



STUDIECENTRUM VOOR ECONOMISCH EN SOCIAAL ONDERZOEK

**VAKGROEP MACRO-ECONOMIE**

**Real versus nominal convergence  
- National labour markets and the  
European integration process -**

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## Abstract

In this paper we investigate the role of national labour market characteristics for the chances of successful transition to Economic and Monetary Union in Europe, as well as for its viability and extension. Our conclusions are rather pessimistic. Although overlooked by the Maastricht Treaty, we emphasize the need for real convergence (i.e. convergence of real macroeconomic variables like unemployment) as a major condition for success. However, current labour market characteristics in the EC make it quite unlikely that this condition will be fulfilled. First, labour market structures and policies in the various EC countries differ widely, which implies that their macroeconomic performance is likely to diverge when they are subjected to a common shock. Second, labour market characteristics make the EC highly vulnerable to rising and persisting unemployment in case of negative shocks. It is shown that in this respect the execution of the Maastricht program might turn into an obstacle to monetary unification.

## 1. Introduction

At the end of the 1980s new political initiatives to relaunch the Economic and Monetary Union gained momentum. This also reanimated the economic debate on the costs and benefits of monetary unification and on the feasibility (or optimality) of establishing an Economic and Monetary Union between the EC countries. The studies range from generally optimistic (e.g. EC Commission, 1990) to rather sceptical (e.g. Feldstein, 1992; Krugman, 1992).

In this paper we endorse the sceptical view. We agree that micro-economic efficiency gains can be realized with EMU, but we call attention to the potential short-term and long-term macroeconomic adjustment costs accompanying an EMU encompassing heterogeneous partners. We focus on differences in labour market institutions between the future members of the Economic and Monetary Union as an important element of heterogeneity.

Section 2 of the paper illustrates the current absence of real convergence between the future EMU partners, in contrast with the increased nominal convergence that they have achieved within the EMS. We concentrate on the differences in unemployment existing between the EMS members. This absence of real convergence is likely to put the EMU under considerable stress, as argued in section 3. In the next two sections we offer a possible explanation for the observed absence of real convergence. We emphasize differences in wage formation and in labour market institutions, which imply diverging macroeconomic performance when the EMU members are subjected to a common economic shock. We present a theoretical model based on the New Keynesian 'competing claims' hypothesis, which relates the equilibrium rate of unemployment to the characteristics of wage and price formation (section 4), and offer a rough empirical application of this model to the EC countries (section 5). A more rigorous econometric test of the model is given in appendix. In section 6 we deal with the implications of our findings for the potential newcomers (Austria, Finland, Norway, Sweden, Switzerland). Finally, we touch on the subject of

how to achieve real convergence and increased harmonization in labour market institutions (section 7).

## 2. Nominal and real convergence: the facts

Table 1 reports annual rates of inflation averaged for the original members of the EMS. To give evidence on the inflation convergence across EMS countries we also computed average absolute annual inflation differentials within the EMS<sup>1</sup>. As can be seen, the EMS did not only experience an impressive amount of disinflation, but also a large shrinking of inflation differentials. The average absolute inflation differential across EMS countries in 1992 amounted to 1.4%, down from 7.2% in 1980, which clearly illustrates the extent to which *nominal convergence* has already been achieved.

Table 1. *Inflation rates and average absolute inflation differentials in the EMS (1979-1992)*

	inflation rates	inflation differentials
1979	9.0	5.7
1980	11.7	7.2
1981	12.0	6.4
1982	10.3	5.5
1983	7.7	4.9
1984	6.3	3.9
1985	4.9	2.9
1986	2.4	3.0
1987	2.6	2.5
1988	2.6	2.0
1989	3.8	1.8
1990	3.0	1.5
1991	3.6	1.4
1992	3.5	1.4

Inflation is based on the CPI. EMS is comprised of the original members Belgium, Denmark, France, Germany, Ireland, Italy and the Netherlands. Because Belgium and Luxembourg maintain a fixed parity, we excluded Luxembourg.

Source: OECD, Economic Outlook.

<sup>1</sup> This measure is computed by taking a simple average of the absolute value of all pairwise inflation differentials in each year.

Table 2. Inflation clusters in the EMS (1979-1992)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
high														
↑														
inflation														
country														
↓														
low														
average inflation rate for each cluster														
cluster														
3	14.7	19.6	18.8	16.0	14.9	12.0	9.0	5.5						
2	10.6	12.0	12.5	10.9	8.2	6.9	5.3	2.8	3.5	3.7	5.7	6.2	6.7	
1	4.2	6.3	7.1	6.2	3.1	2.4	2.1	0.2	0.2	1.2	3.0	2.5	3.1	3.5

Belgium (bel), Denmark (dnk), France (fra), Germany (deu), Ireland (ire), Italy (ita) and the Netherlands (nld).

Source: OECD, Economic Outlook.

The nominal convergence process within the EMS is also clearly illustrated in table 2 where we use cluster analysis<sup>2</sup>. An examination of the top panel of this table reveals that in recent years there is a tendency for the EMS countries to form one cluster with respect to inflation<sup>3</sup>. In 1990 and 1991 Italy remained the only country that did not fit in with the other EMS countries. The inflation difference between Italy and the rest of the EMS was still 3.6% in 1991 (see the bottom panel of table 2). In 1992, however, Italy no longer formed a separate cluster. The difference between the average inflation rate of the low inflation cluster and the high inflation cluster has shrunk since the early 1980s when it still amounted to more than 10%. When averaged over the

<sup>2</sup> By this analysis we can sort observations into groups called clusters so that the degree of statistical association is high among members of the same group and low between members of different groups. Observations are combined by considering the squared Euclidean within-cluster distances. If the increase in the total sum of these distances becomes too high, clustering is finished.

<sup>3</sup> If included in the cluster analysis, Spain (which entered the EMS in June 1989) and the United Kingdom (which was member from October 1990 to September 1992) join Italy for 1989-91. For 1992 Spain, the United Kingdom, Italy and Germany form a separate cluster.

respective periods, this difference was 11.1% for 1979-84, and only 4.2% for 1985-91, which again clearly illustrates the achieved convergence of inflation rates within the EMS<sup>4</sup>.

Table 3 shows the average unemployment rate in the EMS and the average annual differential across countries. Contrary to nominal convergence, *real convergence* has clearly been absent. The figures reveal very different unemployment rates which did not tend to converge during the 1980s. On the contrary, we can detect an increase in the average differential.

Table 3. *Unemployment rates and average absolute unemployment differentials in the EMS (1979-1992)*

	unemployment rates	unemployment differentials
1979	5.9	2.3
1980	6.1	2.3
1981	7.9	2.8
1982	9.2	2.7
1983	10.5	3.2
1984	11.0	3.2
1985	10.9	3.6
1986	10.6	4.1
1987	10.6	4.3
1988	10.3	3.9
1989	9.8	3.8
1990	9.0	3.5
1991	9.7	3.8
1992	10.3	4.1

Source: OECD, Economic Outlook.

The existence of divergent unemployment performances in the EMS is also illustrated in table 4, again using cluster analysis. Contrary to the inflation rate, where we detected a decrease in the number of clusters towards 1992, the number of unemployment clusters increased in the beginning of the 1980s from 2 to 3, and remained at 3 for the rest of the period<sup>5</sup>. The bottom panel of

<sup>4</sup> A similar result is obtained if we concentrate on the nominal interest rate to investigate nominal convergence.

<sup>5</sup> If GNP per capita is considered to examine real convergence, the number of clusters is three for the whole period, pointing again at the absence of real convergence within the EMS.

table 4 shows that in 1992 there still existed an unemployment difference of almost 10% between the low unemployment cluster and the high unemployment cluster (Ireland)<sup>6</sup>. When averaged for the whole period 1979-92, the difference between the average unemployment rate of the low and of the high unemployment cluster has been as high as 7.8%. For 1979-84 the low-high cluster difference amounted to 5.6% compared to 9.4% for 1985-92. From these figures the divergence in unemployment rates within the EMS is obvious, an observation which is clearly in line with the second column of table 3.

Table 4. Unemployment clusters in the EMS (1979-1992)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
high			bel	bel	ire	ire	ire	ire	ire	ire	ire	ire	ire	ire
↑			ire	ire	bel	bel								
unempl.	ita	bel	ire	ire	ire	ire	ire	ire	ire	ire	ire	ire	ire	ire
country	bel	ita	dnk	dnk	nld	nld	ita	ita	bel	bel	fra	dnk	dnk	dnk
↓	ire	ire	ita	dnk	dnk	dnk	fra	fra	fra	fra	bel	dnk	fra	fra
low	dnk	dnk	fra	nld	ita	ita	nld	nld	nld	dnk	dnk	bel	bel	bel
	fra	fra	nld	fra	fra	dnk	dnk	dnk	dnk	nld	nld	nld	deu	deu
	nld	nld			fra									
	deu	deu	deu	deu	deu	deu	deu	deu	deu	deu	deu	deu	nld	nld
average unemployment rate for each cluster														
cluster														
3			9.5	11.7	13.6	14.4	17.4	17.4	17.5	16.7	15.6	13.7	15.8	17.2
2	6.9	7.2	6.9	9.0	10.5	10.3	10.3	11.1	11.3	10.8	10.0	9.6	10.0	10.8
1	3.2	3.3	3.4	5.0	7.5	7.1	7.1	7.8	7.6	7.7	6.5	5.7	6.3	7.5

Source: OECD, Economic Outlook.

### 3. Why real convergence is needed

Nominal convergence (meaning convergence of the development of costs and prices and of their underlying determinants such as money growth rates) is generally accepted as a precondition for the (transition to) Economic and Monetary Union. Indeed, one of the most salient characteristics of a monetary union is the ab-

<sup>6</sup> Spain forms a separate cluster with Ireland for 1989-92, while the United Kingdom takes part of the low unemployment cluster in 1990 and the middle cluster in 1991 and 1992.

sence of the exchange rate instrument to correct for deviating movements in national inflation rates. The criterion in the Maastricht Treaty that the potential candidates' inflation rates should not exceed the average of the three EC countries with the lowest inflation by more than 1.5% is directly related to this need for nominal convergence. In this respect, we observed in section 2 that the countries participating in the Exchange Rate Mechanism of the EMS have realized increased convergence towards low inflation rates<sup>7</sup>.

In our view, however, real convergence (defined as convergence in real macroeconomic variables such as per capita GDP, economic growth and unemployment), while technically no necessity for EMU, would have great advantage for the working of the Union. Stated differently, the absence of real convergence is likely to put the EMU under considerable stress. As we shall argue in section 7 some structural convergence (meaning here changes in labour market institutions which bring member countries more closely in line with each other) may also be necessary for real convergence. The reasons for real and structural convergence are easily understood.

1. If the EMU consists of member countries with widespread structural differences, their macroeconomic performance is likely to diverge when they are subjected to a common macroeconomic shock. For example, one can think of an external shock, such as a substantial change in the US dollar exchange rate or in the terms of trade in general. Or of internal shocks such as a decrease in demand caused, e.g., by Germany's monetary policy. Yet, a smooth functioning of the EMU requires convergence in its members' macroeconomic performance, especially with regard to inflation.

Formulating the conditions of monetary integration in terms of structural characteristics of the economies concerned is, of course, a well-established tradition. Seminal contributions

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<sup>7</sup> It is, of course, a different matter whether the EMS itself has contributed to this inflation decline (see e.g. Gros & Thygesen 1992, p. 126-133, and the references given there).



include Mundell (1961), stressing mobility of production factors, McKinnon (1963), looking at the openness of the economy, and Kenen (1969) pointing at the degree of diversity of the product mix.

In this paper we continue this approach, but we argue that the relevant characteristics are to be found in the domain of labour market institutions.

2. If the Economic and Monetary Union consists of countries with very different equilibrium unemployment or growth rates, this will threaten the long-term stability of the Union. Indeed, such a situation will imply transfers from the low unemployment countries to the high unemployment ones, through the system of automatic stabilizers. If such a situation has a permanent character, the willingness of the low unemployment countries to remain in the Union will be affected.

To the extent that the redistribution is rather modest (the EC being no federal nation like the US or Germany, a Community-wide tax being absent and the Community budget being rather small, even after the proposed increases) there will be labour migration from the high to the low unemployment countries. While this labour movement may be an equilibrating factor from an economic point of view, it may create serious social and political tensions as the recent examples in Europe illustrate. Another possibility is that the high unemployment countries will be tempted to use the exchange rate instrument and leave the Union.

3. A third reason why real convergence is needed is that an EMU encompassing partners with unequal real performance will experience a lot of conflict about the stance of monetary policy to be followed by the Union's central bank. All other things being equal, member countries with a high equilibrium unemployment rate will end up on a higher inflation path than countries with a low equilibrium unemployment rate.

In order to illustrate this point we use a diagrammatical exposition of the Barro-Gordon model as presented by Artis (1991, p. 132) or De Grauwe (1992, p. 142). This model shows that a coun-

try's equilibrium inflation rate<sup>8</sup> depends on:

- a) the preferences of the authorities: the equilibrium inflation rate will be higher in a country with a 'wet' government (i.e. a government that has a relative preference for low unemployment) than in a country with a 'hard nosed' government (a government that cares much more about inflation);
- b) the slope of the short-term Phillips curve: the steeper the short-term Phillips curve, the lower the equilibrium inflation rate;
- c) the level of the equilibrium rate of unemployment: with given policy preferences, the higher the equilibrium rate of unemployment, the higher the equilibrium inflation rate.

Concentrating on the latter determinant, consider the situation depicted in figure 1. We assume two partner countries in an EMU (A and B) with a common set of (convex) short-term Phillips curves and policy-makers with the same preferences. These preferences are shown by a set of concave indifference curves for inflation and unemployment. Further, assume that country B's equilibrium rate of unemployment exceeds country A's ( $u_B^* > u_A^*$ ). It then follows that the equilibrium inflation rate in country B will be higher than in country A ( $\dot{p}_B^* > \dot{p}_A^*$ ).

Of course, in the EMU there can only be one monetary policy and one inflation rate. If both countries have equal weight the Union's equilibrium unemployment rate is the average of that of both countries ( $u_E^* = 0.5u_A^* + 0.5u_B^*$ ). It follows that the equilibrium inflation rate of the Union will be  $\dot{p}_E^*$  (with  $\dot{p}_A^* < \dot{p}_E^* < \dot{p}_B^*$ ). Figure 1 illustrates that the Union's (and hence the member countries') inflation rate will differ from the national inflation rates before the Union was created. This point is especially relevant for country A, since it will now suffer from a higher inflation rate than is 'optimal' from a domestic point of view. Forming an EMU with the high unemployment country B pushes country A to a higher (less favourable) indifference curve.

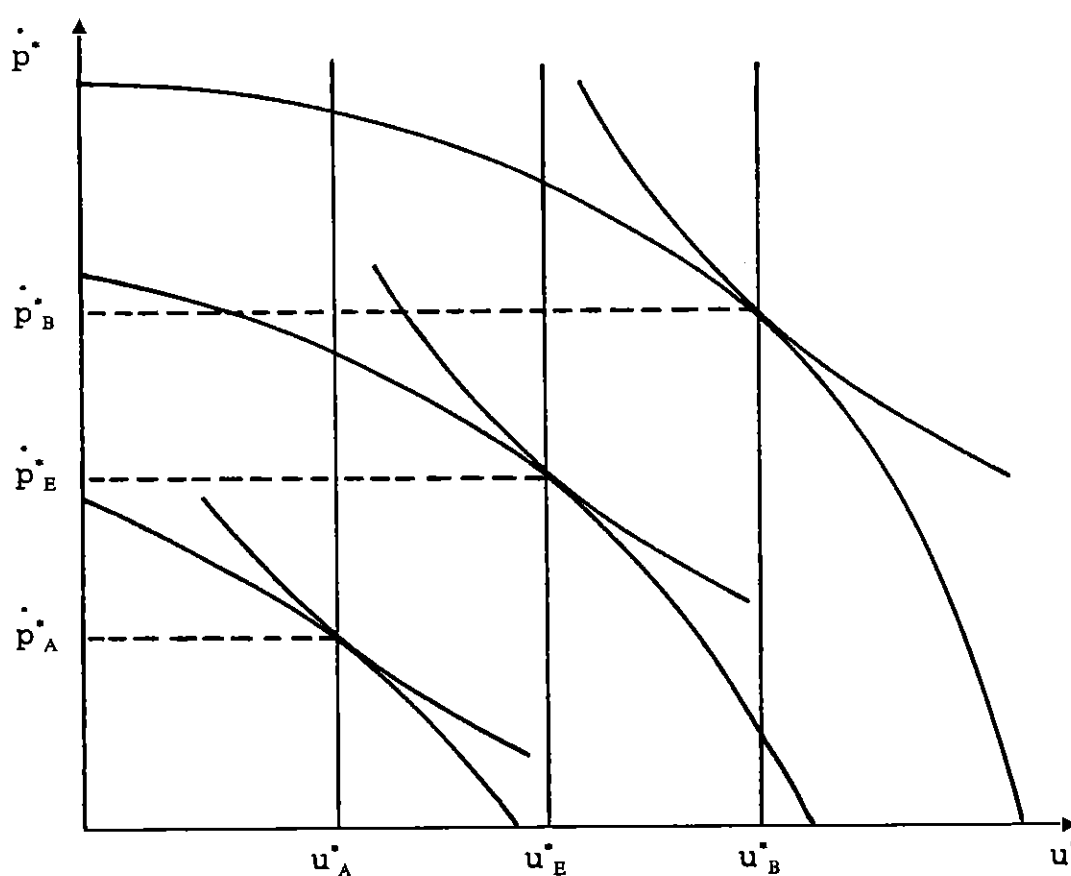
Notice that the first and the third determinant of the equi-

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<sup>8</sup> Defined as the inflation rate that will be achieved when the monetary authorities follow a discretionary policy.

librium inflation rate may point into the same direction. If governments of countries with a high equilibrium rate of unemployment have a strong preference for low unemployment (reducing unemployment becoming the first priority), the conclusion gains strength that an EMU is difficult to realize between countries with different equilibrium unemployment rates.

Figure 1. A diagrammatical exposition of the Barro-Gordon model



In this respect, it is somewhat surprising to find that the Maastricht Treaty emphasizes convergence in financial variables (inflation, interest rates, government deficit and debt ratios) and is rather silent on real convergence as a criterion for Economic and Monetary Union. This is at odds with the October 1990 European Council (Rome) where it was agreed that "in order to move to the second phase of economic and monetary union further satisfactory and lasting progress toward real and monetary convergence

had to be achieved" (*italics added*) (quoted in Anderton et al. 1991, p. 51)<sup>9</sup>. However, the need for real convergence has not been unnoticed by others. For example, Gros and Thygesen (1992, p. 467) state that it would have been desirable for the Maastricht Treaty to include the unemployment percentage explicitly among the convergence criteria.

#### 4. Explaining the absence of convergence in unemployment: the competing claims model

The previous section emphasized the need for convergence of the equilibrium rate of unemployment (further specified as the NAIRU) if an economic and monetary union is to be viable and sustainable. Today this convergence does not exist (see tables 3 and 4). Moreover, there may be good reasons to expect further divergence. In this section we present a model for the explanation of the NAIRU. This model is to be situated in the New Keynesian approach developed by, among others, Carlin & Soskice (1990) and Layard, Nickell & Jackman (1991). It captures what we believe to be the main characteristics of today's European economies, i.e. wage bargaining by employers and unions, price-setting by imperfectly competitive firms and labour market intervention by the government (e.g. active labour market policy, unemployment benefits).

Section 4.1. presents the model. Section 4.2. concentrates on the underlying role of labour market characteristics. In sections 4.3. and 4.4. we examine the implications of our model for the transition to EMU and its viability.

##### 4.1. A model of wage and price formation

To discover the main determinants of the NAIRU we rely on the 'competing claims' hypothesis of wage and price formation. The basic idea is that, in an economy where both workers (unions) and

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<sup>9</sup> This statement is all the more important since increased competition in the single market and in the EMU is likely to increase rather than decrease real economic disparities between member states.

firms have market power, each group will attempt to obtain a particular share of the economy's product (real income). The NAIRU is the unemployment rate at which these competing claims are reconciled. The model consists of two equations: a wage-setting equation, which will receive the larger part of our attention, and a price-setting equation.

#### *Wage-setting*

$$w - p = a_0 + a_1(p_c - p) - a_2(u - \pi u_{-1}) + a_3q^* + a_4t_w - a_5t_p \quad (1)$$

#### *Price-setting*

$$p - w = b_0 - q^* + t_p + b_1p_m \quad (2)$$

with : w : gross nominal wage  
 p : producer price level  
 p<sub>c</sub>: consumer price level  
 u : unemployment rate  
 q\* : trend productivity of labour  
 t<sub>w</sub>: income tax rate on the worker  
 t<sub>p</sub>: employment tax rate on the employer  
 p<sub>m</sub>: import price level  
 All variables in logs (except u, t<sub>w</sub> and t<sub>p</sub> which are rates)  
 a<sub>i</sub>, b<sub>i</sub> ≥ 0; a<sub>1</sub>, a<sub>3</sub>, a<sub>4</sub>, a<sub>5</sub> ≤ 1; 0 ≤ π ≤ 1

Gross nominal wages are bargained as a mark-up on prices (equation 1). A key determinant of the magnitude of the wage-price mark-up is the state of the labour market (unemployment). Other relevant factors are productivity, the terms of trade and taxes on labour.

If unemployment rises, bargained real wages will decline. The parameter a<sub>2</sub> reflects the responsiveness of wages to unemployment. Graphically, the wage line (WL) in figure 2, which relates the bargained real wage to the unemployment rate, has a negative slope. Various reasons explain this negative relation. First, facing worse labour market conditions, workers (unions) will moderate their wage claims. The growing number of job searchers on the labour market will increase the employed's expected welfare loss in the event of a layoff. Their preference for wages, relative to employment, will fall. Second, if unemployment rises, the employer's wage offer to his current employees can be expected to

decline since the number of 'employable' workers at his disposal rises. Third, rising unemployment undermines the workers' bargaining power.

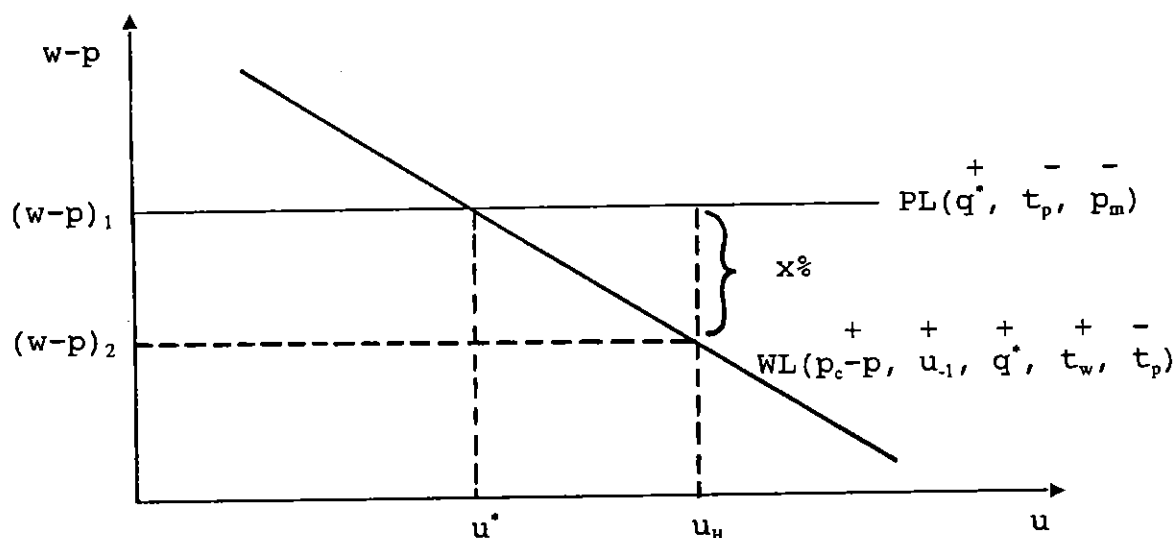
In the long-run the negative effect exerted by unemployment on the bargained real wage may be much weaker than in the short-run. There are several explanations, which all imply a weakening of the above mentioned mechanisms. First, prolonged unemployment may gradually deteriorate the skills, motivation and search intensity of the jobless. Second, employers may consider a prolonged unemployment spell as a negative signal of a worker's expected productivity. As a consequence, the unemployed will no longer be considered 'employable' substitutes for the current employees, whose situation will then become more comfortable. Third, the unemployed may drop out of the union and, as a consequence, lose their impact on union (wage) policy. A rise in unemployment may thus reduce the number of workers represented (and supported) by the unions at the bargaining table.

Algebraically, the parameter  $\pi$  reflects the magnitude of these 'hysteresis' effects. If  $\pi$  tends to 0, hysteresis is absent and there is no difference between the short-run and the long-run effect of unemployment on wages. On the other hand, if  $\pi$  tends to 1, unemployment only has a short-run effect, which disappears after one period (say, year). Graphically, a rise in unemployment will in the next period generate an upward shift of the wage line if  $\pi > 0$ .

Further, the wage line may shift because of changes in the terms of trade, trend productivity or taxes on labour. As for the terms of trade,  $a_1$  is a key parameter. It stands for the responsiveness of nominal wages to consumer prices (and thus import prices). If  $a_1$  tends to 1, nominal wages are set as a mark-up on consumer prices, whereas producer prices have no impact. In this case, each change in the terms of trade generates a strong shift in the wage line. If  $a_1$  tends to 0, nominal wages are set as a mark-up on producer prices. In this case, consumer prices leave nominal wages (and the wage line) unaffected. As for the effect of productivity developments, the parameter  $a_2$  indicates to what extent productivity gains are absorbed into wage claims. Finally, if taxes on the workers ( $t_w$ ) rise, they will ask for a higher gross

wage in order to maintain the same net wage. Similarly, employers will try to shift the burden of employer taxes ( $t_p$ ) to the workers (lower gross wage). The parameters  $a_4$  and  $a_5$  indicate to what extent both parties are successful.

Figure 2. Competing claims and a graphical derivation of the NAIRU



Firms set prices as a mark-up on wages (equation 2). In line with empirical observation, the price-wage mark-up is assumed unresponsive to business cycle fluctuations (i.e. changes in unemployment)<sup>10</sup>. Graphically, this means that the price line (PL) is horizontal. Trend productivity, taxes on the employer and import prices are key determinants of the magnitude of the price-wage mark-up and, thus, of the real wage that price-setters are willing to concede to workers. A rise in trend productivity shifts the price line upwards, whereas an increase in taxes or import prices shift it downwards.

Obviously, the price-setting mechanism can be extended to include other determinants (e.g. non-wage labour costs due to health and safety regulations). In our model these factors do not occur explicitly, although one could argue that they determine  $b_0$ . At the intersection of the wage line (WL) and the price line (PL),

<sup>10</sup> For further details, see Bean (1989), Carlin & Soskice (1990, chapters 6 and 18) and Layard et al. (1991, chapter 7).

the NAIRU ( $u^*$ ) reconciles the real wage claims of wage-setters and the real wage that price-setters want to concede. If we exclude extreme parameter values, the NAIRU rises if the terms of trade deteriorate (i.e. if real import prices increase), if trend productivity declines, if taxes on labour rise and if unemployment rose in the previous period. Algebraically,

$$u^* = [1/a_2][a_0 + b_0 + a_1(p_c - p) - (1-a_3)q^* + a_4t_w + (1-a_5)t_p + b_1p_m] + \pi u_1 \quad (3)$$

or, in the long-run (i.e. if  $u = u_1 = u^*$ ),

$$u^* = [1/(a_2(1-\pi))][a_0 + b_0 + a_1(p_c - p) - (1-a_3)q^* + a_4t_w + (1-a_5)t_p + b_1p_m] \quad (4)$$

#### 4.2. The NAIRU and the characteristics of the labour market

Obviously, as equation (4) shows, the NAIRU depends crucially on the value taken by the various parameters. Their role must not be underestimated. Taking into account that all OECD countries had to face quite similar, mainly negative, shocks at the world and the domestic level in the 1970s and 1980s (see e.g. McCallum, 1983; Heylen, 1992b, chapter 1), explaining differences in the relevant parameters may even be the most important task if one wants to explain the divergence in the OECD countries' NAIRU (and in the EC countries' unemployment observed in section 2). To some extent the equations (5), (6) and (7) deal with this task.

Equation (5) explains the magnitude of bargained wage moderation in response to unemployment ( $a_2$ ). Equation (6) concentrates on hysteresis effects ( $\pi$ ), i.e. the extent to which unemployment, once it is created, tends to persist (because the unemployed either lose the capabilities 'to buy themselves in again', or because their interests are no longer taken into account at the



bargaining table). Equation (7) deals with the impact of terms of trade changes on bargained wages ( $a_1$ ). Particular attention is paid to the role of structural characteristics of the labour market and labour market policy. For underlying empirical evidence we refer to Layard et al. (1991, chapter 9), Van Poeck (1991) and Heylen (1992a, 1993).

$$a_2 = a_2(\overset{+}{\text{ALMP}}, \overset{-}{\text{GUS}}, \overset{+}{\text{CB}}, \overset{+}{\text{DCB}}) \quad (5)$$

$$\pi = \pi(\overset{-}{\text{ALMP}}, \overset{+}{\text{GUS}}, \overset{-}{\text{CB}}) \quad (6)$$

$$a_1 = a_1(\overset{+}{\text{IND}}) \quad (7)$$

with : ALMP: extent of active labour market policy by the government  
 GUS : degree of generosity of the unemployment benefit system  
 CB : a dummy variable indicating that wage bargaining occurs on a centralized (national) level  
 DCB : a dummy indicating that wage bargaining occurs on a decentralized (firm) level  
 IND : degree of wage indexation to consumer prices

Active labour market policy programmes like the provision of public employment services (information, counselling, placement, job-search courses) and (re)training schemes, exert favourable effects on both  $a_2$  and  $\pi$ . First, by increasing the 'competitiveness' (search effectiveness, employability) of the unemployed, these programmes reinforce the pressure of the outside labour market on the wage bargainers<sup>11</sup>. For example, they enlarge the employer's pool of available substitutes for his current workforce. Second, they help to avoid that unemployment deteriorates

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<sup>11</sup> Various, mainly Nordic, authors (e.g. Calmfors & Nymoer, 1990) have argued against active labour market policy. Anticipating the government's help in case of job loss, wage bargainers may raise their preference for wages (instead of employment). As a consequence, active labour market policy may elicit more aggressive wage behaviour (and reduce  $a_2$ ). Empirically, however, these effects seem to be weak and dominated by the favourable effects of active labour market policy on the competitiveness of the unemployed (Heylen, 1993).

the skills and motivation of the unemployed. As a consequence, they reduce the risk that the unemployed slide into structural unemployment.

The effects of a change in the generosity of the benefit system (i.e. in the level of the benefit, the length of the period that the benefit is payable or the eligibility conditions) are quite analogous. Less generous benefits are expected to enhance the motivation of the unemployed to search and their willingness to accept jobs offered<sup>12</sup>. This also increases the competitiveness of the unemployed and reduces the risk of long-term unemployment. Further, a reduction in benefit generosity raises the downward pressure of unemployment on wages because it increases the expected welfare loss of the employed in the event of a layoff.

Centralization of wage bargaining between well-coordinated, national (encompassing) unions and employer associations raises the responsiveness of wages to unemployment and reduces the risk that a worker who loses his job, becomes structurally unemployed. The main reason is that a centralized union, bargaining for all workers in the economy, will attach relative priority to employment (instead of wages). Centralized bargaining systems allow to internalize the favourable external effects of moderating wages and providing employment to all workers (see Calmfors & Driffill, 1988). These external effects are lower inflation and a rise in real aggregate demand (for given nominal demand), lower taxes (improvement of the government budget balance) and a rise in all workers' re-employment probability in the event of a layoff. As soon as one leaves the centralized level (e.g. wage bargaining at the level of the industry or the firm), these favourable external effects can no longer be internalized and the employed will see no reason to take into account the interests of the unemployed. The latter will then face a higher risk of becoming long-term unemployed. As an additional explanation for the higher preference for employment in centralized bargaining systems, it has been suggested that unemployed workers tend to remain members of cen-

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<sup>12</sup> It should be noticed, however, that this argument may only fully apply to shorter benefit duration and severer eligibility conditions. It may not fully apply to lower benefit levels. For example, to the extent that lower benefits reduce the job seeker's financial means, they may deteriorate search effectiveness (Atkinson & Micklewright, 1991).

tralized unions (keeping an influence on union policy), whereas they drop out of decentralized unions.

Despite the negative influence on  $a_2$  due to the non-internalization of favourable external effects, wage bargaining at the decentralized (firm) level may still promote flexible wages, i.e. a high  $a_2$  (Calmfors & Driffill, 1988). The reason is to be found in the high substitutability between the products of different firms (and thus the high price elasticity of product demand). As a consequence, the penalty (job loss) that the employed have to face when they claim excessive wages is substantial. If wage bargaining takes place at the level of the various industries (or the national economy), these market sanction effects disappear because the substitutability between the products of the bargaining units (e.g. steel and textile industries) becomes much smaller.

Finally, automatic indexation of wages to the cost of living (IND) raises the responsiveness ( $a_1$ ) of bargained real wages,  $w-p$ , to terms of trade changes.

Summarizing, we can rewrite equation (3) (or 4) in terms of all underlying determinants (parameters and explanatory variables). This is done in equation (8), which also indicates the expected effect of changes in these determinants on the NAIRU. Productivity has not been retained since it is a largely endogenous variable. The real import price enters instead of the terms of trade. The sign of the indexation variable is ambiguous. If real import prices rise, indexation to consumer prices exerts upward pressure on the NAIRU (see e.g. Van Gompel & Van Poeck, 1992). If real import prices fall, we get the opposite sign<sup>13</sup>.

$$u^* = u^*(\overset{-}{\text{ALMP}}, \overset{+}{\text{GUS}}, \overset{-}{\text{CB}}, \overset{-}{\text{DCB}}, \overset{?}{\text{IND}}, \overset{+}{\text{RIP}}, \overset{+}{\text{TAX}}) \quad (8)$$

with : RIP : real import price  
TAX : tax wedge (with  $\ln \text{TAX} \approx t_w + t_p$ )

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<sup>13</sup> It should be noticed that the signs of the effects on the NAIRU of changes in  $a_2$  or  $\pi$  (and thus of ALMP, GUS, etc.) depend on the kind of shocks that the economy has to face. Equation (8) reflects the observation that shocks in the 1970s and 1980s have generally been negative. As for the transition to EMU, negative shocks will probably dominate too.

#### 4.3. Unemployment, the NAIRU and (dis)inflation

This section briefly illuminates the relation between unemployment, the NAIRU and the level of inflation. We think this may be useful to pave the way for our discussion of the transition to EMU in the next section.

As the definition says, the NAIRU is consistent with constant inflation (the inflation level is irrelevant). This is straightforward. At the NAIRU the real wage claimed by workers is equal to the price-determined real wage arising from the firms' pricing decision. Workers will set nominal wage growth equal to (expected) inflation, whereas firms set actual inflation equal to nominal wage growth. The economy is in equilibrium.

Changes in inflation require that actual unemployment deviates from the NAIRU. For example, suppose that the government aims at disinflation (to meet the entry conditions for the EMU). It will then have to push unemployment above the NAIRU ( $u_H$  in figure 2) and open a gap of, say,  $x\%$  between the wage-setters' real wage claims,  $(w-p)_2$ , and the price-setters' profit claims (corresponding to  $(w-p)_1$ ). Facing higher unemployment workers are willing to accept a lower real wage in order to get more employment. In order to realize this goal, they will reduce the growth rate of their nominal wages, and set it equal to the expected inflation rate minus  $x$ . Price-setters will respond to this fall in the growth rate of nominal wages and reduce the level of price inflation proportionally (see equation 2). Real wages remain unchanged. Unemployment may, however, return to a lower level if the government considers the obtained disinflation satisfactory and loosens policy. If that is not the case, policy will remain restrictive, unemployment will remain high and the process described above will be repeated.

Two factors determine how painful disinflation is in this model. The first is the slope of the wage line (i.e.  $a_1$ ) since this fixes the magnitude of the gap  $x$  and, thus, the magnitude of nominal wage reduction. The second is the vulnerability of the economy to hysteresis ( $\pi$ ) since this determines the upward shift of the wage line after a rise in unemployment. If  $\pi$  is high, it is

not sufficient for the government to maintain unemployment at  $u_H$  because the upward shift in the wage line will gradually eliminate the gap  $x$  and thus the tendency of wage growth to fall. More unemployment will then be necessary.

#### 4.4. Implications for the EMU: transition and sustainability

The EMU imposes strict entry conditions on the EC (EMS) members. For most countries (except maybe France and Denmark) monetary and/or fiscal restraint will be necessary. In countries like Spain, the UK, Italy, Belgium and, to a lesser extent, Ireland (which already have a relatively high NAIRU) restraint might be particularly severe.

In terms of our model, unemployment will initially rise above the NAIRU and the situation discussed in the previous section will show up. In case wage responsiveness ( $a_2$ ) is weak in the countries of restraint and hysteresis effects ( $\pi$ ) are substantial, the unemployment rise will not only be substantial, it will also show a high tendency to persist. As a consequence, the NAIRU ( $u^*$ ) in these countries will be pushed upwards, and so will the average NAIRU in the EC. In figure 1 the equilibrium inflation rate will then rise. Concluding, in this case the process of transition will put double pressure upon the chances for successful realization of the EMU. First, the differential between equilibrium inflation in the low inflation countries and in the EMU will rise. So will conflict about the stance of monetary policy. Second, fiscal transfers (or the movement of labour) from low to high unemployment countries will become more substantial.

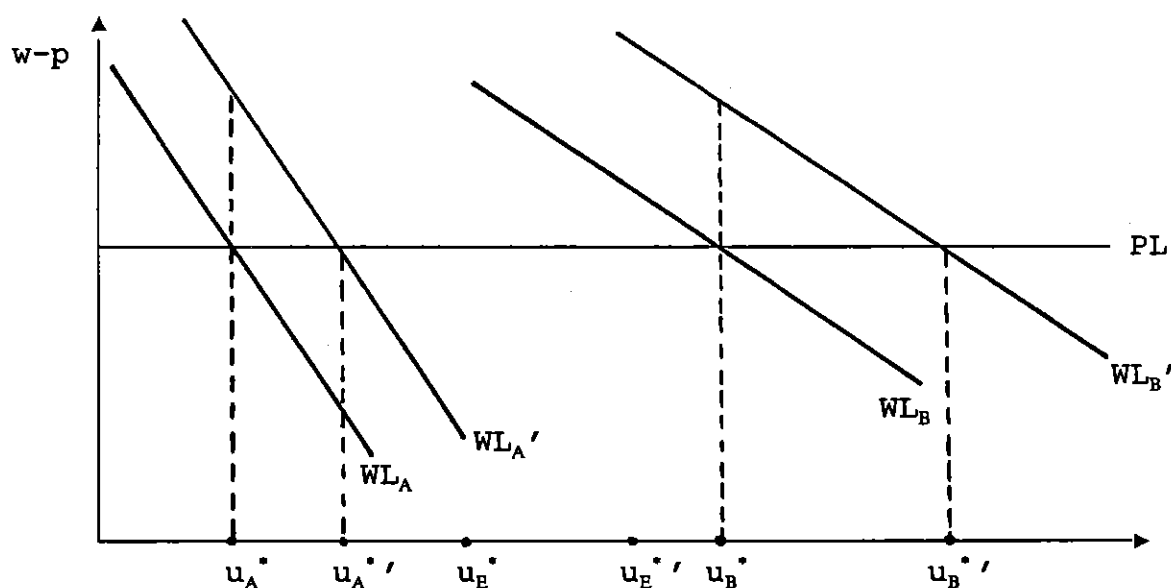
The structural labour market characteristics (parameters) are also highly relevant for the chances of sustainability of the EMU. As we have argued (section 3) and as figure 3 makes clear, different structural characteristics of countries are likely to generate different responses to common shocks. This may inhibit a smooth functioning of the EMU.

Consider the countries A and B, which constitute an EMU and which we assume to have the same price line (PL). Country A has a relatively low NAIRU ( $u_A^*$ ) and a steep wage line, whereas B has a

high NAIRU ( $u_B^*$ ) and a flat wage line. Suppose both countries have to face the same negative shock (e.g. a real import price rise), which pushes the wage lines upwards. As can be seen, differences in the responsiveness of bargained wage claims to unemployment imply that country B will have to face a much stronger rise in unemployment to make workers accept the real wage that the firms are willing to concede. In the short-run, country B will have to face a stronger upward pressure on inflation than A. As far as the EMU is concerned, both the average NAIRU ( $u_E^*$ ) and the variance of the NAIRU will rise. So will, other things equal, equilibrium inflation and tension on the monetary policy front.

Obviously, the scenario need not be so pessimistic. Everything depends on the kind of shocks that the economies have to face. In figure 3 favourable shocks may reduce both the average and the variance of the NAIRU in the EMU.

Figure 3. Shocks and the evolution of the NAIRU in the EMU



## 5. Empirical assessment: intra-EC differences

Let us now look at the real world. Table 5 summarizes data for a tentative empirical assessment of equation (8)<sup>14</sup>. Three groups of countries are considered. In this section we mainly concentrate on the EC. The next section discusses the other European countries (and potential new EC members).

Lack of recent and comparative data for the NAIRU made us use the average rate of unemployment in 1982-91 as a proxy. The period 1982-91 can be considered to correspond to the last (extended) business cycle. The data confirm the existence of a *wide spread among the EC members' unemployment* (see section 2). Germany and the Netherlands are relatively good performers. In Italy, Belgium and, especially, Ireland and Spain, the situation is relatively bad.

The other columns in the table allow us to examine the possible structural determinants of these unemployment differences. The second data block presents proxy variables for  $a_2$  and  $\pi$ .  $Ea_2$  stands for the short-run responsiveness of wages to unemployment,  $E\pi$  for vulnerability to hysteresis. Both variables have been calculated as a (weighted) average of point estimates for  $a_2$  and  $\pi$  presented in nine, respectively four, studies in the international literature (see appendix 2). SLTU is a second proxy for vulnerability to hysteresis. It stands for the share of long-term unemployment, i.e. the percentage of all unemployed who have been unemployed for more than one year. The data are an average for 1987-89. One might call SLTU an indicator for the probability that a worker who loses his job, will still be out of work 12 months later<sup>15</sup>.

The following conclusions can be drawn. First, in the EC the *willingness to moderate wages if unemployment rises, is low*. This conclusion relies not only on the raw data for the EC countries;

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<sup>14</sup> For a firmer (econometric) analysis, we refer to appendix 1. For data sources, see the description in the text.

<sup>15</sup> The data for SLTU are based on OECD surveys, which makes them largely independent of national registration practices (Source: OECD, Data base on unemployment by duration and age groups). The correlation between  $E\pi$  and SLTU (calculated over all countries in table 5) amounts to 0.78. (Leaving out Belgium and Australia it rises to 0.84).

it particularly relies on a comparison with the other country groups. Second, the EC countries are strikingly vulnerable to unemployment persistence.  $E\pi$  equals 0.88 on average; it is not significantly different from 1. The observation that in 1987-89 more than 50% of all unemployed in the EC were unemployed for more than a year, confirms this statement. The implications are unambiguous: negative shocks do not only tend to generate much unemployment in the EC (cf. the situation of country B in figure 3), each rise in unemployment has also a high probability of becoming permanent. Third, looking at the individual countries, structural parameters are the worst in Spain, Ireland, Italy and the UK. These countries score badly (below average for  $Ea_2$ , above average for  $E\pi$  or SLTU) for at least 2 structural indicators. Germany and the Netherlands score better than average for all 3 indicators. The correspondence with the unemployment situation is obviously not accidental. Fourth, we may now understand why convergence of inflation in the 1980s went along with divergence of unemployment (section 2): the rise in unemployment necessary to elicit the disinflationary process and to move towards the German standard, was not only substantial, it also showed a high degree of persistence.

The third data block in table 5 contributes to an explanation why structural parameters differ among the EC countries (see equations 5 and 6). The data concern active labour market policy (ALMP), the characteristics of the unemployment benefit system (DUR, RR, COV, GUS) and the degree of centralization of wage bargaining (COR, CI):

- ALMP is calculated as total government expenditures on public employment services and training schemes for the unemployed. The data reflect expenditures per unemployed person. They are expressed in thousands and in purchasing power dollar values. Data for 1986. Source: our own calculation based on OECD (1989) for the exchange rates and OECD (1990) for policy expenditures. Unemployment data have been taken from OECD, Economic Outlook, Statistics on microcomputer diskettes.
- DUR stands for the maximum duration (in months) of eligibility to some form of benefit (unemployment benefit, supplementary insurance, means-tested assistance) paying over \$ 120 a month.



- Data for 1985. Source: Layard, Nickell & Jackman (1991).
- RR is the unemployment benefit replacement ratio (i.e. gross benefits during the initial months of unemployment as a percentage of the most relevant wage, normally the gross wage). Data for 1985. Source: Layard, Nickell & Jackman (1991). Both DUR and RR concern a single person younger than 50.
  - COV indicates the unemployment benefit coverage rate (i.e. the percentage of all unemployed who receive benefits). Data for 1985. Source: Burda (1988).
  - GUS is a general indicator for the generosity of the unemployment benefit system. This indicator rises in the level of the benefit, the length of the period that benefits are payable and the coverage rate. The data are expressed in thousands and concern 1985. Source: Burda (1988)<sup>16</sup>.
  - COR is the Bruno & Sachs (1985) corporatism index. This index is higher to the extent that industrial relations and wage bargaining are centralized and characterized by harmony. Industrial relations are called centralized if the union movement is centralized (and actively participating in wage bargaining), if the autonomy of unions at the plant level is low and if coordinated employer organizations exist. The idea of harmony is related to the presence of works councils and other forms of concertation and co-determination in firms.
  - CI is the Calmfors-Driffill ranking for the degree of centralization of industrial relations and wage bargaining. Highly centralized countries (e.g. Austria and the Nordic countries) receive low rank numbers, highly decentralized countries (e.g. the U.S.) get high rank numbers. Source: Calmfors & Driffill (1988) and Layard, Nickell and Jackman (1991).

Unlike nominal convergence, real/structural convergence has not

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<sup>16</sup> Burda calculated GUS as the actual discounted value of future replacement, expressed in terms of percent-weeks, and multiplied by the coverage ratio. Algebraically, we conceive GUS as follows:

$$GUS = COV * \sum_t^n RR_t (1/(1+r))^t$$

with: n: number of weeks that benefits can be received;  $RR_t$ : replacement ratio in week t; r: discount rate and COV: coverage ratio.

(yet) been achieved in the EC. Differences among countries are the widest for active labour market policy. Government engagement is quite strong in Germany, it is extremely poor in Italy and Spain. As for the other countries, Denmark, France and the Netherlands do relatively well, the UK and Ireland relatively badly.

With respect to unemployment benefits, the conceptual difference should be noticed between countries like Belgium, Germany, Ireland and the UK, with relatively low benefits that are paid for an indefinite period, and countries like Denmark and Spain, where benefits are high, but paid for a relatively short period. (In Spain coverage remains quite weak). Finally, the characteristics of the benefit systems in France and Italy are almost non-European. For each indicator these countries score below the average of the other EC countries.

As for corporatism and centralization, Germany, the Netherlands and Denmark tend to deviate from the non-centralized non-corporatist labour market pattern in the rest of the EC. In all three countries, labour market relations are basically harmonious. (In the other countries, the conflict model tends to prevail). Calmfors & Driffill (1988) rank Denmark among the most centralized countries, characterized by central wage agreements between national employer associations and union confederations. Although the main negotiations in Germany and the Netherlands take place at the industry level, there are some important elements enhancing coordination (in clear contrast to Belgium, where the industry level dominates too). In Germany wage agreements in the metal industry are pattern making. In the Netherlands there is a high degree of coordination on the union side. In France, Spain, Italy, the UK and Ireland labour market relations are characterized by the existence of multiple and largely uncoordinated levels of bargaining. These countries show a certain degree of decentralization towards the firm level (especially the UK), though clear elements of industry-related negotiations and/or organizations exist. Consequently, decentralization remains much weaker than in the US, Canada or Switzerland.

As we have argued earlier, this 'neither-nor situation' in most EC countries contributes to excessive and rigid wage bargain-

ing. The reason is simple: those who get the benefits of higher wages (purchasing power) can escape the larger part of the costs. First, there is no real market sanction. Second, since each bargaining unit constitutes only a fraction of the economy, there are plenty of other bargaining units to bear the costs.

The final block in table 5 presents data for the other determinants of the NAIRU included in equation (8). TAX stands for the tax wedge. It has been calculated as the ratio of total wage costs for the employer (i.e. compensation per employee) to the net wage of the worker (i.e. compensation minus direct taxes to be paid by the worker and social security contributions to be paid by both the worker and the employer)<sup>17</sup>. The data are an average for 1982-1991. We notice the gap between the 'central' countries, with high taxes on labour, and the 'periphery' (the UK, Ireland, Spain) with relatively low taxes. Greece, for which we included no data, joins this latter group (TAX=1.58). With respect to social harmonization in the EC, it is obvious that imposing the same social security rules on the 'periphery' countries, may result in further unemployment divergence<sup>18</sup>.

RIP stands for the total percentage change of the real import price between (the average for) 1982-91 and (the average for) 1970-72. On average, the EC countries had to face a real import price rise of 6.2%. Some countries, however (e.g. the Netherlands and the UK), experienced a decline. As we have argued earlier, the impact of this development on unemployment is expected to depend on the indexation system. In this respect we introduce IND. This variable is a dummy for the degree of indexation of wages to the cost of living<sup>19</sup>. It mainly refers to the situation in the 1970s and beginning of the 1980s. If indexation was widespread (e.g. Belgium, Italy), IND equals 2. If there was no explicit indexation

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<sup>17</sup> Source: our own calculation based on OECD, Economic Outlook, Statistics on microcomputer diskette.

<sup>18</sup> That is if TAX proves to be a significant determinant of  $u^*$ .

<sup>19</sup> IND has been taken from Emerson (1983) and Layard et al. (1991), who rely on Bruno & Sachs (1985).

Table 5. Unemployment and relevant labour market characteristics in the OECD

Country	u*	Ea2	E $\pi$	SLTU	ALMP	DUR	RR	COV	GUS	COR	CI	TAX	IND	RIP
<u>EC members</u>														
Belgium	11.11	0.53	0.71	76.2	0.68	indef	60	94	6.94	0.5	8	2.12	2	10.4
Denmark	9.28	0.25	0.70	28.4	1.04	30	90	79	4.79	3.0	4	2.14	2	9.7
France	9.52	0.61	0.96	44.7	1.00	45	57	66	2.12	0.0	10	2.01	2	14.6
Germany	5.95	0.50	0.67	48.0	1.71	indef	63	63	5.86	4.0	6	1.96	0	7.9
Ireland	15.51	0.41	1.05	66.6	0.58	indef	50	70	3.66	.	11	1.55	1	-1.0
Italy	10.92	0.89	0.93	68.6	0.29	6	2	.	.	0.5	12	2.14	2	17.5
Netherlands	8.71	0.60	0.82	48.7	1.02	indef	70	89	6.38	4.0	7	2.34	2	-1.3
Spain	18.71	0.31	1.15	60.7	0.20	42	80	44	4.24	.	10	1.72	1	-3.5
UK	9.54	0.24	0.93	43.8	0.46	indef	36	81	3.86	0.0	11	1.46	0	-6.3
Average	11.03	0.48	0.88	54.0	0.78	.	56.4	73.3	4.73	1.7	8.8	1.94	.	6.2
Stand. dev.	3.62	0.20	0.16	14.2	0.44	.	24.4	15.0	1.49	1.7	2.5	0.28	.	8.2
<u>Potential EC members</u>														
Austria	3.48	1.45	0.75	16.2	1.74	indef	60	73	1.54	4.0	1	1.99	0	-16.1
Finland	5.06	0.72	0.68	16.0	1.58	indef	75	96	4.10	1.5	5	1.62	1	-5.3
Norway	3.47	1.37	0.68	8.1	3.26	18	65	85	1.98	4.0	2	1.92	1	2.0
Sweden	2.19	2.15	0.54	7.6	8.99	14	80	87	1.97	4.0	3	2.42	1	16.6
Switzerland	0.74	2.27	0.54	.	3.76	12	70	87	1.38	2.0	14	1.79	0	-26.1
Average	2.99	1.59	0.64	12.0	3.87	.	70.0	85.6	2.19	3.1	5.0	1.95	.	-5.8
Stand. dev.	1.45	0.57	0.08	4.1	2.70	.	7.1	7.4	0.98	1.1	4.7	0.27	.	14.7
<u>Other countries</u>														
Australia	7.98	0.50	0.89	26.7	0.44	indef	39	.	.	0.0	9	1.39	2	-3.8
Canada	9.65	0.47	0.60	7.9	1.88	6	60	.	.	0.0	16	1.44	1	-18.6
Japan	2.50	3.73	0.77	19.7	0.29	6	60	40	0.86	1.5	13	1.38	0	12.1
US	7.02	0.38	0.50	7.1	0.95	6	50	34	0.48	0.0	15	1.56	1	25.5
Average	6.79	1.27	0.69	15.4	0.89	.	52.3	37.0	0.67	0.4	13.3	1.44	.	3.8
Stand. dev.	2.65	1.42	0.15	8.2	0.62	.	8.7	3.0	0.19	0.6	2.7	0.07	.	16.6

(.): data not available or not relevant  
indef: indefinite duration

(e.g. Germany, the UK), it equals 0. It should be noticed that in almost all countries the indexation system has changed significantly in recent years. Belgium seems to be the only EC country in table 5 where the practice of full and automatic indexation of wages has survived (until now).

## 6. Implications for potential newcomers

In this section we first compare the situation in the EC with those in the non-member and non-European countries (see table 5). We then evaluate the chances for successful extension of the EC.

### 6.1. A comparison between EC and non-EC countries

As for our first aim, a number of striking conclusions can be drawn. First, the average NAIRU in the non-EC countries amounts to 4.7%, whereas in the EC it is 11.0%. If we don't consider Germany, Canada is the only non-EC country that can 'compete' with the EC members in terms of unemployment.

Second, the difference between the unemployment performance of the EC and the non-EC is accompanied with a remarkable contrast in structural parameters. Taking into account the generally adverse environment of the 1970s and 1980s, the structural situation of the EC shows up as highly unfavourable. The willingness to moderate bargained wages if unemployment rises is on average the lowest in the EC. Further, unlike the other countries, the EC members are highly vulnerable to hysteresis. In contrast to the data for the EC (cf. supra), in the other countries only 14% of the unemployed were long-term unemployed in 1987-89.

Third, looking at the underlying structural characteristics, the message of the data is the following: the structural weaknesses in wage formation in the EC countries are due to an insufficient development of active labour market policy, an overly generous unemployment benefit system and a system of wage bargaining which is, in most countries, neither fully centralized, nor decentralized. The underdevelopment of active labour market policy

is extremely striking in comparison to the other European countries. Only Germany can face these countries' engagement. As for benefit generosity, the summary indicator GUS is more than twice as high, on average, in the EC than in the other countries. If we do not consider Finland, each of these other countries has a GUS-value below the lowest GUS observed in the EC. The reason is mainly to be found in differences in benefit duration. For the replacement and coverage rates, the EC countries take intermediate positions, on average. The EC countries also take intermediate positions for the degree of corporatism and centralization: wage bargaining and industrial relations are neither characterized by corporatist centralization (like they tend to be in the other European countries, except Switzerland) nor by non-corporatist decentralization (like they tend to be in the non-European countries and Switzerland).

Fourth, the tax wedge seems to provide an additional explanation for the poor unemployment performance of the EC countries. It is definitely higher inside (both EC and non-EC members) than outside Europe. A final reason for higher unemployment in the EC may be related to the adverse combination of, on average, rising real import prices and widespread wage indexation.

## 6.2. Chances for successful extension

Among all potential candidates, only five countries are likely to enter in the near future: Austria, Finland, Sweden, Norway and Switzerland<sup>20</sup>. These five applicants have in prospect to join the European Union by 1995. Austria, Finland and Sweden recently started formal negotiations with the EC and, shortly, the EC Commission will announce its recommendation on the entry of Norway. Switzerland also applied for EC membership although recently a majority of the Swiss population rejected the entry into the European Economic Area by referendum.

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<sup>20</sup> Other countries that have also expressed their interest in membership, including Southern countries (Turkey, Malta and Cyprus) and countries in Central and Eastern Europe (Hungary, Bulgaria, ex-Czechoslovakia, Romania and Poland), are still kept at a distance since the adjustments to be made in these countries are substantial.

Several arguments point in favour of incorporating these five countries into the EC. First, a major part of their trade being directed towards the EC, these countries are already well integrated. Second, they are rather affluent and will therefore make a net contribution to the EC's budget. And, finally, these countries are relatively well prepared for monetary unification, in the sense of meeting the Maastricht criteria. The extension of the EC to Austria, Finland, Sweden, Norway and Switzerland is therefore likely to promote the process of integration.

Undoubtedly, labour market characteristics in these countries will also affect the chances for successful extension of the Community. As observed above, for most indicators in table 5 divergence is striking if one compares the EC with its potential newcomers. The average NAIRU in these countries is much smaller and their structural situation is much more favourable. As for labour market characteristics, the potential newcomers will therefore be in a good starting position for entry<sup>21</sup>. Nevertheless, it is remarkable that, recently, economic performance worsened in some of these countries (Norway, Sweden and, especially, Finland). The collapse of Finnish trade with the former Soviet Union, for example, caused its unemployment rate to triplicate in a few years time. It remains to be seen of course whether these developments also affect these countries' NAIRU. More problematic is probably that in recent years some of the structural characteristics in these countries (e.g. centralized wage bargaining and corporatism) have tended to take less favourable directions. If these tendencies continue, they will surely affect the smooth extension of the EC.

The entry of Austria, Finland, Sweden, Norway and Switzerland will undoubtedly also have its effects on actual core members. First, it is highly probable that demonstration effects of these newcomers will bring about (a gradual) labour market reform in the low performing core members which may increase convergence among

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<sup>21</sup> For a critical assessment of the role of labour market characteristics for macroeconomic performance in the Scandinavian countries, see Calmfors (1992).

the Union's members (see section 7). Second, the entry of countries with a low NAIRU will reduce the Union's NAIRU ( $u_E^*$ ) and equilibrium inflation rate ( $\dot{p}_E^*$ ) (see the Barro-Gordon model in section 3). This may soften potential conflict about monetary policy in the Union. On the other hand, in the low performing core members the transition towards lower inflation may temporarily lead to higher unemployment (unless the entry of Austria, Finland, Sweden, Norway and Switzerland has an immediate effect on inflation expectations).

### 7. Concluding remarks: how to achieve real convergence

The overall tendency of this contribution is that a successful transition to EMU in the EC, as well as a viable EMU, may require *changes in labour market policies and institutions*. First, *the need for converging unemployment rates* imposes changes on some member countries, so that the working of the labour market is broadly similar in all countries. Second, *the need for lower (or at least stable) unemployment rates* in the EC imposes changes on all countries. Since it is unlikely that these changes will occur soon, a 'tough' interpretation of this article is that the Maastricht program for EMU (requiring a fight against inflation and budget deficits) may be counterproductive. Because of weak wage formation and labour market characteristics in the EC, Maastricht may generate permanently higher and further diverging unemployment rates. As a consequence, it may reduce the chances for EMU.

However, a few reservations to this central message about the need for structural changes are in place. First, we agree with Flanagan et al. (1992, p. 27) that there does probably not exist a unique efficient set of (labour market) institutions that minimize the equilibrium rate of unemployment or the unemployment increase after a demand shock. This leaves room for a set of multiple equilibria, each of them leading to the same total labour costs and labour market results which are in some sense optimal or at least satisfactory for society. Next, as put forward by Freeman (1988,



p. 79) there is no guarantee that labour market institutions developed in one country can, with success, be transferred to another. Finally, it remains an open question whether labour market harmonization should be the outcome of a voluntary process on the basis of national choices, or whether it should be set by community legislation. E.g. Padoa-Schioppa et al. (1987, p. 87-88) argue that there is a strong case for national experimentation in labour policy areas in the EC, combined with increased dissemination of information and exchange of experience. It is hoped that demonstration effects will gradually produce convergence on the best practices. A similar idea is found in Flanagan et al. who state that "once a country is open to international competition and possibly also to unhindered mobility of people and capital, there is no way an inefficient system of rules and regulations can survive for a long time" (p. 28). Or to use the words of Britton & Mayes (1992, p. 61) "convergence of institutions may ... occur as the natural counterpart of closer economic integration".

Yet, most economists recognize that institutional changes in voluntary organizations like e.g. trade unions, are very difficult to achieve, institutions having an innate tendency to continuity (vested interests; high social, economic and political costs of change). This implies that a long transition period may be required. Therefore we agree with Begg & Mayes (1992, p. 248-249) that there may be a number of policies that can make structural convergence easier (including the reform of wage bargaining and indexation mechanisms, and perhaps also involving the universal adoption of common labour market regulation).

APPENDIX 1. The Barro-Gordon model and our 'competing claims' model for the NAIRU: an econometric investigation

It goes without saying that the relations that we put forward in sections 5 and 6 require a firmer empirical test than the 'eyeball econometrics' we have performed until now. This appendix investigates the empirical validity of our model for the NAIRU (equation 8) in combination with the Barro-Gordon model presented in section 3.

The implications of the latter can briefly be summarized as follows: the equilibrium rate of inflation in a country depends positively on the equilibrium unemployment rate (NAIRU) and the relative aversion of policy makers to unemployment (relative to inflation). It depends negatively on the slope of the short-term Phillips curve. As for the empirical translation of the second factor, we consider central bank independence and adherence to a fixed exchange rate mechanism with a credible anti-inflationary anchor (say the EMS) to reflect particular aversion to inflation.

We simultaneously estimated the following inflation and unemployment equations:

$$\dot{p}^* = \alpha_0 + \alpha_1 u^* - \alpha_2 Ea_2 - \alpha_3 CBI - \alpha_4 EMS - \alpha_5 MAJ + \alpha_6 SIG$$

$$u^* = \beta_0 - \beta_1 ALMP - \beta_2 (1/DUR) + \beta_3 CI + \beta_4 TAX + \beta_5 TEMP$$

with :  $\dot{p}^*$  : equilibrium (consumer price) inflation rate;  
CBI: central bank independence indicator;  
EMS: EMS dummy;  
MAJ: indicator of government power;  
SIG: indicator of government instability in the 1980s;  
TEMP: extent of temporary layoff procedures  
 $\alpha_i, \beta_i > 0$

Our equation for equilibrium inflation partially relies on Grilli, Masciandaro & Tabellini (1991, table 15), who also include a central bank independence indicator and an EMS-dummy to explain inflation differentials across OECD countries. Further, these authors add a number of political variables (MAJ, SIG). We shall

go into these below. As can be seen, we extend the work of Grilli et al. in line with our interpretation of the Barro-Gordon model and add the NAIRU ( $u^*$ , see table 5) and the estimated short-run wage responsiveness to unemployment, i.e. the slope of the short-run Phillips curve (our  $Ea_2$  in table 5), as explanatory variables.

Table A1 presents additional data with respect to the other variables (for detailed data sources, see appendix 2). As a proxy for the equilibrium inflation rate ( $\dot{p}^*$ ) we use the average inflation (consumption deflator) in 1982-91. CBI is a summary indicator for central bank independence. Underlying this indicator are indicators for political, as well as for economic independence. Source: Grilli, Masciandaro & Tabellini (1991). As far as Sweden, Norway and Finland are concerned, for which Grilli et al. present no data, we assigned the same indicator value as for France. Support for this choice can be found in Parkin (1987) and Alesina (1989). EMS is a dummy for the countries participating in the exchange rate mechanism of the European Monetary System.

MAJ and SIG are two political variables, taken from Grilli et al. (except for Finland, Norway and Sweden<sup>22</sup>). The former stands for the fraction of time between 1950 and 1989 for which government was characterized by majority rule, i.e. supported by a single party that had a majority in the legislature. The idea is that strong governments are better able to execute unpopular policy programmes (e.g. cut expenditures, raise taxes), whereas weaker (coalition or minority) governments are not. The latter tend to have higher debt, deficits, seigniorage and inflation.

SIG stands for the number of significant government changes in the 1980s. Grilli et al. consider a change to be significant if the following conditions are met: for a majoritarian parliamentary system (the Anglo-Saxon countries and France) there has to be a change in the party of the prime minister, for a representational system there has to be a change in both the prime minister party and the coalition of parties supporting the government. SIG is expected to raise inflation. If countries are 'vulnerable' to government instability, governing parties have a high chance of

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<sup>22</sup> For these countries our sources are Macridis (1990) and Larousse (various issues).

not being in office the next year, i.e. of not having to face the burden (deficits, debts, inflation) of their policies. The expectation is that this generates higher inflation.

Table A1. Inflation and relevant structural and institutional characteristics in the OECD

Country	$\dot{p}^*$	CBI	EMS	MAJ	SIG	TEMP
<u>EC members</u>						
Belgium	4.01	7	1	9.8	0	0
Denmark	4.88	8	1	0.0	1	1
France	5.29	7	1	41.5	3	0
Germany	2.42	13	1	9.6	1	0
Ireland	5.66	7	1	65.9	3	0
Italy	8.95	5	1	0.0	4	1
Netherlands	2.08	10	1	0.0	0	0
Spain	8.46	5	0	50.0	1	0
UK	5.65	6	0	92.7	0	0
Average	5.27	7.6	.	29.9	1.4	.
Stand. dev.	2.21	2.4	.	32.1	1.4	.
<u>Potential EC members</u>						
Austria	3.20	9	0	39.0	0	0
Finland	5.91	7	0	0.0	1	0
Norway	6.56	7	0	29.4	3	0
Sweden	7.92	7	0	5.0	1	0
Switzerland	3.40	12	0	0.0	0	0
Average	5.40	8.4	.	14.7	1.0	.
Stand. dev.	1.83	2.0	.	16.3	1.1	.
<u>Other countries</u>						
Australia	7.33	9	0	26.8	1	0
Canada	4.96	11	0	80.5	2	1
Japan	1.69	6	0	80.5	0	0
US	4.38	12	0	41.5	1	1
Average	4.59	9.5	.	57.3	1.0	.
Stand. dev.	2.01	2.3	.	23.8	0.7	.

(.): data not relevant

In the unemployment equation TEMP is a new variable. It is a dummy variable which equals 1 for countries where temporary layoff unemployment is quite frequent (source: Atkinson & Micklewright, 1991, p. 1684). The underlying idea is that temporary layoff procedures reduce the responsiveness of wages to unemployment ( $a_2$ ).

Since these procedures imply that workers who lose their jobs, have a fair chance of being recalled, they may decrease the search intensity of the average unemployed and thus the pressure exerted on wages. According to equation (3) or (4) this will raise the NAIRU. Further, we mention that we followed Layard et al. (1991) and assigned a value of 48 (months) for the benefit duration variable (DUR) in countries with indefinite benefit periods. Finally, notice that we included the inverse of DUR in the unemployment equation.

Table A2 reports our 'best' estimation results. The estimation method was 3SLS, with a constant, CBI, EMS, MAJ, SIG, ALMP, 1/DUR, CI, TAX and TEMP used as instruments. Between brackets are absolute t-values. The number of observations was always 18.

The third result is special. Unlike the first and second results, which concern consumer price inflation and the period 1982-91, the third result relies on data for GDP price inflation and concerns 1980-89 (i.e. the data used by Grilli et al.). We added this result in an attempt to investigate the 'robustness' of our findings.

The following conclusions can be drawn. First, for both our Barro-Gordon interpretation of equilibrium inflation and our model for the NAIRU, the results are most encouraging. They are even quite convincing for the impact on unemployment of active labour market policy, benefit duration, the degree of centralization and taxes. They are equally well-established for the impact on inflation of central bank independence, the EMS and the political variables. The results are slightly less good for the coefficients on  $u^*$  and  $Ea_2$  in the inflation equations. Though these always receive the expected sign, significance is sometimes low. A reason may be that these variables are strongly correlated (see equation 3 or 4): correlation amounts to -0.68. Omitting  $Ea_2$  in the second estimation, the coefficient on  $u^*$  becomes highly significant.

Second, the 'best' results presented in table A2 hide some 'interesting' results not presented. For example, a number of variables showed up highly insignificant when included as an explanatory variable for estimation. Among these are the benefit

Table A2. Estimation results for equilibrium unemployment and inflation

<u>RESULT 1</u>								
Equation for $\dot{p}^*$								
Const.	$\bar{u}^*$	Ea2	CBI	EMS	MAJ	SIG	R <sup>2</sup>	SER
9.50 (5.25)	0.11 (1.16)	-0.58 (1.30)	-0.44 (3.95)	-2.71 (5.35)	-0.03 (3.58)	0.79 (4.41)	0.84	0.83
Equation for $\bar{u}^*$								
Const.	ALMP	1/DUR	CI	TAX	TEMP		R <sup>2</sup>	SER
-3.72 (1.60)	-0.36 (2.21)	-44.5 (5.86)	0.67 (7.32)	4.31 (4.04)	3.53 (4.01)		0.94	1.07
<u>RESULT 2</u>								
Equation for $\dot{p}^*$								
Const.	$\bar{u}^*$	Ea2	CBI	EMS	MAJ	SIG	R <sup>2</sup>	SER
7.57 (6.60)	0.21 (3.45)	-	-0.36 (3.59)	-2.75 (5.08)	-0.03 (3.93)	0.82 (4.31)	0.82	0.89
Equation for $\bar{u}^*$								
Const.	ALMP	1/DUR	CI	TAX	TEMP		R <sup>2</sup>	SER
-3.75 (1.61)	-0.37 (2.22)	-44.3 (5.83)	0.67 (7.32)	4.32 (4.05)	3.50 (3.98)		0.94	1.07
<u>RESULT 3 (for GDP deflator and 1980-89!)</u>								
Equation for $\dot{p}^*$								
Const.	$\bar{u}^*$	Ea2	CBI	EMS	MAJ	SIG	R <sup>2</sup>	SER
10.13 (5.73)	0.23 (2.47)	-0.74 (1.70)	-0.53 (4.88)	-2.29 (4.63)	-0.02 (2.75)	1.07 (6.04)	0.90	0.84
Equation for $\bar{u}^*$								
Const.	ALMP	1/DUR	CI	TAX	TEMP		R <sup>2</sup>	SER
-4.30 (1.88)	-0.28 (1.74)	-46.2 (6.16)	0.71 (7.89)	4.25 (4.04)	3.71 (4.28)		0.94	1.07

Note: All unemployment equations include an additional dummy, which takes the value 1 for Spain and Ireland and -1 for Switzerland. The estimated coefficients (and t-values) for this dummy are : for result 1: 7.7 (11.4), for result 2: 7.8 (11.4), for result 3: 7.3 (10.9). (This dummy was also used as instrument).

replacement ratio (RR) and the squared centralization ranking ( $CI^2$ , which we included to test for the favourable effects of extreme decentralization). Further, to investigate the effect of indexation and real import price developments, we added the product of IND and RIP (IND\*RIP) as an explanatory variable. Though the expectation was to obtain a positive sign, an insignificant negative sign showed up.

Third, some critical comments may be necessary. First, for MAJ we relied on the data of Grilli et al. which concern the period 1950-89. It might be more adequate to use data for the 1980s (cf. SIG). Second, though we are able to explain the major part of the variation in unemployment across the OECD countries on the basis of a relatively low number of explanatory variables, it should be added that a dummy had to be used to capture the impact of 'unknown' determinants for Spain, Ireland and Switzerland (see the note below table A2).

## APPENDIX 2. Data sources underlying Ea, and E7

$Ea_2$  has been calculated as a (weighted) average of original estimates presented by:

Alogoskoufis, G. & A. Manning (1988), 'On the persistence of unemployment', Economic Policy 7, October, p. 427-469 (their table 5)

Andersen, P.S. (1989), 'Inflation and output: a review of the wage-price mechanism', BIS Economic Papers, nr. 24, January (his table 4)

Bean, C., Layard, R. & S. Nickell (1986), 'The rise in unemployment: a multi-country study', Economica 53, Supplement, p. 1-22 (their table 3)

Chan-Lee, J. H., Coe, D. & M. Prywes (1987), 'Microeconomic changes and macroeconomic wage disinflation in the 1980s', OECD Economic Studies 8, Spring, p. 121-157 (their table 6, from which we took data for the large countries and Spain)

Grubb, D., Jackman, R. & R. Layard (1983), 'Wage rigidity and unemployment in OECD countries', European Economic Review 21, March/April, p. 11-39 (their table 1)

Kawasaki, K., Hoeller, P. & P. Poret (1990), 'Modelling wages and prices for the smaller OECD countries', OECD Working Papers, 86, October (their table 2, from which we took data for the small countries except Spain)

Layard, R., Nickell, S. & R. Jackman (1991), Unemployment. Macroeconomic performance and the labour market, Oxford, Oxford University Press (chapter 9, their table 7)

Newell, A. & J. Symons (1985), 'Wages and unemployment in the OECD countries', Centre for Labour Economics, London School of Economics, Discussion Paper, nr. 219 (their tables 6c and 6d)

OECD, (1989), Economies in transition. Structural adjustment in OECD countries, Paris, OECD (table 2.6.)

$E\pi$  has been calculated as an average of original estimates by:

Alogoskoufis, G. & A. Manning (1988), 'On the persistence of unemployment', Economic Policy 7, October, p. 427-469 (their table 4)

Barro, R. (1988), 'The persistence of unemployment', American Economic Review, 78, nr. 2, p. 32-37 (his table 1)

Heylen, F. & P. Verhulst (1990), 'The Phillips curve slope and the cost of disinflation in the 1980s', Paper presented at the 2nd Annual Conference of the European Association of Labour Economists (EALE), Lund, Sweden (their table 1)

Layard, R., Nickell, S. & R. Jackman (1991), Unemployment. Macroeconomic performance and the labour market, Oxford, Oxford University Press (chapter 9, their table 5, first column)

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