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The impact of EMU on European unemployment

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Oesterreichische Nationalbank

Working Paper 34

The impact of EMU on European unemployment

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Editorial

In this Working Paper José Viñals (Banco de España and CEPR) and Juan F. Jimeno (Universidad de Alcalá, FEDEA, and CEPR) examine to what extent Economic and Monetary Union (EMU) may affect the future evolution of European unemployment. After discussing short and long-run determinants of unemployment in general they estimate a multivariate time series model for EU countries. With this model it is possible to separate country specific factors from common factors of unemployment. There seems to be evidence that a great fraction of European unemployment is determined by a common factor which could become more important with deeper financial and economic integration in Europe. Surprisingly, there is no evidence that changes in real exchange rates have any significant influence on European unemployment rates.

November 5, 1998

1. Introduction¹

Persistent unemployment is the top social and economic problem of most EU countries. Nowadays, the unemployment rate in most EU countries is above 10 per cent and, although unemployment has decreased during expansions, the average EU unemployment rate within each cycle has increased since the early seventies. Although unemployment evolutions have been to some extent similar in EU countries, there are some outliers. On the one side, Portugal, Austria, UK, The Netherlands, and Luxembourg, which have unemployment rates close or below 7 per cent, are the “low unemployment” countries. On the other side, Spain, with roughly 20 per cent unemployment, and Finland, whose unemployment rate is close to 15 per cent, are the extreme examples of the EU unemployment “disease”. Participation rates, the incidence of unemployment among some population groups (youth, female, low skilled workers), and the duration of unemployment spells also vary across EU countries. This variation suggests that there may be some peculiarities in the unemployment situation of these countries. However, the overall situation regarding unemployment is that most of these countries are “converging” to unemployment rates close or above 10 per cent.

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

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

¹ This paper partly draws from J. Viñals and J.F. Jimeno (1996): “Monetary Union and European Unemployment” CEPR, working paper no. 1485. The views expressed by the authors are purely personal and do not thus necessarily coincide with those of the institutions with which they are affiliated

Furthermore, EMU may bring up some real effects, for instance, on price setting -through the deepening of economic integration- and on wage setting -through changes in the wage determination process- which may have some effects on unemployment.

We organise our discussion of the likely effects of EMU on unemployment in several steps. In section 2 we take care of some preliminaries. Firstly, we present some back-of-the-envelope calculations of the employment growth needed to bring down unemployment to “acceptable” rates, say 5% in about half a decade. Taking this as a reasonable benchmark, and given foreseeable labour force growth in the EU, simple calculations show that solving the unemployment problem requires sustained employment growth around 1.5 per cent per annum. Thus, the relevant question to be addressed is under which conditions can EU countries achieve sustained non-inflationary growth of this order of magnitude, and to what extent EMU makes these conditions easier to meet. Secondly, we present a well-known model of the labour market to be used in the identification of the determinants of unemployment over the short and the long run. After these preliminaries, in section 3 we discuss some empirical evidence that is relevant for the discussion of the costs of forgoing the nominal exchange rate as an instrument for short-term macroeconomic adjustment. Firstly, we estimate the sources of shocks to unemployment across EU countries and disentangle the “common” European component of those shocks from the national/regional component. Secondly, we survey some evidence on the sources of exchange rate fluctuations. Thirdly, we report some estimates of the degree of real wage rigidity across EU countries in order to gauge the extent to which nominal exchange rate changes translate into real exchange rate changes. Finally, we discuss some evidence on the impact of real exchange rate fluctuations on employment at the industry/regional levels. In section 4 we look at the effects of EMU on macroeconomic policies, with particular emphasis on the Stability Pact, and on price and wage determination processes, so as to assess the overall consequences for unemployment. The paper ends with section 5, which contains some concluding remarks.

2. Preliminaries

2.1 What does it take to bring EU unemployment down to 5 per cent?

By definition, unemployment evolutions depend on labour force growth and employment growth. In the current scenario, given by the forecasts of labour force and employment growth in the EU, unemployment will continue to be at high levels in most countries during the next years. In Table 1 we present some estimates (from OECD, 1997) of labour force growth and employment growth in EU countries, and compute the unemployment rate

implied by them in the year 2004.² According to these estimates, the EU will experience labour force growth of around 0.3 per cent per annum, and employment growth only slightly higher, 0.4 per cent per annum. As a result, the unemployment rate will only fall by a small amount, and will be above the 10 per cent mark well into the next decade. Only the “low unemployment” countries (Austria, The Netherlands, Portugal, and UK), together with Denmark and Ireland, which are enjoying high employment growth, will achieve moderately low unemployment. In the rest of the EU countries, unemployment will only fall slowly or even increase (see columns 1 and 4 in Table 1). Needless to say, these are only unemployment projections based on arbitrary labour force and employment growth estimates. However, these projections make the point that under the current growth paths of employment and labour force, unemployment will continue to be a very serious problem in most EU countries.

As a benchmark for comparison, we compute the employment growth needed to reduce EU unemployment to 5 per cent by the year 2004 (again, an arbitrarily chosen scenario). This growth rate turns out to be around 1.5 per cent per annum (1.1 points more than under the OECD projections in column 3 of Table 1). We distribute this additional growth equally across countries and compute the year by which the unemployment rate will be close to 5 per cent (column 5 in Table 1). Under this alternative scenario, all countries but three will reduce unemployment rates to that figure by the year 2005. The three exceptions are Spain, which starts with a very high unemployment rate and is expected to experience high labour force growth, and Germany and France, whose employment performance in the 1996-98 period and, consequently, our employment growth projections for 1999 onwards, are rather low.

As already mentioned, these rough computations are not to be taken as precise predictions of unemployment evolutions in the EU but rather as illustrative exercises. They are presented to make just the following point: under the current scenario of low labour force growth and only slightly higher employment growth, unemployment rates will fall slowly in most EU countries. To reduce unemployment rates significantly in the medium term requires additional employment growth of about one per cent per annum. This brings the employment growth required to reduce unemployment to about 1.5 per cent per annum throughout half a decade. Translated into GDP growth, this may require growth rates of around 3/3.5 per cent. The relevant question is then if European economies can achieve sustained, non-inflationary growth of this order of magnitude. Although this may not seem an

² For 1997 and 1998 we take the OECD projections of labour force and employment growth. For 1999 onwards, we take the average of the 1996 growth rates and the OECD projections for 1997-98.

insurmountable challenge, structural conditions in European labour markets are not nowadays conducive to this goal. In the next sections, we discuss the influences of EMU on these impediments in the fight against unemployment. But before turning to this discussion, it is useful to present a model of the determinants of unemployment so as to provide the conceptual framework for discussing how EMU could impact on European unemployment.

Table 1. Forecasts of unemployment rates in EU countries

	(1)	(2)	(3)	(4)	(5)
France	12.7	0.6	0.33	13.6	2008
Germany	11.1	0.0	-0.07	13.9	2010
Italy	12.2	0.2	0.2	12.0	2005
Austria	6.3	0.0	-0.1	6.8	1999
Belgium	12.6	0.2	0.5	10.7	2004
Ireland	10.8	2.9	3.5	6.9	2002
The Netherlands	6.2	1.5	2	--	1999
UK	6.1	-0.07	0.8	--	1998
Greece	10.4	1.5	1.3	11.3	2005
Spain	20.8	0.8	1.6	15.6	2007
Portugal	7.1	0.3	0.5	6.4	2000
Denmark	8.1	1.3	1.8	--	1999
Finland	14.7	0.2	1.7	5.9	2002
Sweden	8.1	-0.2	-0.1	7.1	2000
EUEU	11.2	0.3	0.4	10.3	2004

(1) Unemployment rate in 1997 (% , OECD forecast)

(2) Annual Labour Force Growth (% , average 1996 and OECD projections for 1997-98)

(3) Annual Employment Growth (% , average 1996 and OECD projections for 1997-98)

(4) Unemployment rate in the year 2004 (% , given columns 2 and 3)

(5) Year by which the unemployment rate will be around 5 per cent under the alternative scenario³.

³ Alternative scenario: Average employment growth in the EU: 1.5 per cent per annum, with additional growth respect to column (4) distributed equally across countries.

2.2 A model of the determinants of unemployment

Most models of the labour 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 labour market.

Figure 1 presents a simple representation of the labour market that 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 labour demand equation) which establishes a negative relationship, I_{SR}^D , between real wages and employment, which depends on expected demand. The labour force is given by I^S , so that a perfectly competitive labour market will yield full employment at 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, I^W . Assuming correct expectations, the resulting short-run equilibrium unemployment rate is given by $I^S - I_{SR}^*$ and inflation will be constant. Misconceptions on aggregate demand make the actual unemployment rate, $I^S - I_{SR}^*$, 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, I_{LR}^D , at a level that depends on the user's 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 mark-up of actual wages over reservation wages.

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. And, on the other, there may be hysteresis effects, so that long-run equilibrium unemployment may depend on the path followed by actual unemployment. (In terms of Figure 1, this means that the position and, plausibly, the slope of the wage-setting and price setting curves, I^W and I_{sr}^D , depend on the path followed by actual unemployment.)

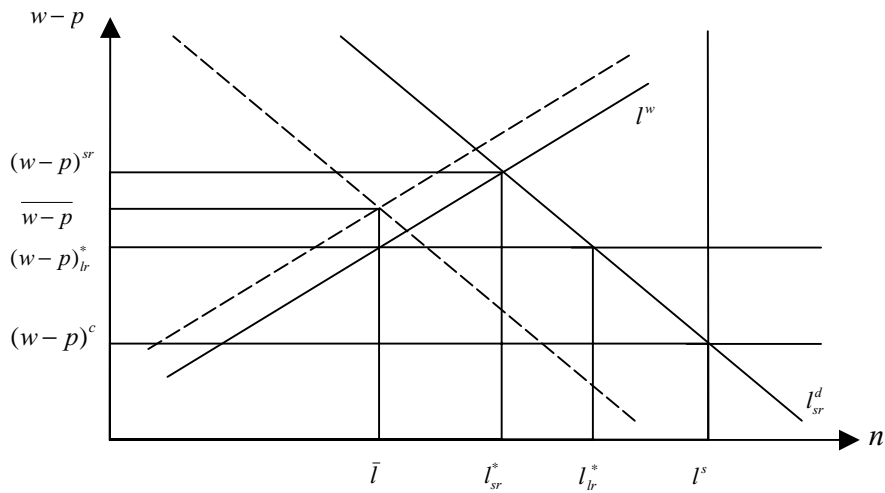


Figure 1

Thus, the determinant of equilibrium unemployment can be divided into three categories (see also Figure 2):

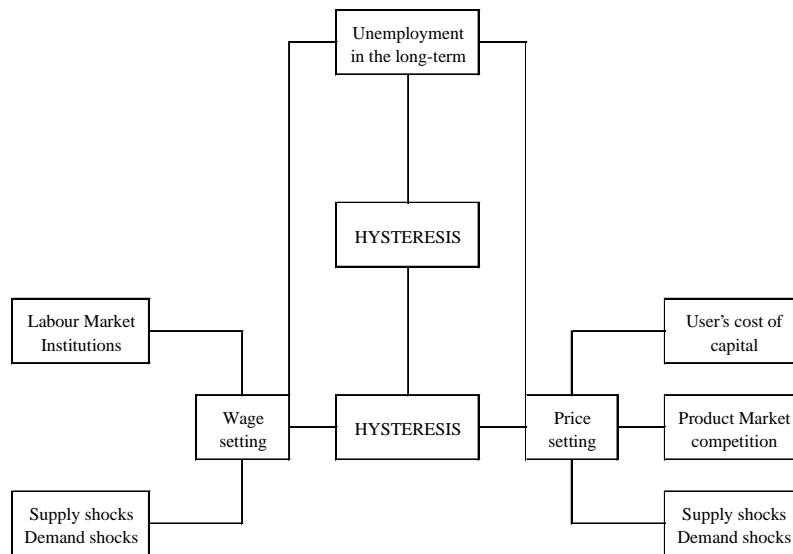
Factors that influence wage-setting behaviour. In Layard et al.’s (1991) so-called battle of the mark-ups, the position of the wage setting-equation depends on the target real wage (or “wage pressure”), while its slope is related to the degree of real wage rigidity. In particular, as the degree of wage pressure and real wage rigidity increase, so does equilibrium unemployment. Additionally, the structuralist theory of Phelps (1994) 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 effected primarily 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.

Factors that influence price-setting behaviour. While different variables may effect price setting, in the battle of the mark-up’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 labour 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.

Hysteresis effects. They relate the long-run wage setting and labour 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,

This model of the labour market has rather clear implications regarding the determinants of unemployment. In particular, unemployment will tend to be high if labour market institutions contribute to generate sustained wage pressures, even when unemployment is high. Moreover, sustained price pressures resulting from insufficient competition in product markets, low total factor productivity growth, and a high user's cost of capital also may increase equilibrium unemployment.

Figure 2: Unemployment Determinants



3. The costs of a common currency

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

limited.

3.1. The sources of shocks to unemployment

In order to infer how symmetric shocks could be under EMU, recent empirical analysis has generally looked at the present situation in the EU and compared it to the US.⁴ While the evidence is far from uncontroversial (see Viñals, 1994, and 1996 for surveys), the dominant conclusion seem to be that asymmetric shocks seem to be quantitatively more important in the EU than in the US. However, a subset of EU countries known as the “core” -Germany and EU countries which have traditionally maintained closer economic and monetary links with it- are rather similar to the US in this regard (see, for instance, Bayoumi and Eichengreen, 1993). The conclusion that follows is that a “narrow EMU” would work satisfactorily, but that a “wider EMU”, including the “periphery”, will be ridden by asymmetric shocks and serious national imbalances.

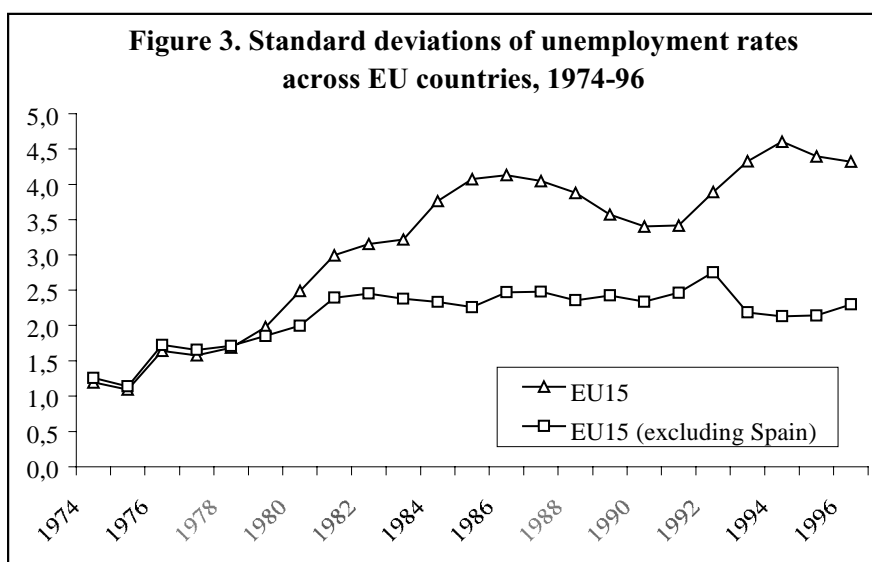
There are several reasons to cast doubts on this conclusion. First, the degree of synchronisation of shocks across EU countries is endogenous, and several papers have shown that the correlation of the business cycles across EU countries have increased as economic and financial integration proceeded (see, Artis and Zhang, 1995, Fatás, 1997, and Frankel and Rose, 1997). This finding contrasts with the view that EMU will result in higher specialisation, regional concentration of production and, thus, more likely asymmetric shocks (Krugman, 1993). Secondly, when looking at unemployment evolutions, the data seem to support the existence of a significant “common component” in the unemployment rates of EU countries, and that both “core” and “periphery” countries are rather similar in this regard. We now turn to present some empirical evidence on the sources of shocks to unemployment rates across EU member countries.

There are several approaches to assessing the relative importance of the different sources of shocks to unemployment in a cross-section of countries or regions. There is the descriptive approach, which consists of measuring the evolution of unemployment dispersion, as indicated by the standard deviation of unemployment in a given sample. Were unemployment exclusively driven by a common shock with the same effects on unemployment in all countries, then this index of unemployment dispersion should remain constant; were the incidence of specific shocks increasing over time, then the index should show an increasing trend.⁵ Regarding EU countries, the evolution of unemployment dispersion, as measured by the evolution of the standard deviation of unemployment rates,

⁴ Needless to say, the “Lucas critique” applies here.

⁵ The converse statements are not true, though.

shows an increasing trend in dispersion from the mid-1970s up to the mid-1980s, a mild decreasing trend since then until 1990, and, again, a surge in the early 1990s (see Figure 3). However this evolution (and, in particular, its rise in the early 1990s) is heavily influenced by the contribution of Spain, which, with almost 10 per cent of the EU labour force, has experienced very wide fluctuations in the unemployment rate. Thus, when Spain is excluded from the sample, the standard deviation of unemployment rates across the rest of EU countries increases by less up to 1981, and remains more or less constant since then. We have computed a similar index of unemployment dispersion using regional data (at the EUROSTAT NUTS-1 level of disaggregation) and find a similar picture: there is no significant overall increase in the dispersion of regional unemployment rates since the mid-1980s up to the early 1990s, and when dispersion increases in the early nineties, it is mainly due to the contribution of Spanish regions.



A more rigorous method for assessing the relative importance of different sources of shocks to national/regional unemployment rates consists of using econometric models to break unemployment down into different components: a “common” EU component, and a national/regional “specific” component. Our decomposition of unemployment rates in EU countries and regions is based on the following recursive model:

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

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 $A(0) = B(0) = C(0) = 0$), and the \mathcal{E} 's are shocks to unemployment. Under this model, nation-specific shocks have no effects at the EU level, and region-specific shocks have no effects at the national level.

Since the system is recursive and we have different sample sizes for national and regional unemployment rates, we estimate the first two equations to decompose shocks to national unemployment into a “common” EU component and a nation-specific component. The decomposition of shocks to regional unemployment rates is based on the estimation of the three-equation system on a panel of EUROSTAT NUTS-1 regions for each country, controlling for regional fixed effects, and imposing the constraint that the coefficients of 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 Auto-regression (VAR):

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

with $x^I = (u^{EU}, u^I, u^J)$ 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 (over-identifying) restrictions imposed on the recursive model (1).

The results are presented in Tables 2 and 3. As for national unemployment rates, the “common” EU component of the shocks explains, on average, almost half of the variance of EU member countries’ unemployment rates within a one year horizon. This proportion increases to 59 per cent, 70 per cent, 78 per cent and 83 per cent after one, two three, and four years, respectively. Thus, EU-wide innovations to unemployment seem to play a very important role in driving national unemployment rates even in the short run.⁶ This is true for most member countries, except for Italy, Portugal, and Sweden. Apart from these exceptions, our results do not support any clear distinction between the “core” and the

⁶ As a reference point, we have performed a similar decomposition of the US states’ unemployment rates during the 1976-90 period. We find that the US-wide shocks to unemployment explain, on average, 79 per cent of the variance of states’ unemployment rates within the year, and around 85 per cent after one to five years.

“periphery” in this regard. As for regional unemployment rates, we find that region-specific shocks explain around 65 per cent of the variance of regional unemployment rates. Moreover, the combination of EU-wide and region-specific shocks leaves only about 20 per cent of the variance of regional unemployment rates to be explained by national shocks (with the only exception of Denmark).

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

Table 2
Proportion (in %) of the variance of national unemployment rates explained by innovations to the EU unemployment rate

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

*Weighted average

Table 3

Proportion (in %) of the Variance of Regional Unemployment Rates Explained by:

	1. INNOVATIONS TO THE EU UNEMPLOYMENT RATE					2. INNOVATIONS TO THE NATIONAL UNEMPLOYMENT RATE					3. INNOVATIONS TO THE REGIONAL UNEMPLOYMENT RATE*				
	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	45	50	26	22	17	15	15	72	50	38	35	35
Denmark	1	3	3	22	49	92	86	64	52	52	7	11	14	6	6
Germany	5	°11	11	14	12	24	23	22	22	22	71	66	64	64	66
France	19	26	26	26	26	10	6	5	4	5	71	68	70	72	70
Spain	4	17	17	24	27	10	6	5	6	5	86	77	70	71	68
Italy	1	6	6	12	22	17	11	15	15	15	82	83	73	67	58
UK	24	26	26	21	21	48	29	31	28	31	28	45	51	51	47
EU*EU*	11	17	17	20	20	25	18	18	18	18	64	65	62	61	64

*Weighted Average

3.2 Evidence on the sources of exchange rate fluctuations

In the literature on Optimal Currency Areas, the nominal exchange rate is thought to determine –in the short-term- the real exchange rate and, thus, foreign demand. Therefore, in this framework, exchange rate management helps to smooth short-term economic fluctuations resulting from national (asymmetric) shocks. Nevertheless, in this respect, it has been argued that the growing economic openness among EU countries within the Single Internal Market makes the use of nominal exchange rate to restore or improve competitiveness increasingly less effective in economic terms, and increasingly more difficult in political terms (see, for instance, Eichengreen and Ghironi, 1995, and Viñals, 1996). Furthermore, the evidence of a significant degree of real wage rigidity in European labour markets (see section 3.3 below) suggests that nominal exchange rate movements are not very effective in moving the real exchange rate in the desired direction. Finally, and perhaps most importantly, in a world of free capital movements, where foreign exchange markets are often subject to self-fulfilling speculative crises which take the exchange rate away from where fundamentals suggest it should be during prolonged periods, there is little room for nominal exchange rate management.

Some recent evidence also casts some doubts on the effectiveness of nominal exchange rates as a tool for short-term macroeconomic management. In a recent paper, Canzoneri, Vallés, and Viñals (1996) investigate whether European nominal exchange rates actually address real imbalances, or rather, are basically driven by monetary and financial considerations. The authors estimate a structural VAR model on three variables –output, the nominal exchange rate and government spending- where the long-run restrictions come from the well-known Mundell-Fleming model. Making use of these restrictions, monetary and financial shocks are separated from real shocks (both supply and demand), and their relative roles in driving output and exchange rate fluctuations assessed. The data runs from 1970:1 to 1985:4, the period of “relative exchange rate flexibility” which goes from the end of the Bretton Woods System to the hardening of the Exchange Rate Mechanism of the European Monetary System. The variables are in relative terms (taking Germany as the center) so as to capture potential asymmetric shocks.

The empirical results show that in many EU countries – both large and small, more or less open, and with different economic structures- most of the short-term variation in relative national outputs can be explained by real shocks (see Figure 4). These shocks, nevertheless, play a very limited role at explaining movements in nominal exchange rates (Figure 5). As a consequence, nominal exchange rates do not seem to respond much to the asymmetric shocks which create macroeconomic imbalances thus reducing their value as a

tool for macroeconomic adjustment.⁷ This means that there are further reasons to believe that the costs of EMU will be quite small as a result of forgoing nominal exchange rate flexibility.

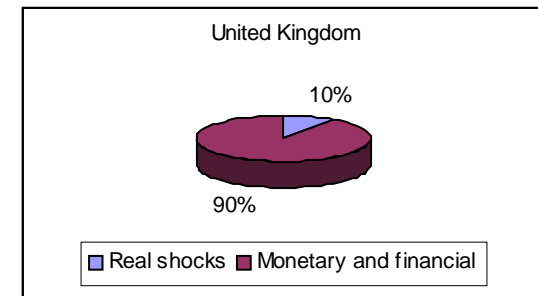
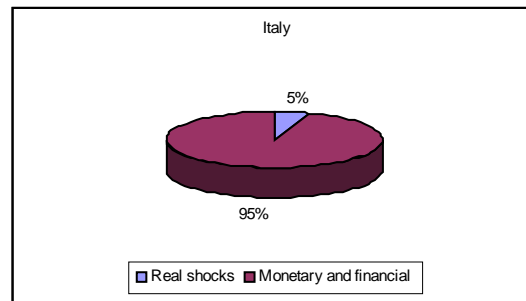
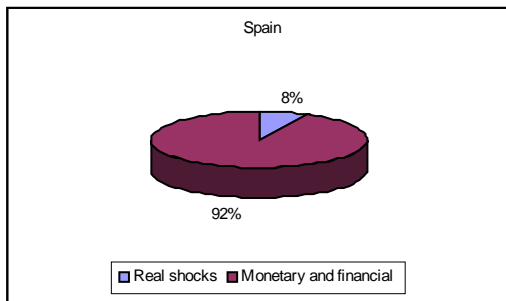
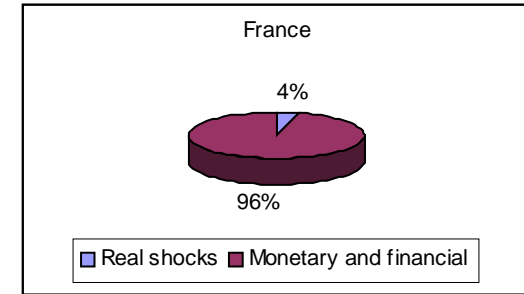
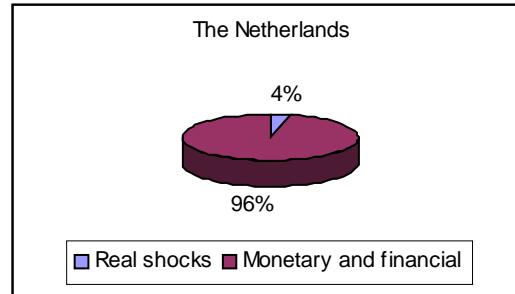
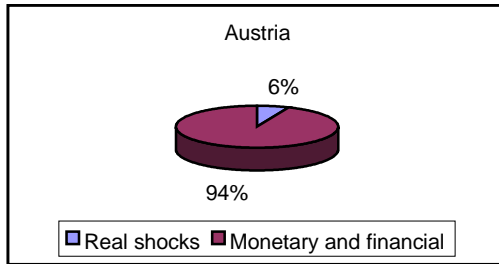
3.3. Real wage rigidity and persistence

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

There have been numerous attempts at estimating the degree of real wage rigidity in EU countries. Some of the most-often quoted estimates are from Layard et al. (1991). These estimates come from structural estimation of wage and price equations, which is sometimes criticised on identification grounds and on the measurement of relevant regressors. Since what matters, as far as EMU is concerned, is the sources of shocks and their transmission through the labour markets, an alternative approach of estimating the degree of real wage rigidity can provide interesting insights. This approach consists of estimating the dynamic responses of real wages and unemployment to different shocks and inferring from them the degree of real wage rigidity and shock persistence. Under the assumptions of constant returns to scale and constant mark-up pricing, the initial response of unemployment to a transitory wage-push shock is determined by the response of real wages to unemployment, while the mean lag of the adjustment path followed by unemployment after such a shock depends on the response of unemployment to lagged unemployment.

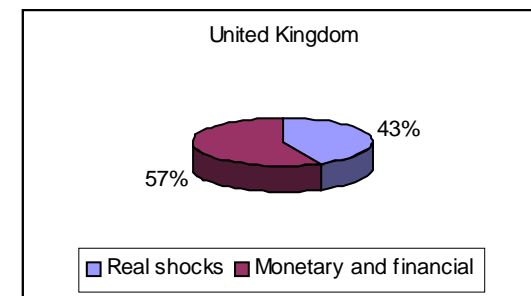
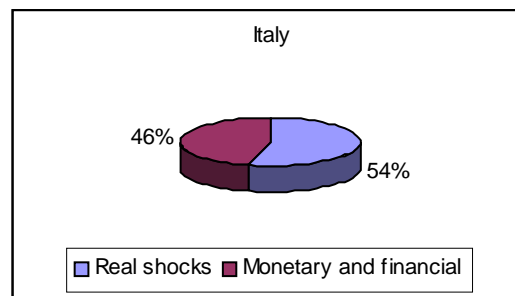
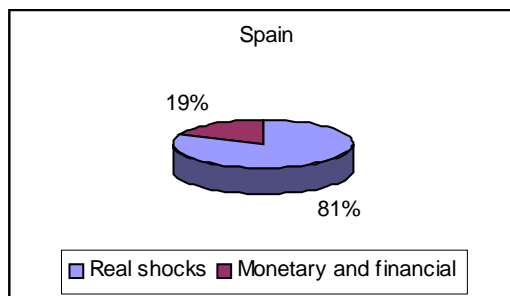
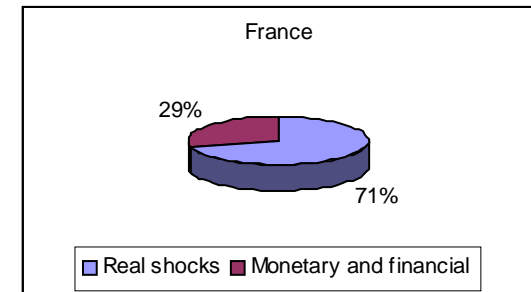
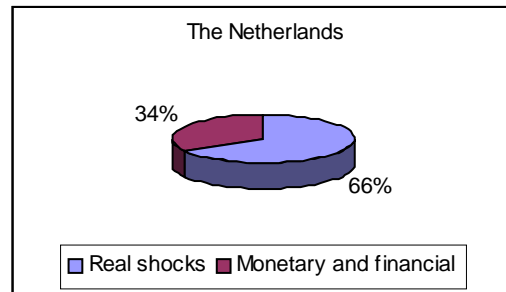
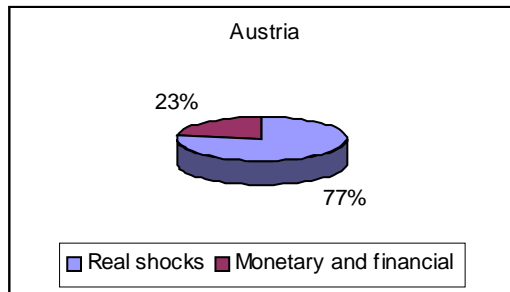
⁷ These results apply to “average” shocks but not to those big real asymmetric shocks which come say, once in a decade and which may require an adjustment of nominal exchange rates.

Figure 4. Sources of fluctuations for relative output (in %)



Note: 1 year horizon. Relative to Germany

Figure 5. Sources of fluctuation for nominal exchange rates (in %)



Note: 1 year horizon. Relative to Germany

We take a bare-bones version of the theoretical model presented in section 2.2. Assuming constant mark-up pricing, prices are given by:

$$p - w = m + z \quad (3)$$

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 assumed to be negatively related to unemployment, as in the following equation:

$$w - p = -c(u - hu_{-1}) + z^w \quad (4)$$

where u is the unemployment rate, c and h are positive parameters, and z^w 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 are real wages. Combining these two equations yields that unemployment is given by:

$$u = \frac{m}{c} + hu_{-1} + \frac{z^w + z}{c} \quad (5)$$

Assuming that shocks to the price-setting equation are mostly of a “technological” nature with permanent effects on real-wages ($z = e^s$), that shocks to the wage equation includes both technological shocks and (stationary wage push/labour supply shocks, so that $z^w = e^s + e^w$), and that $h < 1$, yields that unemployment is stationary and its initial response to wage push/labour supply shocks is greater the more rigid real wages are. Moreover, the mean lag of the response to unemployment ($h/(1-h)$) is increasing in h . Alternatively, 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 of the impulse response of unemployment to wage push/labour supply shocks. 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 rather simple. First, assuming that $h < 1$, we estimate a VAR composed by the rate of growth of real wages and the unemployment rate and recover the structural parameters (c and h) from the impulse-response of unemployment to shocks which have no long-run effects on real wages. Secondly, assuming that $h = 1$, we estimate a VAR composed of the growth rate of real wages and the first difference of the unemployment, rate, and recover the structural

parameters (c and h) from the impulse-response of unemployment to the same kind of shocks. It should be noted that the model above suggests that the other type of shocks recovered are technological shocks which increase real wages in the long run and do not affect unemployment.

The results of this exercise (together with the estimates from Layard et al., 1991) are reported in Tables 4 and 5. In the first case, when unemployment is assumed to follow a stationary process ($h < 1$) we find that the average degree of real wage rigidity in the EU countries almost doubles that of the US. By countries, only the Netherlands and Ireland seem to be close to the US benchmark. Similarly, the average mean lag response of unemployment to wage-push shocks in EU countries is more than 2 years higher than in the US. In the second case, when unemployment is assumed to follow an $I(1)$ process ($h = 1$), we find qualitatively similar results, although by countries there are some differences with respect to the previous case.

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

3.4. Employment effects of real exchange rate fluctuations

The above notwithstanding, even if nominal exchange rates could be set as to influence real exchange rates, some evidence on the response of employment to the real exchange rate also suggests that forgoing nominal exchange rate flexibility will not be very costly in employment terms. Two recent papers (Burgess and Knetter, 1996, on the G-7 countries, and Dolado, Izquierdo, and Jimeno, 1998, on Spanish regions) are devoted to the estimation of the response of employment at the industry level to exchange rate shocks for the G-7 countries. At the theoretical level, the determinants of this response are mainly the degree of competitiveness of product markets and the regulation of the labour market. The more com-

Table 4

Estimates of Real Wage Rigidity and Persistence

	STRUCTURAL ESTIMATES FROM WAGE AND PRICE EQUATIONS			ESTIMATES FROM VAR (D(W-P),U)		
	Real-Wage Rigidity	Persistence	Mean Lag	Real-Wage Rigidity	Persistence	Mean Lag
Belgium 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 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
EU*EU*	0.42	0.68	2.28	4.09	0.78	3.61
US US	0.25	-0.02	1.62	2.39	0.60	1.53
Japan	0.06	-0.05	<0	2.21	0.65	1.90

*Weighted average. Source for the first three columns: Layard, Nickell and Jackman (1991), chapter 9, pp. 406-407.

Table 5
Real Wage Rigidity in the EU

	ESTIMATES FROM VAR (D(W-P), DU)
Belgium Belgiu	1.42
Denmark	1.10
France France	1.58
Germany	1.48
Ireland	1.68
Italy	1.00
Netherlands	1.52
Spain	1.94
UK	1.16
Austria	0.85
Finland	1.71
Sweden	1.41
EU*EU*	1.39
USUS	0.73
Japan	0.89

*Weighted average

petitive are product markets, the larger are the changes of production patterns brought up by changes in real exchange rates. However, if firms can adjust mark-ups, then price adjustments may partially offset the need for adjusting employment after changes in real exchange rates. Furthermore, labour market regulation (job protection legislation, say) may reduce the response of employment to exchange rate shocks.

Burgess and Knetter (1996) find that exchange rate fluctuations influence employment at the industry level in the expected manner (a real appreciation leads to a decline in manufacturing employment in most sectors⁸.) There are some differences across countries, though. While in the UK, Italy and Canada employment seems to be more sensitive to exchange rate changes than in the U.S., the contrary happens in Germany, France and Japan. Using their own words, “overall, the data are consistent with the view that employment in European Labour Markets is much less influenced by demand shocks and much slower to adjust to the long-run steady state”. In a similar study, Dolado, Izquierdo, and Jimeno (1998) estimate an employment equation using data on 17 sectors (not only manufacturing) and 17 Spanish regions. The specification of their employment equation also includes domestic aggregate

⁸ About 25% of their 95 country-industry observations showed statistically significant negative exchange rate elasticities.

demand and exchange rate volatility as regressors. Their results confirm that while real exchange rate appreciations reduce employment in most industries, reducing exchange rate volatility has nevertheless positive effects on employment.

To sum up, this section has presented evidence that suggests that common shocks are likely to be prevalent once in EMU, that nominal exchange rate flexibility has not played in the past in the EU the “buffer stock” function assumed by the Optimal Currency Areas literature, and that the degree of real wage rigidity in European countries is quite high. Taken together, these bits of evidence tend to suggest that European countries are going to face only very limited costs from not being able to use nominal exchange rates as a short-term tool for addressing macroeconomic imbalances in EMU. If this is the case, the benefits brought up by EMU in terms of more stable macroeconomic policies –both monetary and fiscal- and enhanced market integration are likely to prevail over the costs, resulting in a net beneficial impact on output growth and employment creation over the medium-term.

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

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

4.1 Macroeconomic Policy

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

EMU also comes together with the Stability Pact, which establishes certain norms of fiscal rectitude aimed at preserving or restoring the sustainability of national fiscal positions and at avoiding an inadequate overall policy-mix in the EMU area as a whole. Given the terms of the

Stability Pact, fiscal consolidation may need to proceed in the future in some countries. An important question, therefore, is how fiscal consolidation measures will affect European unemployment in the next years.

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

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

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

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

In sum, while the differing fiscal positions and macroeconomic structures of the member states suggest that fiscal consolidation efforts over the next few years may have different impacts on their economies, any potential short-term costs of fiscal consolidation on economic activity will be minimised –and even reversed- if budgetary adjustments are carried out in an appropriate and credible fashion and, especially, if accompanied by structural labour market reforms. Furthermore, credible progress along fiscal consolidation would contribute to improving the overall macroeconomic mix in the euro-zone, 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 state of public finances in some EU countries, the reduction of budget deficits and debt is a desirable policy in its own right as it is a precondition for avoiding financial unsustainability problems which might jeopardise the chances of achieving balanced economic growth.

4.2 Effects on price and wage setting

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

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

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

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

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

5. Concluding remarks

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

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

There is a significant common component in European unemployment which may even increase by the enhancing effects of EMU on financial and economic integration. As regards unemployment, in “normal times” common shocks are likely to prevail.

The evidence on the very limited role of nominal exchange rates in addressing macroeconomic imbalances, the scant response of real exchange rates to nominal exchange rates, and the small influence on employment of real exchange rates, suggests that the short-run costs of forgoing nominal exchange rates are rather small in employment terms.

In the medium term, what really influences employment creation is sustained, non-inflationary growth. In this respect, it is to be expected that a well-managed EMU and Stability Pact will lead to more stable macro policies, which will promote growth.

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

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