPEAN UNION, 1995



terms of inflation but with a much less unfavourable unemployment performance. This suggests that the unemployment rate at which inflation is stabilized (NAIRU or "natural" rate) is noticeably higher in EU countries than in the US, a fact confirmed by the available empirical evidence. In sum, while there are undoubtedly differences across European countries, most of them share the unfavourable characteristic of registering rather slow disinflationary effects of high unemployment rates, which is suggestive of strong rigidities in the downward movement of wages and prices.

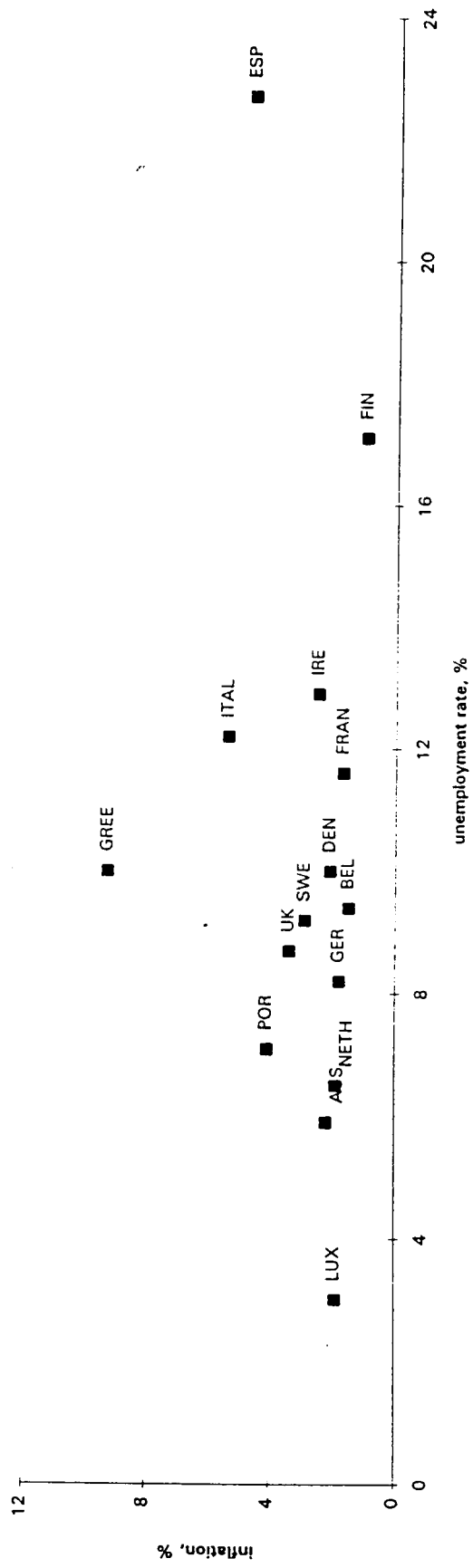
Figure 3 shows the present situation as regards both unemployment and inflation in Member States, and highlights several issues. On the one hand, the very different starting position across countries as concerns the state of real and nominal divergences is exemplified by the fact that while only four countries have unemployment rates below the rate which is typically considered to be acceptable (7%), eleven countries have already achieved inflation rates of 3% or lower, thus coming close to what is typically understood as a reasonable degree of price stability. On the other hand, many of the European countries often referred to as the "core" have unemployment rates which are higher than in some countries often referred as being in the (geographic) "periphery" (e.g. Portugal). Thus, the typical notion of what is "core" and "periphery" does not seem to apply in a clear-cut manner when we talk of convergence both in real and nominal terms.

2.2 European, national, and regional components of unemployment

The previous paragraphs have illustrated that, in spite of some marked national differences, most EU countries tend to have rather high rates of unemployment, and to exhibit a significant resistance of inflation to come down in the presence of such high unemployment rates. This suggests, in principle, that there is a non negligible common element in European unemployment.

To assess the likely impact of Economic and Monetary Union on European unemployment, it is important to look at how important are European, national and regional forces in driving unemployment rates over time. This is so because depending on which of them is more important the implied costs of foregoing the nominal exchange rate as a tool for short-term macroeconomic stabilization will be lower or higher. For example, if all unemployment rates at the national and regional levels were to be driven by a common European component, then suppressing national currencies would not be costly.

Figure 3. INFLATION AND UNEMPLOYMENT IN THE EU, 1995



There are several approaches at assessing the relative importance of the different components of unemployment.

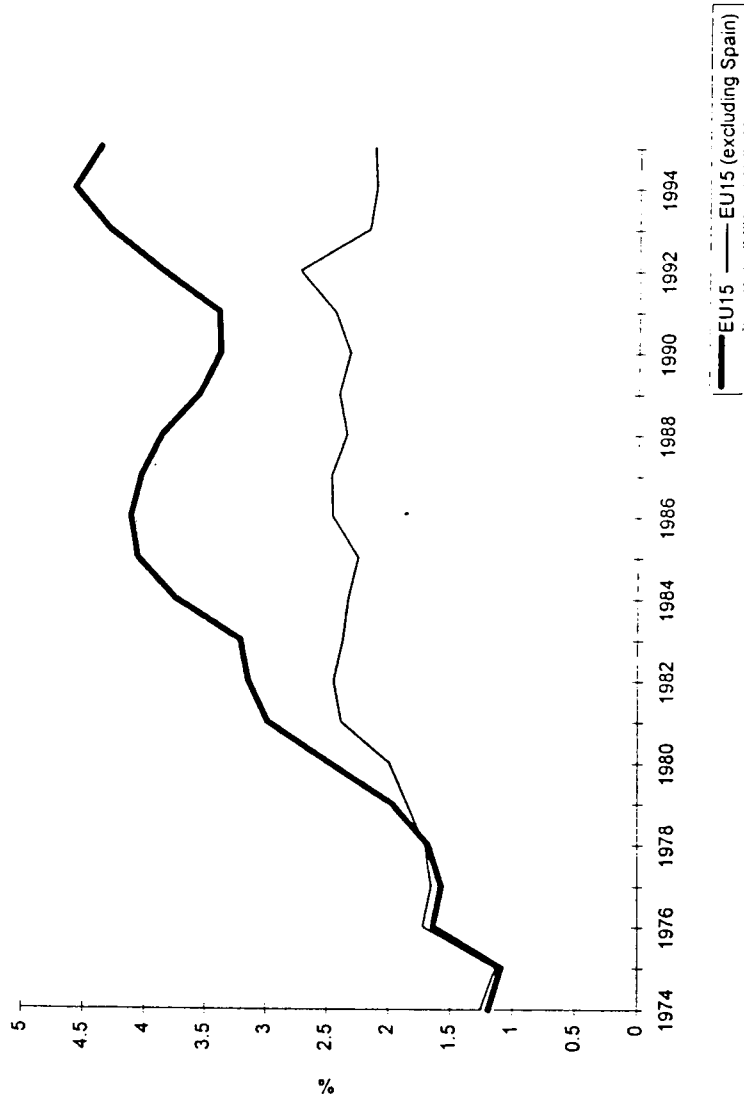
A descriptive approach consists in measuring the evolution of unemployment dispersion across either countries or regions. Regarding unemployment dispersion, the standard deviation of unemployment across across EU countries (including new member states)⁵ shows a continuous raise in unemployment dispersion since the mid-seventies up to the mid-eighties, a mild decrease since then until 1990, and a surge in dispersion in the early nineties (see Figure 4). However, the evolution of dispersion (and, in particular, its rise since 1990), is heavily influenced by the contribution of Spain, one of the very high unemployment countries. Namely, with almost 10% of the Union's labor force, the Spanish unemployment rate has become roughly double that of the EU since the mid-eighties, and has shot up rapidly in the early eighties and, again, in 1992-93. Thus, when Spain is excluded we observe an increase in unemployment dispersion of smaller magnitude up to 1981, and no significant trend since then. As regards to the regional dispersion of unemployment, we have computed a similar index at the EUROSTAT NUTS1 level of desegregation. While availability restricts both the period and the number of countries that we can use to construct this measure⁶, a similar picture arises: there is no significant overall increase in the regional dispersion of unemployment, and it is only in the early nineties when it increases (and, as in the case of dispersion across countries, it is largely due to the contribution of Spanish regions).

A second approach towards assessing the different evolutions in the unemployment performance of countries/regions is followed by recent studies focusing on the persistence of unemployment differentials across regions. These studies show that in the European Union this persistence is not substantially higher than in the US (see Blanchard and Katz (1992) for the US, and Decressin and Fatás (1995) for the EU). Given the higher inter-regional labor mobility existing in the US, this result may appear surprising, but it is explained by the relatively higher procyclical labour participation rate in EU countries, which counters the effects of lower inter-regional migration flows. There are, however, some European countries where regional

⁵ Weighted by the share of each country/region in the total labor force.

⁶ From 1983 onwards, and excluding Portugal, Greece, Austria, Finland and Sweden.

Figure 4. STANDARD DEVIATION OF UNEMPLOYMENT RATES ACROSS EU COUNTRIES, 1974-95



*Weighted by shares in total labour force.
Source: Authors' calculations from OECD Labour Statistics.

unemployment differentials show a great deal of persistence: Spain (see Jimeno and Bentolila (1995)), Italy (see Decressin and Fatás (1995)), and the UK (see Thomas (1993)).

Finally, a more rigorous method for assessing the relative importance of different forces in explaining the evolution of national/regional unemployment rates consists in using econometric models to decompose shocks to unemployment in several components; namely, a common component, and a national/regional specific component. Following this approach, we have estimated a small model for each of the Member States⁷ (whose basic details are provided in Appendix 1), which allows us to decompose the evolution of unemployment rates into the three above mentioned components -European, national and regional⁸. In order to summarise in a compact form the flavour of our results, Table 1a presents the relative importance of European and national shocks in explaining the evolution of national unemployment rates in the European Union, and Table 1b shows the relative importance of European, national and regional shocks in explaining the evolution of unemployment rates in the European regions.

As can be seen in Table 1a, during the 1971-93 period, EU-wide unemployment shocks explain almost half the variance of EU Member countries' unemployment rates within a one year horizon. This proportion increases to 59%, 70%, 78% and 83% after one, two, three and four years, respectively⁹. Thus, EU-wide innovations

⁷ Except for Luxembourg and for those countries in which regional data are not available for a long enough period. Data on national unemployment rates are for the 1969-93 period. Data on regional unemployment are available from EUROSTAT (REGIO databank) for the 1983-93 period for all countries with the exception of Greece, the Netherlands, Portugal and the new Member States.

⁸ The identifying assumptions have been made that region-specific shocks to unemployment have no effect on national nor European unemployment, and that national -specific shocks to unemployment have no effect on European unemployment. Regional unemployment data are at the EUROSTAT NUTS1 level.

⁹ This variance decomposition is somewhat robust to the inclusion of deterministic trends, and stochastic trends in the specification of the unemployment process. We have estimated our model with no trends, a similar deterministic trend for all countries, a segmented trend in 1973, and in differences. In the text we report the results from the estimation of the specification with no trends (see Appendix 1). The variance decompositions from the specifications which include deterministic trends are very similar to the decomposition reported in the text. When the model is estimated in differences, EU aggregate shocks explain (on average) 41% of the

to unemployment seem to play a very important role even in the short-run¹⁰. As a reference point, we have performed a similar analysis on the US states using unemployment rates for the 1976-90 period, recovering US-wide innovations and state-specific shocks to each state's unemployment rate. The resulting decomposition of variance shows that US-wide shocks to unemployment explain, on average, 79% of the variance of the states' unemployment rates within the year, and between 84-85% after one to five years.

One has to be cautious when interpreting this decomposition of the variance of unemployment between European and country-specific shocks. Given the simplicity of the model and the length of the time series on unemployment, we cannot provide any structural interpretation of the European wide shocks. It could be argued that coordination of monetary policies within Exchange Rate Mechanism (ERM) is behind these shocks. However, the sample period does not exactly correspond to the period during which the ERM has been in effect. Furthermore, there are countries which joined the ERM only recently (like Spain) and whose unemployment rates are mainly driven by European-wide shocks. Alternatively, one can think that international trade and/or (biased) technological progress, combined with wage rigidities in the labour market, have recently been the main sources of shocks to unemployment. EU countries are subject to international competition in a similar degree, technological progress is likely to spread simultaneously across these countries, and wage rigidities seem to be common across Europe. Thus, it could be argued that the European-wide shocks that we have identified are nothing but trade and productivity shocks. Although this may be a likely explanation of European unemployment, our results are not powerful enough to prove it right. Notice that we have estimated European-wide shocks allowing them to have different effects across countries. This means that the same shock rises unemployment more in some countries than in others. Had we restricted European-wide shocks to have symmetric

variance within the year, and 53.6%, 57.6%, 57.6% and 57.9%, after one, two, three and four years, respectively. These results are available upon request.

¹⁰ Regarding the short-run effects of EU-wide innovations to unemployment, there are three countries in which these innovations explain a relatively low proportion of variance of their respective unemployment rates: Italy, Portugal and Sweden. At the other extreme, the UK, France and Belgium are the EU Member Countries where aggregate innovations explain a highest proportion of the variance of national unemployment.

unemployment effects across countries (the common shock increases unemployment by the same amount in all the countries), we would have found that country-specific shocks explain a much higher proportion of the variance of unemployment (roughly 75%).

Regarding European regional unemployment rates, the results reported in Table 1b suggest that region-specific shocks explain between 61-65% of the variance of regional unemployment rates. Taking together the weight of EU-wide and regional specific shocks, it leaves only about 20% of the variance of regional unemployment rates to be explained by national shocks.¹¹

Overall, taking the results in Tables 1a and 1b altogether, we conclude that there seems to be a very significant EU-wide component driving unemployment across EU countries. At the national level, this component explains more than half of the variance of movements in unemployment. At the regional level, region-specific shocks and EU-wide innovations to unemployment explain up to about 80% of the variance of regional unemployment rates, a similar proportion of the variance of national unemployment rates explained by EU-wide shocks at medium horizons. Moreover, the situation in the European Union regarding the relative importance of common and idiosyncratic shocks in explaining national unemployment rates is similar to that of the United States. Finally, something else worth mentioning regarding Tables 1a and 1b is that the above findings seem to be true not just for the EU as a whole but also for most Member States. Thus, it is not possible to draw any clear distinction between the forces driving unemployment in the so-called "core" and "periphery" countries. In Section 4 of the paper we will analyze what these findings mean as concerns the likely impact of EMU on European unemployment.

2.3. Real wage rigidity in the EU

One relevant issue for explaining the magnitude and persistence of EU unemployment is the role played by real wage rigidities. As it is well-known, the higher is the degree of real wage rigidity, the higher is the NAIRU and the smaller the impact of monetary and exchange rate policy on real variables, like

¹¹ Denmark is the only exception to this general pattern.

Table 1a.

Proportion (in%) of the variance of national unemployment rates explained by innovations to the EU unemployment rate (a)

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

Note: (a) The % of the variance of national unemployment rates explained by innovations to the national rate itself (idiosyncratic shocks) is 100 minus the figures shown in the Table.

Table 1b

Proportion (in%) of the variance of regional unemployment rates explained by:

	1. Innovations to the EU unemployment rate				2. Innovation to the National unemployment rate				3. Innovations to the Regional unemployment rate(a)						
	Within the year	After 1 year	After 2 years	After 3 years	After 4 years	Within the year	After 1 year	After 2 years	After 3 years	After 4 years	Within the year	After 1 year	After 2 years	After 3 years	After 4 years
Belgium	2	28	45	50	50	26	22	17	15	15	72	50	38	35	35
Denmark	1	3	22	42	49	92	86	64	52	45	7	11	14	6	6
Germany	5	11	14	14	12	24	23	22	22	22	71	66	64	64	66
Spain	4	17	24	24	27	10	6	6	5	5	86	77	70	71	68
France	19	26	26	23	26	10	6	4	5	4	71	68	70	72	70
Italy	1	6	12	18	22	17	11	15	15	20	82	83	73	67	58
United Kingdom	24	26	21	18	21	48	29	28	31	32	28	45	51	51	47
Weighted average	11	17	20	21	20	25	18	18	18	16	64	65	62	61	64

Note: (a) The figures in this part of the Table are obtained by subtracting the sum of parts 2 and 3 from 100.

unemployment. Thus, finding out how rigid are real wages in Europe is of interest for knowing several things: to what extent is European unemployment structural; and how likely is it that the loss of the nominal exchange rate -once in EMU- will influence European unemployment. In principle, the more rigid are real wages, the more structural is unemployment and the less important is the loss of the nominal exchange rate for real macroeconomic performance.

There have been numerous attempts at estimating the degree of real wage rigidity across countries. Some of the most often quoted estimates are in Layard, *et. al.* (1991), chapter 9. These estimates arise from the structural estimation of wage and price equations across OECD countries, and are reproduced in Table 2a. However, structural estimation of this kind is sometimes criticized on identification grounds, and on the measurement of relevant regressors.

Since the relevant issue is about the sources of shocks and their transmission on the labour market, an alternative empirical approach can provide interesting insights. This approach consists on the estimation of the dynamic responses of the main labour market variables after several types of shocks. This has been the route followed by Bayoumi and Eichengreen (1993), among others, who identified the relative importance of supply and demand shocks in EU countries and the correlation of these shocks across countries. However, they did not investigate the transmission of shocks through labour market variables.

To complement the empirical results of the two studies mentioned above, we pose a simple labour market model (which is a barebone version of Layard's *et. al.* (1991) model, as extended by Blanchard, 1990), and estimate it following the structural VAR approach, as in Bayoumi and Eichengreen (1993)¹². Thus, the model of the labour market that underpins our measures of real wage rigidity in EU countries is composed of a labour demand equation, and a real wage equation, according to which real wages depend on current and lagged unemployment. In this setup, real wage rigidity is defined as the increase in equilibrium unemployment which is needed to accommodate a permanent wage-push shock. Under the assumption of constant returns

¹² As it is usual in this type of exercises, the Lucas' critique is relevant. What we can learn is about the sources of shocks and their transmission *before EMU is in place*. Both the sources of the shocks and their transmission could likely change under EMU. In any case, the current dynamics of real wages and unemployment provide the starting point for EMU.

to scale and constant mark-up pricing, the initial response of unemployment to a transitory wage-push shock is determined by the response of real wages to current unemployment, while the mean lag of the adjustment path followed by unemployment after such a shock depends on the response of real wages to lagged unemployment (see Appendix 2). Thus, the impulse response function of unemployment to wage-push shocks can be used to compute an index of real wage rigidity.

The results of this exercise are shown in Tables 2a and 2b, which distinguish two cases: real wages react to the level of current unemployment more than to the level of lagged unemployment, and real wages react to changes in unemployment (*hysteresis*). In the first case, unemployment follows a stationary process and we estimate a bivariate VAR composed of (the rate of growth of) real wages and the level of unemployment. In the second case, unemployment follows a process integrated of order one, and we estimate a bivariate VAR composed of (the rate of growth of) real wages and changes in unemployment¹³. Our results show that the degree of real wage rigidity and of hysteresis is significantly higher in EU countries than either in the US or Japan. We discuss in Section 4 the implications of these empirical findings for the potential effects of EMU on unemployment.

2.4 European unemployment: what do we know?

We now take stock of the previous analysis and of our reading of the existing literature on European unemployment to draw some tentative conclusions which can be useful in analysing the potential impact of EMU on European unemployment.

Firstly, while there has been some sensitivity of European unemployment to cyclical conditions in the last twenty years, there has been an increase in unemployment over the long-run which suggests the presence of deep structural causes. This has been confirmed by the available empirical evidence which, although far from conclusive, suggests that the long-term increase in actual unemployment rates has been accompanied in many instances by an increase in NAIRUs. If persistence

¹³ The later case is plausibly relevant for some EU countries since 1973, where the presence of a unit root in unemployment cannot be rejected. It is not, however, a case that fits the US and Japanese experience in this regard. However, we also report the results of the US and Japan, in this case, for the sake of completeness.

Table 2a

	Layard, Nickell and Jackman (1991), chapter 9, pp. 406-7			VAR ($\Delta(w-p), u$)		
	Real Wage Rigidity	Hysteresis	Mean Lag	Real Wage Rigidity	Hysteresis	Mean Lag
Belgium	0.25	0.77	0.70	2.86	0.77	3.44
Denmark	0.58	0.60	0.45	3.44	0.72	2.55
France	0.23	0.84	2.72	5.13	0.81	4.20
Germany	0.63	0.76	2.55	3.76	0.77	3.30
Ireland	0.27	0.71	3.19	2.92	0.74	2.78
Italy	0.06	0.69	2.87	4.29	0.82	4.66
Netherlands	0.25	0.71	2.51	2.11	0.76	3.14
Spain	0.52	0.59	2.75	4.20	0.78	3.56
UK	0.77	0.48	1.36	3.43	0.72	2.51
Austria	0.11	0.53	<0	4.49	0.79	3.69
Finland	0.29	0.79	4.60	9.55	0.83	5.01
Sweden	0.08	0.81	1.44	4.92	0.83	4.92
European Union*	0.42	0.68	2.28	4.09	0.78	3.61
USA	0.25	-0.02	1.62	2.39	0.60	1.53
Japan	0.06	-0.50	<0	2.21	0.65	1.90

* Average (weighted by shares of the labour force).

Table 2b

	VAR ($\Delta(w-p), \Delta u$)
	Real Wage Rigidity
Belgium	1.42
Denmark	1.10
France	1.58
Germany	1.48
Ireland	1.68
Italy	1.00
Netherlands	1.52
Spain	1.94
UK	1.16
Austria	0.85
Finland	1.71
Sweden	1.41
European Union*	1.39
USA	0.73
Japan	0.89

* As in Table 2a

mechanisms are important enough, this structural nature of European unemployment is nevertheless compatible with both supply and demand shocks having an impact on NAIRUs. Secondly, the rather high unemployment in the European Union relative to the US and Japan is mainly the result of a fall in the outflow rate from unemployment to employment, rather than the result of an increase in the inflow rate from employment into unemployment (see Layard et. al. (1991) and OECD (1994a)). As a consequence, the average duration of unemployment spells in EU countries is now much higher than it was in the early seventies, while in the US it has not changed significantly¹⁴. Furthermore, for a given vacancy rate, unemployment rates in EU countries are higher than they used to be. In other words, the Beveridge Curve has shifted outwards in most EU countries at least until 1985, although since then there seems to be no further shift¹⁵.

Thirdly, as regards the size and characteristics of national unemployment problems -a key issue in discussions of real convergence-, it is far from clear that a neat distinction can be made between central or "core" EU countries and those in the (geographic) "periphery".

Fourthly, unemployment dispersion across EU countries and regions increased during the seventies and early eighties, but excluding outliers (mainly, Spain), there has been no further increase in unemployment dispersion after the mid-eighties. In

¹⁴ However, the increase in EU long-term unemployment (unemployed who have spent at least one year without a job) took place in the late seventies and early eighties and has remained fairly constant since then (with two exceptions, Ireland and Italy, where it has increased). Since unemployment in the EU is mainly the result of a fall in the outflow rate to employment, there is a high correlation between total unemployment rates and long-term unemployment rates. Thus, not surprisingly, long-term unemployment is specially high in Ireland and Spain (despite the fact that the high incidence of fixed-term employment in Spain has significantly increased workers flows in and out of unemployment since 1987).

¹⁵ The Okun curve (the relationship between the unemployment rate and the capacity utilization rate) shows a similar pattern. Instead, in the US, there are no significant outward shifts either in the Beveridge or Okun curves (if anything, inwards). In other non-EU countries an increase in vacancies but not in unemployment has been registered. The shifts of the Beveridge and Okun curves are illustrative not only of the nature of the shocks affecting the economy but also of the degree of mismatch between labor demand and supply, and of changes in social protection (see Blanchard and Diamond (1992)). Therefore, the EU experience suggests that, up to the mid eighties, either the matching efficiency of EU economies has decreased, or the social protection system has improved, leading to changes either in reservation wages or in the search intensity of the unemployed, or both.

addition, it seems that the evolution of national unemployment rates is driven to a significant extent by common European forces. The uniformly higher unemployment rates in European countries, their persistence, and broadly similar evolution suggest that the underlying causes behind European unemployment are to a significant extent common to all Member States, and therefore that policies oriented towards reducing European unemployment should be rather similar across countries. Nevertheless, the intensity with which these policies is applied should be particularly high in Spain, Ireland and Finland, whose unemployment rates are the highest.

Finally, real wage rigidity is relatively high in the European Union, and propagation mechanisms important enough for temporary shocks to have persistent effects on unemployment. Real product wages have increased more in the EU than in the US, but less than in Japan. The comparison between the EU and US experiences in this regard suggests the existence of a trade-off between real wage growth and unemployment following the occurrence of adverse supply shocks. In this light, there is well-documented evidence of a productivity slowdown in both the US and Europe during the seventies and the eighties. Additionally, the adverse oil shocks of the late seventies and the early eighties represented a deterioration of the terms of trade. While in the US these developments caused a slowdown in real wage growth, in EU countries they translated into high unemployment.

In sum, in spite of national differences in unemployment performance, EU countries share a persistent unemployment problem related to the relatively high incidence of long-term unemployment and the low effectiveness of unemployment at bringing down inflation. Furthermore, common European forces seem to play an important role in driving national unemployment rates in Member States. However, we still need to explore what are the causes of the unfavourable unemployment performance in the European Union. This is the purpose of the next section of the paper.

3. THE CAUSES OF EUROPEAN UNEMPLOYMENT

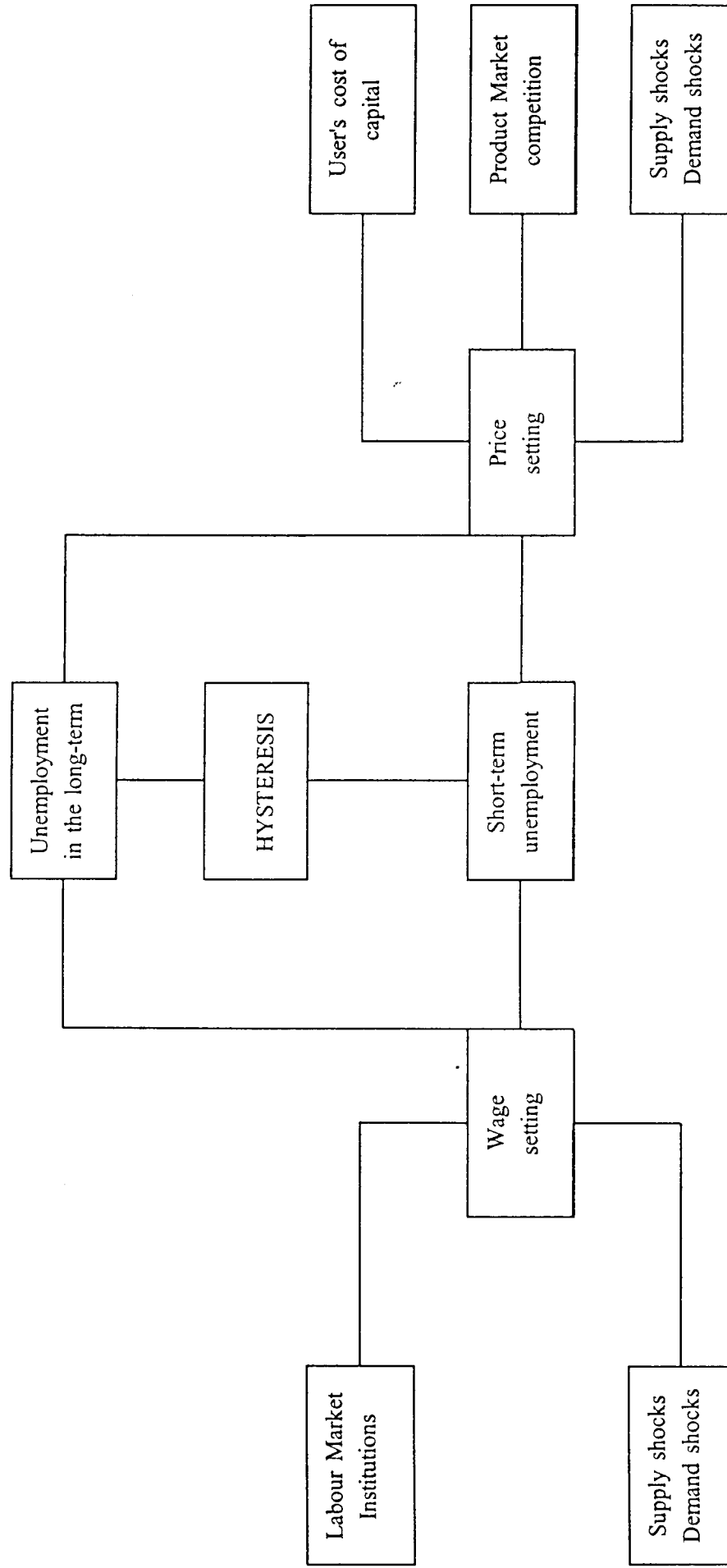
The plausible effects of EMU on unemployment cannot be grasped without a previous understanding of the causes of current European unemployment. In this regard, most models of the labor market distinguish between the natural rate of unemployment, which is the unemployment rate that would prevail in the long-run, and cyclical unemployment, which is the short-run unemployment caused by transitory shocks that hit the economy. Traditionally, the natural rate was thought to

correspond to frictional unemployment, which results from people moving between jobs in an economy working at full capacity and with a stable rate of inflation. Consequently, the natural rate of unemployment was thought to be independent of demand policies, and, to a first approximation, constant. However, the European unemployment experience suggests that the so-called natural rate of unemployment is anything but constant, that it should be better called structural or equilibrium unemployment, and that cyclical unemployment may become structural quite rapidly.

The determinants of equilibrium unemployment, summarized in Figure 5, are thought to be related to factors affecting wage setting and price setting behaviour (see, for instance, Blanchard (1990), Layard, Nickell and Jackman (1991) and Phelps (1994), while actual unemployment may be influenced by nominal shocks which induce price and wage surprises (see Appendix 3 for a more detailed presentation of the main conceptual determinants of unemployment). Regarding the determinants of equilibrium unemployment, most labour market models agree that all factors which induce wage pressure on the part of workers (e.g. union's strength, real wage aspirations, unemployment benefits, etc...) and price pressures on the part of firms (e.g. desired profit margins, etc.) adversely affect the level of equilibrium unemployment.

As concerns the adjustment from actual unemployment to short and long-run equilibrium unemployment, this may be affected by some of the above mentioned variables that determine the equilibrium levels of unemployment. Moreover, there may be hysteretic effects, so that long-run equilibrium unemployment may depend on the path followed by actual unemployment. Two sources of hysteresis are usually mentioned. First, insiders' power in wage determination (resulting, for instance, from high firing costs) and union membership may result in target wages being dependent on the current levels of employment (see Blanchard and Summers (1986) and Lindbeck and Snower (1988)). Secondly, high unemployment usually leads to long-term unemployment. If either the long-term unemployed have lower job search intensity (because they become discouraged and disenfranchised) or firms discriminate against them when hiring (because their skills depreciate), then the downward pressure exerted on wages by a given unemployment rate will be lower the higher is the proportion of long-term unemployment.

FIGURE 5: UNEMPLOYMENT DETERMINANTS



The conventional wisdom, based both on the stylized facts described in Section 2 and on the theoretical arguments sketched above, is that any attempt at explaining European unemployment must account for the reasons of the rise in equilibrium unemployment. In principle, and as discussed above, there can be two alternative reasons for an increase in equilibrium unemployment: permanent shocks to the equilibrium unemployment rate; and transitory shocks which, because of the characteristics of the propagation mechanisms, have long-lasting effects on the equilibrium unemployment rate.

There is some debate about the sources of the shocks driving European unemployment, and the relevance of the persistence hypothesis. Movements in the price of energy, in the terms of trade, in real interest rates, demand policy changes, and, recently, biased technical progress are often cited as the most relevant shocks that have hit EU economies in the past. As for the degree of persistence, the available econometric evidence is not particularly conclusive in distinguishing between the permanent shock hypothesis and the extreme version of the persistence hypothesis (ie., hysteresis)¹⁶.

There is nevertheless the presumption that labor market institutions affect both equilibrium unemployment and the speed of adjustment after transitory shocks. Thus, most economic policy packages aimed at reducing unemployment often refer to reforming labor market institutions like wage bargaining, job security legislation and the unemployment protection system.

¹⁶ There are two approaches at distinguishing between the permanent shock hypothesis and the hysteresis hypothesis. According to the first approach, while the permanent shock hypothesis, in its extreme version, implies the existence of either a deterministic trend or a mean-shift in the stochastic process driving unemployment, the hysteresis hypothesis implies the existence of a unit root. The presence of unit roots in the stochastic processes followed by the unemployment rates of most EU countries cannot be rejected (see Elmeskov and MacFarlan (1994)). However, given the number of observations in macroeconomic series, the power of unit root tests is low, and this evidence cannot thus be taken as supporting hysteresis versus a non hysteric but slow adjustment process. According to the second approach, estimation of the structural equations contained in the model of the labor market can provide information on the size of some interesting economic effects among the relevant variables. However, structural estimation is subject to some identification problems and, in any case, the usual estimation of aggregate dynamic macroeconomic wage relationships has mostly failed to prove the existence of hysteresis. Therefore, at this stage, there is no conclusive evidence on the actual relevance of hysteresis.

3.1 The role of labor market institutions

The idea that labor market imperfections are the main cause of unemployment is a recurrent topic. In fact, the main lines of research on the determinants of equilibrium unemployment have focused on the effects of labor market institutions on both the level and the dynamics of unemployment. Nevertheless, as in the case of the sources of shocks to unemployment, different authors attach to them different degrees of importance when explaining EU unemployment. For instance, the well-known OECD Jobs Study (1994a) is an in-depth comparative study of the causes of unemployment across OECD countries which advocates a complete deregulation of the labor market as the main measure to fight unemployment. On the other hand, the European Commission's paper (1993) just advocates very specific changes in the regulation of the labor market, and proposes an investment-led demand push and a more employment-intensive growth. There are also sceptics who claim that labor market institutions differ very widely across EU countries and, hence, that the similar unemployment evolution observed in these countries must be explained by something else (see, for instance, Junankar and Madsen (1995)). Finally, others authors recognize the specific nature of the labor market, and argue that a complete deregulation of the labor market is neither politically viable nor warranted by economic criteria. For them, the correct approach at reforming labor market institutions is to identify inefficiencies in the functioning of the labor market, starting from a recognition of the need to work within the parameters of the existing political economy framework, making marginal changes that work in the right direction (Alogoskoufis *et. al.* (1995)). In what follows, we explain our view on what is the impact of existing labor market institutions on European unemployment.

3.1.1 Unions and Collective Bargaining

The main differences in the wage determination process across EU countries arise from country-specific regulations on collective bargaining, and thus from the role played by unions in this process. However, besides specific rules, some common regularities can be found: while in the US union density and the proportion of workers covered by collective agreements are similar and low (about 15% each), in EU countries union density is higher than in the US (with the exceptions of France

and Spain), and the coverage of collective bargaining is much higher (about 70-80%)¹⁷.

This disparity between union density and coverage of collective bargaining can be traced back to the fact that, while in the US collective agreements are reached within single-employer bargaining under a closed-shop system, in EU countries multi-employer bargaining with an open-shop system are most prevalent. Furthermore, while it is true that there are wide variations in collective bargaining practices across EU countries regarding levels of negotiation, and the degrees of coordination and synchronization among wage setters, it seems rather unlikely that these differences account for a large proportion of national intra-EU unemployment differentials.

The mainstream approach to examining the macroeconomic implications of collective bargaining has focused on the concept of centralization. Most authors pay attention to the primary level at which wage negotiations take place (establishment, firms, sectors, nation-wide) and to the extent of coordination among wage setters. From this information, a (subjective) measure of the degree of centralization in collective bargaining is proposed and related to macroeconomic performance. From a theoretical point of view, there are several reasons why centralization of wage bargaining may reduce wage pressure and wage rigidity, thus favourably impinging on equilibrium unemployment and persistence. However, there are other reasons by which single-employer firm-level bargaining may be preferred¹⁸. As a result, there is no conclusive answer about the optimum level of centralization, and empirical analysis has not settled the issue either, mainly because empirical measures of centralization are not independent from researchers' perceptions of collective bargaining rules.

The above notwithstanding, there is some consensus about what the worst collective bargaining procedures might be. In particular, when collective bargaining takes place at several levels, when sectoral agreements establish a layer of minimum wages, and when coordination among wage setters --firms and workers- is low, neither the gains from centralization nor the advantages of decentralization are achieved. Thus, under this scenario, equilibrium unemployment is unambiguously higher.

¹⁷ See OECD (1994b), chapter 5.

¹⁸ See Calmfors (1994) for a survey, and Jimeno (1993).

3.1.2 Job Security

There is a continuing debate on the effects of firing costs on employment. According to some, the main effect of firing costs is to reduce the variability of employment without affecting much the level of employment. The reason is that firing costs would reduce layoffs during recessions -since they make more costly to fire workers-, and would reduce hiring during expansions -since they increase the shadow cost of labor¹⁹.

However, this view is subject to criticism once we consider that, if recessions are not short-lived, the difficulties of firms to lay off workers during recessions may finally lead to their closing down, and thus to a more adverse effect on employment than under less costly firing conditions. Under this alternative interpretation, firing costs would negatively affect the average level of employment. In addition to the above, there are other (general equilibrium) unfavourable effects of firing costs on employment. Firstly, firing costs distort the allocation of labor, so that efficiency may be negatively affected and the wages that employers can offer are lower. And secondly, they increase insiders' bargaining power, so that workers' target wages tend to be higher. As a result, employment is unambiguously reduced by firing costs.

Firing costs arise from several sources, related to both the regulation on dismissal procedures and to the use of fixed term (temporary) contracts. Dismissals may be restricted by the requirement of notice period and administrative approval, severance payments, and the provisions for appeal against unfair dismissals. Fixed term employment, as an alternative to regular permanent employment, may be restricted by the nature of the work for which fixed term employees can be hired, minimum and maximum bounds on the length of the period of fixed term employment contracts, and provisions for renewal.

As regards the evidence, most pundits have argued that firing costs are relative high in Continental Europe and that this contributes to explain unemployment differentials across countries. While it is quite complex to come out with a single measure of the severity of firing restrictions which could be used to establish comparisons across countries, there are some rankings of countries in this regard. The most recent and comprehensive of all of them is in OECD (1994a), chapter 6. According to it, there

¹⁹ See Bentolila and Bertola (1990), and Bentolila and Saint-Paul (1994).

is some variation in the degree of strictness of firing regulations across EU countries, although regulations tend to be generally stricter in the EU than in non-EU countries. The exceptions are, on the one hand, the UK, Ireland, the Netherlands and Denmark -which have the least strict employment legislation across EU countries. The OECD countries with the strictest employment protection legislation seem to be (in this order) Italy, Spain, Portugal, Greece and Belgium. Within this group, there are both the countries with the highest (Spain) and lowest unemployment (Portugal, save Luxembourg) rates in the EU. Our interpretation of this evidence is that, while firing costs cannot explain by themselves observed unemployment differential across countries, since there are other factors that need to be taken into account, they nevertheless exert an adverse effect on unemployment in the EU.

When attempting to reduce firing restrictions, instead of reducing them across the board for all permanent employment contracts, most EU countries have turned to partial liberalization strategies based on the allowance of fixed term employment contracts. With hindsight this has proven to be, in certain cases, an incorrect strategy since it has created artificial incentives for temporary contracts and has led to a segmentation of the labor market, with unfair social consequences and negative economic effects. The Spanish experience in this regard is quite remarkable. In late 1984, fixed term employment was allowed. Nowadays, more than 30% of employees are under a fixed term employment contract, and the conversion rate of fixed term employees into permanent ones after their contract end is rather low (around 15%, according to some estimates). This duality of the labor market may have resulted in more wage rigidity (see Bentolila and Dolado (1994) and Jimeno and Toharia (1993a)), since permanent workers enjoy higher protection against dismissals, given the buffer of temporary employees, and wage negotiators mostly represent the interests of the former. It also has some negative effects on labor productivity, affecting effort choice and incentives for investing in firms' specific human capital (see Jimeno and Toharia (1993b)). Moreover, it spuriously increases labor turnover rates since restrictions on the renewal of fixed term contracts result in the substitution of fixed term employees by others when contracts expire. And higher rotation, combined with generous unemployment benefits, produces an additional burden on the government's budget.

In sum, insofar as firing costs are regarded as an obstacle to employment creation, the appropriate strategy would be to lower them for all kind of employment

contracts, avoiding the segmentation of employment between permanent and fixed-term workers (as it happens in Spain).

3.1.3 Unemployment Benefits

While unemployment benefits are justified on social grounds, there are few doubts about their adverse impact on unemployment. Firstly, unemployment benefits increase the duration of unemployment spells by affecting search intensity (ambiguously) and the reservation wage of unemployed workers (unambiguously). And secondly, they make unemployment a less dramatic personal and social experience, thus affecting also employed workers' decision on effort choice and wage setting. Consequently, the unemployment benefit system is a determining factor of both equilibrium unemployment and unemployment persistence²⁰.

EU countries, where social cohesion is a social value, have generally opted for unemployment benefits systems with relatively high replacement ratios and relatively long duration of benefits²¹. However, eligibility rules and the conditioning of benefits on search and on the willingness to work vary widely across Member States. As happens with other labor market institutions, it is quite difficult to obtain an objective measure of generosity to establish comparisons across countries. Nevertheless, it is fair to say that high-unemployment countries, where supervision and administration of the system to link benefits to search and willingness to work is very expensive, and/or perhaps unfeasible, may have no choice but to make eligibility harder and to reduce the duration of benefits. In contrast, low-unemployment countries may be able to keep adequate incentives by close supervision and conditional administration of benefits.

²⁰ For a recent very detailed empirical analysis of the impact of unemployment benefits see Bover et al. (1996).

²¹ See OECD (1994a), chapter 8.

4. THE IMPACT OF EMU ON EUROPEAN UNEMPLOYMENT

The previous sections have outlined the most salient facts concerning European unemployment and put forward some hypothesis regarding the main causes driving both unemployment in Europe and national unemployment differentials. As a result of the analysis undertaken, it has been tentatively concluded that there are significant common roots to the existence of rather high unemployment rates in most Member States, and that these roots are, to a significant extent, of a structural nature. Of particular importance seems to be the pervasive role exerted by a number of labour market institutions, developed to extend the welfare state in the 60s and early 70s.

Taking stock of the above analysis, this section tries to shed some light on how EMU might affect European unemployment. In order to answer this question, in what follows we distinguish between the impact of policies put in place to meet the convergence requirements set by the Maastricht Treaty to enter into EMU, and the impact of EMU itself once it is fully established.

4.1 Unemployment in the transition to EMU

4.1.1 The pursuit of convergence

At present, unemployment in the EU stands at a rate close to 10%, which is considered to be higher than desirable on economic and social grounds and whose reduction is a top policy priority. At the same time, EU countries still do not meet all the convergence conditions set out in the Treaty to enter into EMU, and specifically the fiscal ones since most countries are far from eradicating excessive deficits. This is exemplified by the fact that, for the EU as a whole, budget deficits are close to 5% of GDP, and public debt levels close to 70% of GDP. The existence of significant budget deficits and debt levels requires taking revenue increasing and/or, preferably, expenditure reducing discretionary measures in order to meet the Maastricht fiscal convergence criteria and be able to establish the Union by 1999, as envisaged in the Treaty. A most important question is therefore how will the needed fiscal consolidation measures affect European unemployment over the next few years.

From a medium-term viewpoint, in so far as the present size of structural budget deficits is too high, and insofar as its reduction is not carried out through tax

increases which raise the degree of "wage pressure", the process of fiscal consolidation should not adversely affect unemployment in the medium-term but quite the contrary. Indeed, lower budget deficits mean lower real interest rates, which enhance private capital formation and economic growth.

From a short-term perspective, the traditional story is that a fiscal tightening leads to a reduction in the rate of expansion of aggregate demand which initially affects unemployment adversely. This is corroborated by most empirical macroeconomic models²². In addition, insofar as hysteresis mechanisms are at work, the impact on unemployment could persist for some time. While these effects are generally recognized as being valid to a first approximation, in practice the size of the shorter-term impact of fiscal consolidation on unemployment will vary across countries -given their different economic structures and present fiscal situations- and will also critically depend on which kind of measures are implemented, and on how they are implemented.

Unfortunately, many of the existing empirical macromodels are not well suited to handle some of the key factors which will influence the final outcome regarding the impact of fiscal consolidation on the economy²³. In particular, as suggested by economic principles and as corroborated by experience and some research (Viñals, 1986, Giavazzi and Pagano, 1990 and 1995, and Argimón, González-Páramo and Roldán, 1995) a reduction of budget deficits based on permanent cuts in current government purchases may lead to lower short-term unemployment costs than if deficits are cut by raising taxes or by cutting public investment. The reason is that the reduction in aggregate demand derived from a cut in total public spending would be (at least partially) offset by the beneficial effects of the credible permanent reduction in current government purchases on private demand. Specifically, private consumption would expand as the public revises upwards its expectations of future disposable income, in the understanding that budgetary consolidation today reduces future taxes to service the debt. Private investment would also increase once the public also contemplates a reduction in real long-term interest rates. In the case of European countries, making substantial progress in fiscal consolidation would also help reduce the risk-premia implicit on interest rates through the reduction of both

²² See, for instance, Hughes-Hallet and McAdam (1996), Barrell et al. (1995) and the discussion in Gros (1996).

²³ See Pisani-Ferri (1996) and European Monetary Institute (1996).

exchange risk and default risk. For countries with significant interest rate differentials at present, this 'interest rate reduction' effect may be all the more important.

In sum, while the differing starting fiscal positions of Member States and their different macroeconomic structures suggest that the necessary fiscal consolidation efforts may impact on their economies with differing intensities, the short-term costs of fiscal consolidation will be minimized (or even suppressed) if budgetary adjustments are carried out in an appropriate and credible fashion and, especially, if accompanied by structural reforms in labour markets to reduce the degree of real wage rigidity. Furthermore, credible progress along fiscal consolidation would contribute to improving the overall macroeconomic policy mix and thus to reducing the constraints that the pursuit of nominal stability places on national monetary policies, thus allowing lower real interest rates. Finally, given the unfavourable state of public finances in most European Union countries, the reduction of excessive budget deficits -besides its importance for the fulfilment of the Maastricht convergence conditions- is a desirable policy on its own right as it is a precondition for achieving sustainable economic growth. Even if short-term costs were to arise as a consequence of fiscal consolidation, this would be the necessary price to pay to improve growth potential. What Maastricht does is just to advance in time the implementation of the fiscal consolidation measures which, in any case, would have to be taken.

A separate issue regarding unemployment during the transition to EMU is the concern expressed in some circles that EMU may be rather difficult to run unless, previous to its establishment, countries achieve a much higher degree of convergence in unemployment rates. While it is true that the political acceptability of EMU and, specifically, of the future single European monetary policy, will be wider across Member States if their starting unemployment rates are relatively similar, we already indicated in Section 2 that a majority of EU countries already have converged -unfortunately- towards rather high unemployment rates (ie. the wrong kind of convergence). Furthermore, the desirability of EMU has much less to do with starting unemployment positions -which relate to the policies and shocks that happened in the past- than with the potential future impact of EMU on unemployment across the Union. This issue is addressed in Section 4.2.

4.1.2 Several speeds

Another important issue regarding the macroeconomic impact of convergence policies during the transition is that the pursuit of convergence may become more difficult -and thus more costly in terms of unemployment- for those countries which are initially excluded from entering EMU in 1999. This risk, which is likely to be exacerbated if only a small set of countries enter ÉMU initially, will materialise insofar as financial markets turn their backs on the excluded countries's currencies. In this case, countries with derogation will suffer unwanted currency depreciations and higher risk premia that would also adversely affect inflation and the budget deficit, further complicating -and making more costly- the fulfilment of the convergence conditions. Moreover, these currency disruptions would also endanger the functioning of the Single Internal Market, which might adversely affect unemployment in the Union (ie. both in countries inside EMU and with derogation). Because it is crucial to avoid the above mentioned problems, it is of the outmost importance that an adequate global framework is established to enable countries with derogation to have a fair chance of meeting the convergence criteria and thus of joining EMU at a later stage²⁴.

4.2 Unemployment in full EMU

Ever since the beginning of the process of building a Monetary Union in Europe, there has been a very heated debate on its costs and benefits, and, in particular, of the consequences of relinquishing the use of the nominal exchange rate as an instrument for macroeconomic stabilization. In this regard, the main questions are: what will be the impact of EMU on European unemployment in the medium-term?; and, what will be the impact of EMU on European unemployment in the shorter-term?.

4.2.1 The medium-term

As regards the first question, the conceptual model of the labour market underpinning the analysis of Section 3 of the paper has rather clear implications regarding the main determinants of unemployment in the medium-term. In particular, unemployment will tend to be high if labour market institutions contribute to

²⁴ See, for example, Viñals (1996) for a discussion of these issues.

generating sustained wage pressures, and if there are sustained price pressures resulting from insufficient competition in product markets, low total factor productivity and a high cost of capital (see the theoretical labour market model in Appendix 3). Thus, the key question to ask is how will EMU affect the main determinants of unemployment over the medium term.

As a first rough approximation, it can be said that since establishing a monetary union is equivalent to having a different monetary policy regime -where the nominal exchange rate is no longer variable- and since monetary policy ought to be neutral over the medium-term, EMU should have no effect on unemployment over prolonged horizons. However, insofar as EMU leads not only to a different monetary policy regime but also to a more stable economic policy regime, this may also contribute to paving the way for lowering unemployment. For instance if, as a consequence of the monetary and the budgetary guidelines included in the Treaty, countries follow sounder and more stable economic policies, this will contribute to permanently lowering the cost of capital which would help investment, growth and unemployment (see, for example, Andrés and Herando, 1995). Moreover, to the extent that EMU enhances market integration through the consolidation of the Single Internal Market, this may well increase the degree of product market competition in the Union which will lower the medium-term rate of unemployment. Finally, the establishment of EMU may also have an impact insofar as the stronger degree of economic integration ends up imposing more discipline on wage setters even if it doesn't affect the current collective bargaining procedures (which, as stated in Section 3, are not conducive to low unemployment). Indeed, as pointed out by Calmfors (1994) and Danthine and Hunt (1994), as economies become more open and integrated, their labour market performance becomes less sensitive to changes in bargaining structure.

The above notwithstanding, it has been claimed that when shocks are very persistent, there is no guarantee that the management of the common monetary policy -once in EMU- will be neutral in the long-run, as a result of hysteresis effects. Nevertheless, given the debate over the actual size of those effects, the empirical relevance of this caveat for the Union as a whole is unclear, although it may be of importance in specific countries (see, for example, Blanchard et al. (1995)).

4.2.2 The shorter-term

While, as argued just above, EMU should not adversely affect the medium-term performance of unemployment but quite the contrary, there is nevertheless a heated debate both among academics and policy-makers about the potential impact of EMU on unemployment over shorter-term horizons (ie. following the occurrence of specific shocks) and, in particular, about the costs that would come from the loss of the nominal exchange rate as a tool for short-term macroeconomic adjustment.

In principle, as is well-known from the literature on Optimal Currency Areas, the impact of EMU on the shorter-term evolution of unemployment would depend on the nature of the shocks hitting the economies of the Member States and on the existence of alternative tools for macroeconomic adjustment. These are discussed in what follows²⁵.

(a) The nature of shocks

The loss involved in not making use of the nominal exchange rate as an instrument for short-term macroeconomic adjustment will be, ceteris paribus, smaller when shocks require little movement of the real exchange rate to reestablish equilibrium. Normally, this tends to happen when shocks across the Union are symmetric rather than asymmetric or idiosyncratic. In what follows we define a shock as being "symmetric" when its effects are roughly similar across the Union, and thus no real exchange rate adjustment is required to restore equilibrium.

In order to infer how symmetric shocks could be in EMU, the empirical evidence has generally looked at the present situation in the EU and has taken the United States as a standard for comparison. While the evidence is far from being uncontroversial (see Viñals, 1994 and 1996 for recent summaries), the dominant conclusion seems to be that idiosyncratic shocks tend to be more frequent in the EU than in the US. Nevertheless, it is also typically found that shocks are rather similar between the US and the subset of EU countries which have traditionally maintained closer economic and monetary links with Germany. The implication seems to be that a narrow EMU

²⁵ For some recent surveys on the costs (and benefits) of EMU see: European Commission (1990), De Grauwe (1992), Eichengreen (1992), Gros and Thygesen (1992), Krugman (1992), Feldstein (1993), Masson and Taylor (1993), Goodhart (1993), and Viñals (1994).

would work satisfactorily, but that a wider EMU will be ridden by asymmetric shocks and serious national imbalances²⁶.

In contrast to this rather pessimistic conclusion concerning the economic viability of a wider EMU, the evidence presented in Tables 1a and 1b earlier in the paper -based on the econometric model described in Appendix 1- is more favourable regarding the real costs of EMU. In particular, the finding that the common EU-wide component explains between 59-70% of the variance of movements in national unemployment rates even over the shorter-term (1 to 2 years) is consistent with the interpretation that, in general, the costs in terms of macroeconomic stability of abandoning nominal exchange rate flexibility are likely to be rather limited. Furthermore, our results also suggest that region-specific shocks explain most of the variance of regional unemployment rates -with national innovations having relatively little effect-, and thus that what would be really costly for Europe is to give up the regional currencies (if there were any!) rather than national currencies. All in all, the above results suggest that to the extent that shocks to unemployment continue to be either common or regional shocks, there are no reasons for EMU -and not just a "narrow" but also a "wide" EMU- to worsen the unemployment situation over the shorter-term.

Evidently, an unavoidable problem that arises when interpreting the above mentioned empirical results is that they are drawn from comparing the historical performance of a group of countries that have not yet formed a monetary union with that of US regions, which have been long-standing members of a union. In short, the analysis could be biased because it might be the case that certain patterns of behaviour now observed in the EU would tend to evolve towards those in the US as economic and monetary integration advanced.

Consider the case of financial and monetary policy shocks. At present, these are country-specific shocks which result from imperfectly coordinated national monetary policies, currency substitution and exchange rate movements. This source of asymmetries would disappear instantaneously once EMU were formed and the single monetary policy implemented. Estimates by the European Commission (1990) and by Canzoneri, Vallés and Viñals (1996) indicate that this effect is likely to be significant. As regards the real side, the main issue for concern is whether the deepening of economic and monetary integration will be associated with a tendency

²⁶ See, for example, Bayoumi and Eichengreen (1993).

towards productive diversification or specialisation in the EU. As Kenen (1969) argued years ago, the more diversified the industrial structure of countries is, the more likely it is that "industry-wide" shocks do not translate into "country-wide" shocks. In this respect, there are two opposing forces to be considered. On the one hand, since most intra-EU trade takes the form of "intra-industry" trade, this implies that Member States exchange very similar goods. Thus, foreseeable, deeper integration may contribute to further diversifying national production structures within the EU, lessening the role of asymmetric or "country-wide" shocks. On the other hand, work by Krugman (1993) suggests that the EU could move in the direction of the US, with higher regional specialisation. Indeed, the existence of increasing returns to scale and "thick-market" externalities could lead to a regional concentration of production, thus making "industry-wide" shocks "region-wide" shocks as well.

While we think that the point made by Krugman regarding the tendency towards regional specialisation as monetary integration proceeds is, in principle, a very important one, Bayoumi and Prasad (1995) have recently questioned the empirical validity of the supposedly more specialised regional productive structure in the US. Indeed, the above authors find that once total output is considered -and not just industrial output- it is no longer the case that the US is regionally more specialised than the European Union. In addition, even if there were a tendency in EMU towards regional specialisation rather than diversification, regional and national specialisation need not be the same thing. In particular, even if a given industry concentrates on a given geographical region, such region might very well spread across several countries. In that case, "industry-wide" and "region-wide" shocks may coincide but diverge from "country-wide" shocks.

From the above discussion, we would draw the conclusion that it is likely that common, European-wide symmetric shocks will prevail in EMU. Nevertheless, and to be on the safe side, since real asymmetric shocks may still happen from time to time -and since they could be big- it is important that adjustment mechanisms are found to deal with them in EMU. This will be of particular importance in those countries with relatively more differentiated production and trade structures.

(b) The role of alternative mechanisms in adjusting to asymmetric shocks

Among the adjustment mechanisms available to cope with real asymmetric shocks in a future EMU -labour mobility, fiscal policy and relative wage flexibility-, it is unlikely that labour mobility will play an important role since the numerous historical, cultural and linguistic differences across European countries constitute a formidable barrier to international migration. Furthermore, the Treaty of Maastricht grants only a limited role to national fiscal policies to cushion the impact of real asymmetric shocks. But what about relative wages?

When shocks have asymmetric effects across countries, a movement of the real exchange is required to restore macroeconomic equilibrium and avoid adverse effects on unemployment. If relative wages were to adjust costlessly, they would induce a prompt re-equilibrating response of the real exchange rate and there would be no loss from forgoing the present degree of nominal exchange rate flexibility. Unfortunately, both the evidence presented in Sections 2-3 of the paper and experience show that in EU economies structural rigidities in national labour markets make wages respond quite slowly to worsening economic conditions, and thus that unemployment tends to persist.

While wages may not be flexible enough nowadays in the EU to cope with asymmetric shocks, it may be expected -on the basis of our discussion in Section 3- that EMU itself might reinforce the degree of wage flexibility in so far as the absence of residual exchange rate flexibility improves the behaviour of wage setters. While accepting that EMU may improve the degree of competition in labour markets over the medium-run -as previously discussed-, we are not very optimistic on the actual magnitude of this effect over the shorter-run. In this regard, the recent experience of the ERM tends to suggest generally modest disciplinary effects on national labour markets. In addition, the recent experience in Germany following unification suggests that there may even be a perverse "wage catching-up" effect which, at least initially, undermines downward flexibility. Consequently, restoring a higher degree of wage (and price) flexibility in EU countries is likely to require both a firm and balanced anti-inflationary macroeconomic policy stance, and the implementation of wide-ranging supply-side policies aimed at improving the workings of labour (and goods) markets; for instance, by reforming job security legislation and unemployment benefits systems (and also by improving competition

in services sectors). If such policies are pursued -and the sooner the better- EMU will amplify their beneficial effects on wage (and price) flexibility.

Let us assume for a moment, however, that the necessary structural reform policies do not take place. How costly is EMU then likely to be over the short-term in terms of unemployment for particular countries?

In order to answer the above question, one must first ascertain how effective the nominal exchange rate actually is in facilitating real exchange rate adjustment in European countries. Clearly, we are not referring to a situation where the nominal exchange rate is used in an activist and systematic way by the authorities. As it is widely acknowledged, the systematic use of monetary or exchange rate policy will not be very effective in altering real variables once private agents take into account the behaviour of the authorities in their decisions, and may even lead to an inflationary bias.

The question of the effectiveness of the nominal exchange rate in facilitating macroeconomic adjustment has often been approached from the point of view of how open the economy is, and of how rigid real wages are. In this respect, it has often been argued that the growing economic openness among EU countries within the Single Internal Market makes the use of the nominal exchange rate to restore or improve competitive positions increasingly less effective in economic terms, and increasingly more difficult in political terms²⁷. Furthermore, evidence of a significant degree of real wage rigidity in European labour markets -presented in Section 2.3- suggests that nominal exchange rate movements may be less effective than believed by some in moving the real exchange rate in the desired direction²⁸. And finally, and perhaps most importantly, the usefulness of the nominal exchange rate as a tool for macroeconomic adjustment is very questionable in a world of free capital movements, where foreign exchange markets are often subject to self-fulfilling speculative crises which take the exchange rate away from where fundamentals suggest it should be during prolonged periods²⁹. In these circumstances, there are serious reasons to doubt that the authorities can successfully

²⁷ See, for example, Eichengreen and Ghironi (1995) and Viñals (1996).

²⁸ See Bean (1992).

²⁹ See Baxter and Stockman (1993), Flood and Rose (1995) and Rose (1995).

resource to nominal exchange rate adjustments to restore macroeconomic balance in the presence of real asymmetric shocks.

In a recent paper, Canzoneri, Vallés and Viñals (1996) empirically investigate whether European nominal exchange rates actually address macroeconomic imbalances, or rather, are basically driven by financial considerations which may or may not be related to such imbalances. The conclusion of the paper is that in many EU countries -both large and small, more or less open, and with different economic structures- nominal exchange rates do not seem to be acting like the efficient "shock absorber" described in the literature on Optimal Currency Areas. However, it must be taken into account that while these results apply to "average" shocks, they do not apply to those big real asymmetric shocks which come, say, once in a decade and which may require an adjustment of nominal exchange rates.

In sum, while it is most likely that EMU will not, in general, adversely affect European average unemployment nor national unemployment differentials given the likely dominance of symmetric shocks, it is nevertheless possible that some countries with more differentiated economic structures may suffer if and when sizable real asymmetric shocks take place, given the limited role of intra-European labour mobility and of national fiscal policies in restoring macroeconomic balance. This notwithstanding, it must also be recognized that the growing degree of integration among European economies within the Single Internal Market and the increasingly important role of financial disturbances in driving exchange rates would in any case make increasingly less effective in economic terms and more difficult in political terms to resort to the nominal exchange rate as a tool for macroeconomic adjustments if EMU didn't take place. Consequently, the only way to successfully cope with important real -symmetric or asymmetric- shocks and to avoid their unwanted effects on unemployment -inside or outside of EMU- is by increasing the degree of relative price and wage flexibility through the reform of those regulations and institutions which prevent an adequate functioning of national goods and labour markets.

5. CONCLUSIONS AND POLICY IMPLICATIONS

This paper has reviewed what we believe are the most important features of the unemployment situation in the EU in order to examine how could the establishment of an Economic and Monetary Union affect European unemployment, and how can

the latter be best fought. The main conclusions and policy implication obtained from the paper can be summarized as follows:

Firstly, although there are significant differences in unemployment situations across the European Union, most countries have in common rather high rates of unemployment and a significant resistance of inflation to come down in the presence of such high unemployment rates. The contrast between the persistently high and drifting European unemployment rates and the much lower and stable rates observed in the United States and Japan suggests that there is a non-negligible common element in European unemployment. This impression is confirmed by the empirical evidence provided in the paper, which shows that common European forces seem to have been very important in explaining the behaviour of national rates of unemployment in the last decades. Furthermore, it is not possible to draw a clear distinction between the so-called "core" and "periphery" countries as concerns the main determinants of national unemployment rates.

Secondly, the very persistent nature of European unemployment over many years suggests that it is mostly of a "structural" rather than of a "cyclical" nature. While a high rate of structural unemployment can be, in principle, affected both by supply and demand shocks and policies, our discussion seems to suggest that several labour market institutions may have been responsible for the less than satisfactory performance of European labour markets, both by contributing to generate sustained wage pressures, and by slowing down the speed with which wage growth decelerates in the presence of worsening economic conditions. Among the labour markets institutions discussed three stand out: collective bargaining, job security legislation, and unemployment benefits systems. It is also important to bear in mind that cyclical unemployment may become structural, given the strong persistence mechanisms observed in European labour markets.

Thirdly, the pursuit of the convergence criteria established in the Treaty of Maastricht for entering into EMU implies implementing sound economic policies which are desirable on their own right and which would need to be introduced even in the absence of EMU. What the Treaty does is just to advance in time those policies. Furthermore, such policies need not be inconsistent with making progress on the unemployment front. Namely, while in some cases there may be short-run costs in terms of unemployment, these ought to be more than offset by the long-term benefits obtained. Finally, short-term costs may be lessened -and sometimes even

eliminated- if convergence policies are credibly implemented and, where applicable, accompanied by structural reforms in national product and labour markets.

Fourthly, as concerns the impact of EMU on European unemployment, our analysis suggests that in so far as EMU leads to more stable monetary and non-monetary policies and to a higher degree of economic integration, this might have, if anything, a favourable impact on unemployment performance across the Union in the medium-term. Nevertheless, since the size of these effects is uncertain, it is stressed that -quite apart from EMU- the fight against unemployment must necessarily involve removing the structural obstacles to the good functioning of national labour markets, and the sooner the better.

We have also explored how EMU might affect unemployment performance over the shorter-term given the unavailability of the nominal exchange rate to restore macroeconomic balance. Our tentative conclusion is that the fears that an EMU comprising a relatively large number of European countries may result in higher unemployment and/or higher national unemployment differentials are grossly exaggerated for several reasons. On the one hand, as explained in the paper, common symmetric shocks are likely to prevail once in EMU; on the other hand, the increasing integration of European economies within the Single Internal Market, their relatively high degree of real wage rigidity, and the presence of self-fulfilling speculative elements in foreign exchange markets, suggest that, in any case, it will be increasingly less effective in economic terms and more difficult in political terms to use nominal exchange flexibility in a macroeconomically stabilising fashion. This notwithstanding, it must be recognized that in those countries with more differentiated economic structures, and thus more likely to be exposed to real asymmetric shocks, EMU membership should be accompanied by structural reforms designed to improve the degree of relative wage flexibility so as to avoid future problems. These problems might be, in addition, all the more important if prevailing labour market institutions increase the persistence of the effects of those shocks.

Fifthly, while we do not find justified that unemployment convergence should become an additional explicit or implicit requirement for entrance into EMU -as sometimes demanded by some- it is quite clear that countries with badly functioning labour markets, in addition to having worse growth and unemployment performance, will have more difficulties in meeting the nominal convergence criteria established in the Treaty since wage and price inflation will be stickier in a downward direction.

As a result, it can be said that the convergence criteria in the Treaty already take into account, to some extent, the concerns of those who worry about starting EMU with wide unemployment differentials, and thus that no explicit or implicit amendment to the criteria should be made for this reason.

Finally, although there is a significant common European element in the national unemployment situations of Member States, policies to reduce unemployment are -and are likely to remain- mainly the responsibility of the national authorities. Nevertheless, European wide institutions can and should play a role in ensuring an adequate coordination of national efforts to fight unemployment within the framework already established to move towards EMU. As we have argued throughout the paper, the pursuit of nominal convergence needs not be incompatible with furthering real convergence if the coordinated implementation of sound monetary and fiscal policies, aimed towards achieving nominal stability, is accompanied by the introduction of appropriate structural reforms. In this regard, the further deregulation and liberalization of non-traded goods and services sectors -when necessary-, and the redesign of labour market institutions -such as job security provisions and unemployment benefits schemes- should be among the top priorities.

To conclude, high European unemployment is a most important problem which -with or without EMU- must be fought directly by removing its structural roots. Furthermore, while having unemployment rates around 10% should not preclude EMU from being established, the operation of the monetary union will be smoother and its net economic benefits larger if European countries succeed in implementing those structural reforms which are needed for unemployment to go to lower, more reasonable rates.

APPENDIX 1
European, national, and regional components of unemployment
rates in EU countries

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

$$\begin{aligned}
 u_t^{EU} &= \delta^{EU} + A_1(L)u_t^{EU} + \epsilon_t^{EU} \\
 u_t^I &= \delta^I + A_2^I(L)u_t^{EU} + B_2^I(L)u_t^I + \epsilon_t^I \\
 u_t^J &= \delta^J + A_3^J(L)u_t^{EU} + B_3^J(L)u_t^I + C_3^J(L)u_t^J + \epsilon_t^J
 \end{aligned} \tag{A1.1}$$

where δ 's are constants, u^{EU} , u^I , u^J are, respectively, the EU average unemployment rate, the unemployment rate of country I, and the unemployment rate of region J in country I; $A(\cdot)$, $B(\cdot)$, and $C(\cdot)$ are polynomials in the lag operator L (with $A_1(0) = B_2(0) = C_3(0) = 0$), and ϵ are unemployment shocks. Under this model, nation-specific shocks have no effects at the EU level, and region-specific shocks have no effects at the national level.

Since the system is recursive, and we have different sample sizes for national and regional unemployment rates, we estimate the first two equations to decompose shocks to national unemployment into an EU component and a nation-specific component. The decomposition of shocks to regional unemployment rates is based on the estimation of the three-equation system on a the panel of EUROSTAT NUTS1 regions for each country, controlling for regional fixed effects, and imposing the constraint that the coefficients of the third equation in A1.1. are the same across regions within the same country. The results in the text arise from the estimation of the system (A1.1) for each of the EU Member States (except for Luxembourg, and for countries in which regional data are not available during a long enough period). Data on national unemployment rates are for the 1969-93 period. Data on regional unemployment are available from EUROSTAT (REGIO databank) for the 1983-93 period (except for the New Member Countries, Greece, Portugal and the Netherlands).

Note that this recursive model is a simplification of the following three dimensional Vector Autoregression (VAR):

$$x_t = D(L)x_t + v_t; D(0) = 0 \tag{A1.2}$$

with $x^1 = (u^{EU}, u^I, u^II)$ and v_t are innovations to unemployment . We have also estimated this VAR and recovered aggregate, national and regional shocks to unemployment under the identifying assumptions that both the contemporaneous effects of national shocks on the EU average unemployment rate and that the contemporaneous effects of regional shocks on national unemployment rates are nil. Under this maintained hypothesis, we cannot reject the (overidentifying) restrictions imposed on the recursive model (A1.1).

APPENDIX 2

Real Wage Rigidity in EU Countries: An index based on the impulse response of unemployment to wage push shocks

As noted in the text, the degree of real wage rigidity in the EU member countries is a crucial determinant of both the costs and benefits of EMU. It is often argued that European countries show a relatively high degree of real wage rigidity (when compared to the US, for instance) and, at the same time, noticeable nominal wage flexibility (see Layard et al., 1991, and Bean, 1994). This combination produces short-lasting effects of nominal shocks and long-lasting effects of real shocks. The costs of a full EMU are decreasing in the degree of nominal flexibility and increasing in the degree of real wage rigidity. Hence, it is important to assess the magnitude of real wage rigidity across these countries.

Following the theoretical model of Appendix 3, we can write a wage and a (long-run) price equation. Assuming constant mark-up pricing, prices (in logs) are given by:

$$p-w=m+z$$

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

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

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

$$u=m/c + hu_{-1} + (z^*+z)/c$$

Now suppose that shocks to the price-setting equation are mostly of a "technological" nature with permanent effects on real wages ($z=e^{\epsilon}$). Shocks to the wage equation includes both technological shocks and (stationary) wage push/labour supply shocks, so that $z^w=e^{\epsilon}+e^w$. Then,

$$U = \frac{m}{c} + h u_{-1} + \frac{e^w}{c} = \frac{m}{c(1-h)} + \sum_{j=0}^{\infty} \frac{h^j}{c} e_{-j}^w$$

Thus, unemployment is stationary and its initial response to wage push/labour supply shocks is greater the more rigid real wages are. The mean lag of the response to unemployment ($h/(1-h)$) is increasing in h .

If $h=1$, unemployment follows a random walk with drift, and its short-run and long-run responses to wage push/labour supply shocks are decreasing in c . This simple model suggests that the degree of real wage rigidity is related to some characteristics the impulse-response of unemployment to wage push/labour supply shocks, which are easily identified. In both cases considered ($h<1$ and $h=1$) real wages are $I(1)$ and wage push/labour supply shocks have no long run effects on the level of real wages. Thus, the empirical exercise to assess the degree of real wage rigidities across countries is very simple. When $h<1$, estimate a VAR composed by the growth rate of real wages and the (level of the) unemployment rate, and recover the impulse-response of unemployment to shocks which have no long-run effects on real wages. When $h=1$, estimate a VAR composed by the growth rate of real wages and the first difference of the unemployment rate, and recover the impulse-response of unemployment to the same kind of shocks. Note that the model above suggests that the other type of shocks recovered are technological shocks which increase real wages in the long run and do not affect unemployment.

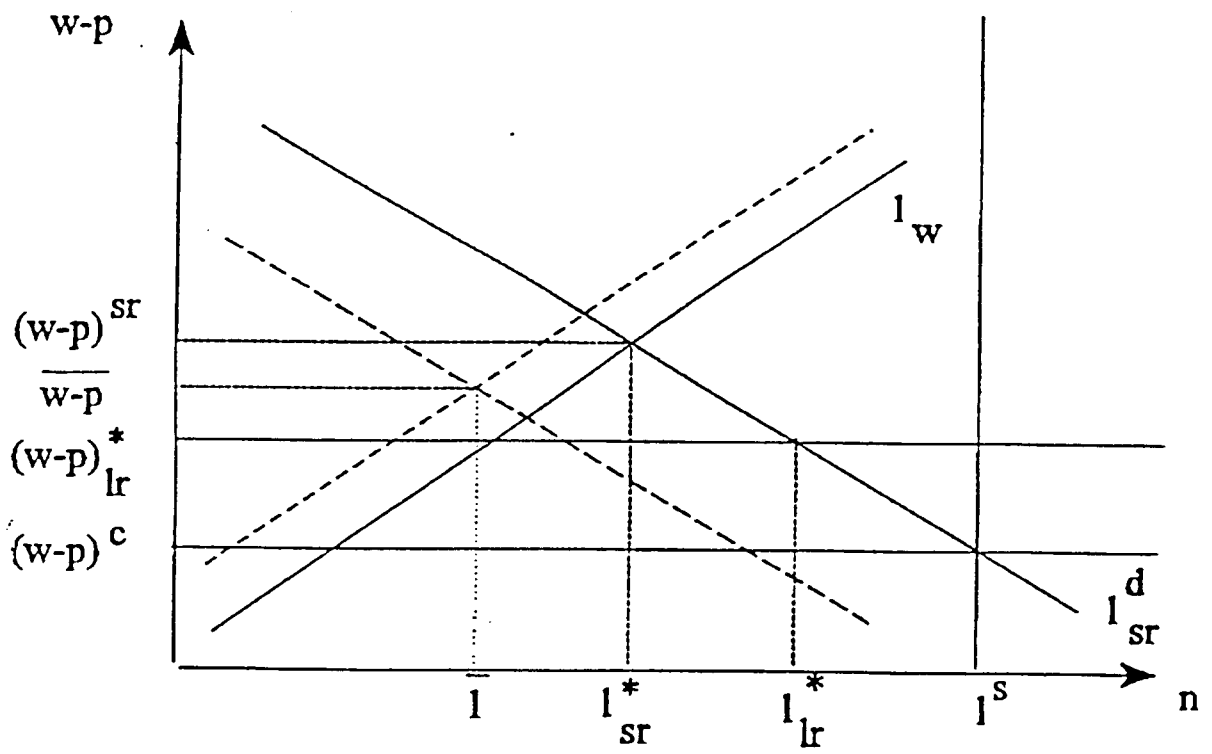
APPENDIX 3

A benchmark model of the labor market

Most models of the labor market identify two unemployment components: the natural rate of unemployment (also called structural unemployment or equilibrium unemployment), which is the unemployment rate that would prevail in the long-run; and cyclical unemployment, which is the short-run unemployment caused by transitory shocks that hit the economy. There is a continuing debate on the determinants of equilibrium unemployment and the sources of cyclical unemployment. However, most macroeconomists share a rather common approach when modelling the labor market.

Figure A1 provides a simple representation of the labor market which can encompass most models of unemployment determination. Given technological constraints and a fixed stock of capital, there is a short-run price-setting equation (or inverted labor demand equation) which establishes a negative relationship between real wages and employment, l_{SR}^D (in logs), which depends on expected demand. The labor force is given by l^S (in logs), so that a perfectly competitive labor market will yield full employment and (log) real wages equal to $(w-p)^c$. However, wage determination is given by a wage-setting equation that because of several reasons (efficiency wages, union power and collective bargaining, etc.) establishes a positive relationship between real wages and employment, l^W (also in logs). Assuming correct expectations, the resulting short-run equilibrium unemployment rate is given by $l^S - l_{SR}^*$, and inflation will be constant. Misperceptions on aggregate demand make the actual unemployment rate, $l^S - l$, be different from the short-run equilibrium unemployment rate, so that a cyclical unemployment component arises. In the long-run, since the stock of capital is endogenous, the price-setting equation is horizontal, l_{LR}^D , at a level that depends on the user cost of capital and on the rate of growth of total factor productivity (see Blanchard (1990)) and, under some conditions, on the degree of competition in product markets. If the latter variables are roughly constant, long-run equilibrium unemployment is mainly determined by the variables that shift the wage-setting curve; that is, basically the reservation wage and whatever factors may affect the desired markup of actual wages over reservation wages.

FIGURE A1



The dynamics of the adjustment from actual unemployment to short-run and long-run equilibrium unemployment can be very rich for two reasons. On the one hand, some of the variables that determine the equilibrium levels of unemployment may also affect the speed of adjustment from one equilibrium to another. On the other hand, there may be hysteretic effects, so that long-run equilibrium unemployment may depend on the path followed by actual unemployment (in terms of Figure A1, this means that the position, and, plausibly, the slope of the wage-setting and price-setting curves, l^w and l_{SR}^D , depend on the path followed by actual unemployment).

Thus, the determinants of equilibrium unemployment can be divided into three categories:

- a) Factors that influence wage-setting behaviour. In Layard's et. al. (1991) story of the so-called battle of the markups, the position of the wage setting-equation depends on the target real wage (or "wage pressure"), while its slope is related to the degree of real wage rigidity. In particular, as the degrees of wage pressure and real wage rigidity increase, so does equilibrium unemployment. Additionally, Phelps' (1994) structuralist theory stresses the role of efficiency wage considerations, so that the position and slope of the wage-setting curve depend on the quitting and shirking behaviour of workers. This behaviour is mostly affected by the ratio of non-wage income to total income, so that changes in wealth, interest rates and government transfers are among the variables shifting the wage-setting curve.
- b) Factors that influence price-setting behaviour. While different variables may affect price setting, in the battle of the markup's story the employers' desired profit margin -which depends on the degree of competition in goods markets- is the main variable affecting the position of the labor demand curve. In the structuralist story, many other variables may play a role such as: productivity growth, productivity and supply shocks, asset and wealth shocks, interest rate shocks, tax and tariff distortions, and public expenditure shocks.
- c) Hysteresis effects. They relate the long-run wage setting and labor demand loci to the path followed by actual unemployment. The main sources of hysteresis are insiders' power in wage determination and long-term unemployment, which reduce the downward pressure exerted by unemployment on wages. Thus, shocks to actual

unemployment, which do not affect short-term equilibrium unemployment directly, may have permanent effects on long-run unemployment³⁰.

³⁰ In econometric terms, the stochastic process followed by unemployment has a unit root.

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