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# What explains high unemployment among low-skilled workers? Evidence from 21 OECD countries

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## Abstract

In OECD countries, unemployment disproportionately affects low-skilled workers. This article examines four explanations: wage-setting institutions, employment regulation, globalization and monetary policy. The analysis is based on pooled regressions for 21 affluent countries over the period 1991–2006. We find no support for the argument that low-skilled workers' employment prospects are hindered by legal minimum wages or strict employment protection, nor that wage inequality improves low-skilled employment. By contrast, investment in active labour market policies pays off and low real interest rates are associated with significantly less low-skilled unemployment. Hence, low-skilled workers' job prospects seem enhanced by a combination of active labour market programmes with monetary policy that fully exploits the economy's growth potential.

## Keywords

active labour market policy, interest rates, low-skilled workers, monetary policy, unemployment

## Introduction

Unemployment disproportionately affects low-skilled workers in both Europe and North America. In 2006, the unemployment rate in the OECD was 10 percent for workers with only basic education compared to 5 percent for workers with upper secondary education and 4 percent with tertiary education (OECD, 2008). While there seems to be a general decline in demand for low-skilled workers since the 1970s, large country differences persist. In 2006, 20 percent of low-skilled workers were unemployed in Germany and 12 percent in Belgium, but under 5 percent in the Netherlands and Norway (OECD, 2008). Our objective is to examine the determinants of these cross-country differences.

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We review and empirically analyse four different sets of explanations. The first highlights wage-setting institutions, and more particularly high minimum wages and wage inequality. The second emphasizes employment policy design and focuses on unemployment benefits, active labour market policies and employment protection legislation. The third highlights the role of international trade and labour migration. The fourth focuses on the macroeconomic context and monetary policy.

These different explanations are examined on the macro-level for 21 OECD countries. We analyse the influence of labour market policies and institutions on unemployment rates of low-skilled workers for four four-year periods between 1991 and 2006. These pooled time-series cross-section regressions show no evidence that low-skilled unemployment is fostered by high legal minimum wages or by strict employment protection, nor that higher wage inequality or lower exposure to international trade reduces unemployment among low-skilled workers. In contrast, two hypotheses are supported by our data: investment in active labour market policies seems to result in lower unemployment of low-skilled workers, while high real interest rates are associated with significantly higher unemployment among the low-skilled. Hence low-skilled workers' job prospects are enhanced by a combination of active labour market policies at the micro-level with a monetary policy that allows the economy to exploit its growth potential at the macro-level.

The next section reviews different explanations for low-skilled unemployment. We then discuss methodological issues, present the data and show the extent of low-skilled unemployment in the 21 countries of our sample. Then we present the empirical results of our pooled regressions. These findings are discussed in the light of experience in some of these countries over the last 15 years. The conclusion highlights the implications of our results for labour market policy.

## **Explanations for high unemployment among low-skilled workers**

### *Wage-setting institutions*

Statutory minimum wages have regularly been accused of harming low-skilled workers' employment prospects. In a perfectly competitive labour market, a minimum wage set above the market-clearing level is expected to produce unemployment. This effect should be strongest among the two least productive employment categories: low-skilled and young workers. The reasoning is straightforward: if a country's wage floor exceeds low-skilled workers' productivity – the marginal product of their labour – employers will not hire them. Minimum wages may thus price low-skilled workers out of the labour market (Siebert, 1997).

Theoretical expectations of the influence of minimum wages become less clear-cut once we recognize firms' monopsony power. If firms are wage-setters and not only wage-takers, a rise in the minimum wage does not necessarily increase unemployment of low-skilled workers (Bassanini and Duval, 2006; Manning, 2003). The employment response to minimum wages may thus be non-linear: positive effects occur for minimum wages below a certain level, job losses thereafter (OECD, 1998).

In most OECD countries, the structure of earnings is affected more strongly by collective bargaining than by statutory minimum wages. In the Scandinavian and German-speaking

countries as well as Italy there is no legal minimum wage, but a close-knit web of collective agreements setting minimum wages for different occupations and sectors (Schulten, 2008). These wage floors should affect low-skilled unemployment in the same way as legal minimum wages: a high coverage rate of collective agreements moves wage formation away from a market solution and should – in a perfectly competitive labour market – threaten low-skilled workers' employment prospects (Siebert, 1997). This argument is closely linked to trade union monopoly power: strong trade unions may push wages above market-clearing levels at the cost of lower employment. However, this effect should be mitigated if labour movements are dominated by exposed-sector unions, which have an interest in sustaining the competitiveness of their industries (Garrett and Way, 1999).

Theoretical expectations may again be more complicated once account is made for non-linear relationships. Trade union influence on wage formation may depend on the structure and coordination of collective bargaining. Thereby, extremes may work best: on the one hand, decentralized bargaining at company level may be employment-friendly, because it comes close to a market process. On the other, very centralized and coordinated bargaining across sectors may also be beneficial, because powerful encompassing unions internalize the employment implications of their wage agreements (Calmfors and Driffill, 1988; Layard et al., 2005). Highly coordinated (and thus often centralized) bargaining may even produce better results in terms of real wage restraint and thus be more successful in minimizing the influence of adverse supply shocks on unemployment (Blanchard, 2006; Kenworthy, 2002; Traxler and Kittel, 2000).

The detrimental effect of wage-setting institutions is often deduced from the argument of skill-biased technical change (SBTC): the diffusion of information technology favours high-skilled over low-skilled labour. While computers substitute for low-skilled personnel in routine cognitive and manual tasks, they increase the demand for high-skilled employees in problem-solving and creative activities. Hence, SBTC puts pressure on workers at the lower end of the skill distribution. Whether this pressure translates into higher unemployment among low-skilled workers depends on a country's wage-setting institutions. Where wages are flexible, SBTC is not expected to increase unemployment, but should be accommodated through higher wage inequality (Krugman, 1994). In contrast, where labour markets are highly regulated, compression of earnings differentials would result in higher unemployment among low-skilled workers (Iversen and Wren, 1998; Scharpf, 2000).

### *Employment policy design*

The main area of employment policy addressed in the literature is unemployment insurance. Generous benefits increase unemployed workers' reservation wage and thus reduce their search intensity and willingness to accept job offers. The probable effect is an increase in unemployment. However, this negative impact may be offset by better job matching: generous unemployment benefits give jobseekers more time to find an efficient match, reducing the likelihood of subsequent separations and increasing productivity (Baccaro and Rei, 2007; Bassanini and Duval, 2006; Gangl, 2004). Whether the detrimental or beneficial effect prevails is an empirical question.

Theoretical expectations are less ambiguous with respect to the impact of benefit duration on unemployment. A longer entitlement period lessens jobseekers' incentive to

accept a new job rapidly and thus increases the risk of becoming trapped in long-term unemployment. This risk may be particularly large for low-skilled and young workers because of the small net difference between unemployment benefits and expected earnings (Esping-Andersen, 2000; Nickell and Bell, 1995).

Again, the negative impact of generous unemployment benefits may be offset by the use of active labour market policy (ALMP) (Bassassini and Duval, 2006). ALMP affects unemployment through three channels. First, employment services and individual case management increase the efficiency of the job search process; second, training programmes improve unemployed workers' competencies and – often combined with hiring subsidies – make them more attractive to prospective employers; third, job-search monitoring makes the unemployed more willing to accept jobs and thus lowers their reservation wage (Martin and Grubb, 2001; OECD, 2005).

Several authors blame job protection rules for labour market rigidities and the European unemployment crisis (St Paul, 2004; Siebert, 1997). Dismissal regulations restrict employers' ability to adjust the workforce to slumps in demand. In deciding whether to hire new workers, they will thus take into account the likelihood that firing costs will be incurred in the future. These higher dismissal costs are expected to have a negative impact on hiring and to push up unemployment. Theoretical predictions become more ambiguous if we extend our analysis to an entire demand cycle: strict employment protection decreases hiring rates in periods of rising demand, but reduces dismissals during downturns (OECD, 2004a).

Still, strict employment protection may affect job creation through a two-fold impact on wages: first, it strengthens the wage-bargaining power of employed insiders by making them less vulnerable to unemployment. Second, it also reduces flows in and out of unemployment and thus increases the share of the *long-term* unemployed. Since firms do not consider these latter as valid substitutes for the employed, long-term unemployment affects wage setting only marginally and leads to higher wages for a given level of employment, resulting in higher equilibrium unemployment.

### *International trade and migration*

International trade, in particular with emerging economies, may have weakened the labour market position of low-skilled workers in OECD countries. According to textbook economics, developed countries that are well endowed with skilled labour have a comparative advantage in the production of goods requiring a highly educated workforce, while developing countries that are well endowed with unskilled labour have a comparative advantage in the production of goods that make intensive use of less educated workers. Increased international trade may thus hamper the employment prospects of low-skilled workers in the OECD countries (Wood, 1995).

Another aspect of globalization is increased labour migration. Immigrants augment a country's labour supply and may thus increase competition for jobs (Borjas et al., 1997). This reduces native workers' employment opportunities if these two groups are substitutes in production. This assumption is not unrealistic for low-skilled workers: in some sectors and occupations, low-skilled native and low-skilled immigrant labour may be almost interchangeable. Hence a large influx of immigrants – if wages do not rapidly adjust downwards – may increase a country's low-skilled unemployment rate.

However, expectations are less clear-cut if immigration is analyzed within a macroeconomic framework. Explanations focussing on the economy's demand side insist that immigration increases population and thus leads to higher demand for goods and services and more jobs. There may even be a positive impact on jobs: By increasing labour supply, immigrants raise an economy's productive capacity and thus enable it to grow faster and longer before wage growth become inflationary (Bentolila et al., 2008). Accordingly, theoretical expectations as to the impact of immigration on employment differ widely.

### *Monetary policy*

A final explanation focuses on macroeconomic policy and aggregate demand management. Unskilled workers are particularly sensitive to economic fluctuations, because of two advantages that skilled workers possess over unskilled workers. First, they can do many of the unskilled jobs; second, they possess specific skills and are thus more costly to replace. In a cyclical downturn, firms thus have an interest in 'hoarding' skilled workers, which means that the burden of adjustment is shifted to lower educated workers, who are more easily replaced once the recession is over (Gautier et al., 2002; Nickell and Bell, 1995).

If a recession lasts several years, low-skilled workers' cyclical unemployment may lead to structural unemployment. This persistence of cyclical unemployment – termed *hysteresis* by Blanchard and Summers (1986) – operates because a protracted slump in aggregate demand increases the number of long-term unemployed, whose job perspectives become increasingly adverse as they face human capital devaluation, become stigmatized by potential employers and reduce their search activity as a result of repeated setbacks (Ball, 1999). Cyclical unemployment is caused by a slump in aggregate demand which, in turn, is closely linked to monetary policy: high real interest rates depress investment and consumption. Accordingly, an extended period of weak aggregate demand – caused, for example, by high or only slowly falling real interest rates – may not just increase current unemployment of low-skilled workers, but through the link with long-term unemployment, also their equilibrium unemployment (Baccaro and Rei, 2007; Ball, 1999). Central banks' setting of interest rates may thus have long-lasting effects on the labour market (Blanchard, 2005; Fitoussi et al., 2000).

### **Data and evidence**

These theoretical expectations are tested for 21 OECD countries. Our sample consists of the EU-15, plus two Western European countries outside EU, Norway and Switzerland, together with Australia, Canada, New Zealand and the United States. For these countries, we examine the link between institutions and low-skilled unemployment for a 16-year period, 1991–2006. Table 1 shows how the different explanations outlined above are translated into quantitative variables and gives an overview of the data.<sup>1</sup>

Our dependent variable is the unemployment rate of unskilled workers. We do not share the view of some scholars that the employment rate is a more meaningful indicator (Bradley and Stephens, 2007; Scharpf, 2000). Low employment rates do not necessarily imply poor labour market health, but are partly due to low labour force participation rates

**Table I.** Variable Operationalization and Descriptive Statistics

Variable	Operationalization of variable	Mean	Min.	Max.
Low-skilled unemployment	Unemployment rate of workers with only basic education	9.0	2.1	19.6
Legal minimum wage <sup>a</sup>	Legal minimum wage as % of median of full-time workers	47.1	29.4	62.5
Bargaining coverage rate	Percentage of employees covered by collective bargaining	70.7	14.0	98.0
Bargaining coordination <sup>a</sup>	Wage-setting coordination index	3.1	1.0	5.0
Trade union density <sup>a</sup>	Percentage of employees organized in a trade union	37.5	9.6	83.0
Wage inequality	Ratio of 5th to 1st decile earnings of full-time workers	1.6	1.3	2.5
Initial unemployment benefit replacement rate	Initial net replacement rate as percentage of net earnings	63.4	34.0	86.0
Five-year unemployment benefit replacement rate	Five-year average of gross unemployment benefit replacement rates	31.1	9.6	63.7
Active labour market policy (ALMP) <sup>a</sup>	ALMP spending as % of GDP, divided by unemployment rate	13.1	1.8	62.7
Employment protection legislation	OECD strictness indicator	2.1	0.2	4.1
International trade <sup>a</sup>	Sum of exports and imports divided by GDP	78.3	20.7	268.7
Labour migration <sup>a</sup>	Yearly average net migration per 1000 population	3.6	-1.2	10.7
Real long-term interest rates <sup>a</sup>	Long-term nominal interest rate minus annual GDP deflator	3.9	-0.5	8.6

<sup>a</sup>To capture the lagged effect of institutions and policies on employment, measures for these variables were averaged over a four-year period pre-lagged by one year with respect to the dependent variable.

Source: Bargaining coordination from Kenworthy (2000); all other indicators from the OECD online-database (<http://stats.oecd.org/wbos/default.aspx>)

among married women – which are culturally and politically determined. In contrast, high unemployment rates unambiguously point to the unsatisfactory functioning of the labour market (Kenworthy, 2002). Moreover, unemployment is of much greater relevance for people's *individual well-being* than is employment per se: micro-level evidence suggests that moves between work and unemployment have a much greater negative impact on people's life satisfaction than moves between work and inactivity (Winkelmann and Winkelmann, 1998). Hence, governments keen to be re-elected fear high unemployment rates much more than low employment rates. However, our own calculation suggests that *empirically* this question is of lesser relevance as unemployment and employment rates for the low-skilled are strongly correlated: the correlation coefficient for the 29 OECD countries for which data are available in 2006 is very high, at -0.82.

We focus on low-skilled unemployment because, in the 21 countries in our sample, the unemployment problem primarily afflicts low-skilled workers. Hence, over the four-year period 2003–2006, the mean unemployment rate was 3.9 percent for high-skilled

workers as compared to 8.1 percent for low-skilled. (Skill is defined, following the OECD (2008), in terms of levels of education.<sup>2</sup>) In nine of the 21 countries analyzed, the high-skilled unemployment rate was below 3 percent, while in six of these, the combined rate for medium- and high-skilled averaged 3.5 percent or less.

Expressed as a multiple of the high-skilled rate, the low-skilled unemployment rate was 2.2 on average. The low-skilled are particularly vulnerable in some continental European countries: the ratio is 3.2 in Austria and Belgium, 3.7 in Germany. The ratio is also above average in four anglophone countries: 3.2 in the USA, 2.7 in Ireland and 2.4 in the UK and Australia. In comparison, the gap in unemployment rates between low- and high-skilled is smaller in the Scandinavian and, above all, the Mediterranean countries, where the ratio is 1.5 or less.

As noted above, we focus on the years 1991–2006, divided into four four-year periods. In the recession years 1991–4 which followed German unification, unemployment among low-skilled workers in our country sample increased from 9 to 11.4 percent. It then remained comparatively high, at 11 percent, during 1994–7 when European governments prepared for Euro entry. When the upswing occurred in 1997–2001, it brought a substantial fall to 7 percent. The rate then remained at a slightly higher level, 8 percent, during 2001–06.

## Results of pooled regressions

We examine the impact of institutions and policies on low-skilled unemployment by estimating pooled time-series cross-section regressions. Since labour market institutions display very little variation over time, there is little point in looking at year-to-year movements (Blanchard and Wolfers, 2000; Kenworthy, 2007); instead, we examine four four-year sub-periods. Having 21 countries in our sample, this gives us 84 observations.<sup>3</sup> Dealing with pooled data, we need to account for the fact that observations from within a country are not independent. Not only institutions, also unemployment rates are sticky over time. We correct for this correlation within the observations of each country by calculating robust OLS-regressions with Huber-White standard errors (see Breen, 2005).<sup>4</sup>

In our analysis, we follow Kenworthy's recommendation (2007) for independent-variable-centred research and start with a series of very simple models where we enter, alongside a time-period control variable, only one explanatory variable at a time. These regressions on the low-skilled unemployment rate are shown in Table 2. We briefly comment on the results for each of the four sets of explanations, starting out with *wage-setting institutions*.

Our data provide no evidence for a detrimental impact of minimum wage levels on low-skilled unemployment: the coefficient has the opposite sign and is not statistically significant. This result is not surprising: cross-country studies regularly find minimum wages in the OECD to be set at too low a level to affect employment of prime age adults (Bassanini and Duval, 2006; Layard et al., 2005; OECD, 1998, 2003). In most countries, collective bargaining is more consequential for wage-setting. However, over the period since 1991, our relatively crude measures of bargaining coverage and bargaining coordination are not associated, one way or the other, with low-skilled unemployment. We obtain the same result for union density: low-skilled unemployment is not fuelled by high union density. This may be because high union density is linked to coordinated wage bargaining. While we do not find evidence for such a link (see Model 1 in Table 3), studies



based on data for earlier periods suggest that coordination of wage bargaining has a significant downward impact on unemployment (Bassanini and Duval, 2006; Blanchard and Wolfers, 2000) and thus cancels out any potentially detrimental influence of union density on unemployment (Baccaro and Rei, 2007; OECD, 2004b). Finally, we find a significant relationship between wage dispersion and low-skilled unemployment. However, it runs counter to the theoretical expectation: countries and periods with greater wage differentials are associated with *more* unemployment among low-skilled workers. This correlation is primarily due to the three Scandinavian countries (Denmark, Norway and Sweden) plus the Netherlands, which have the most compressed wage structure in our sample and also feature low rates of low-skilled unemployment.

Table 2 also presents our results on the four institutional explanations outlined above. In the case of *employment policy design*, we find no significant link between the OECD index of employment protection strictness and low-skilled unemployment. This result is in line with previous studies reporting that job protection legislation strongly influences a country's *mix* of employment between regular contracts, temporary contracts and self-employment, but does not affect the *level* of unemployment (Bassanini and Duval, 2006; Layard et al., 2005; OECD, 2004a). Likewise, we find no significant relationship between the two measures of unemployment benefits (the one-year and five-year replacement rates) and low-skilled unemployment. The finding that unemployment insurance generosity – the replacement rate during the first year – does not increase unemployment has been reported before (Baccaro and Rei, 2007; Blanchard and Wolfers, 2000; Nickell and van Ours, 2000). Less expected is the absence of a link between low-skilled unemployment and long-term benefits, since benefit duration has regularly been singled out as one of the main culprits of persistent European unemployment (Ball, 1999; Esping-Andersen, 2000).

**Table 2.** Regression Results of Potential Influences on the Low-skilled Unemployment Rate

		Beta	Std error	R <sup>2</sup>	N obs.
Wage-setting institutions	Legal minimum wage	-12.01	12.300	0.155	48
	Bargaining coverage	0.02	0.027	0.066	74
	Bargaining coordination	-0.57	0.497	0.088	57
	Trade union density	-0.00	0.038	0.045	84
	Wage inequality	4.08 <sup>†</sup>	2.031	0.148	64
Employment policy design	Initial unemployment benefit replacement rate	-0.04	0.042	0.067	83
	Five-year unemployment benefit replacement rate	-0.01	0.044	0.060	81
	Active labour market policy	-11.3 <sup>**</sup>	3.470	0.132	84
	Employment protection legislation	-0.22	0.679	0.058	78
Globalization	International trade	-0.02	0.013	0.097	84
	Labour migration	-0.53 <sup>*</sup>	0.195	0.165	83
Monetary policy	Real long-term interest rates	1.20 <sup>**</sup>	0.366	0.186	82

Significant at: <sup>†</sup>  $p < 0.1$ ; <sup>\*</sup>  $p < 0.05$ ; <sup>\*\*</sup>  $p < 0.01$ .

Note: coefficients have been estimated with OLS-regressions using robust Huber-White standard errors. All the regressions include a control variable for the time period (coefficient not shown).

Our data strongly support the importance of ALMPs.<sup>5</sup> Attributing a larger share of GDP to ALMP (for a given rate of unemployment) seems related to consistently less unemployment among the low-skilled. This beneficial impact possibly explains why we do not find a detrimental influence for unemployment insurance: states with comparatively generous benefits such as the Scandinavian countries, the Netherlands or Switzerland also spend more on ALMP. However, if we introduce the measures for one-year and five-year unemployment benefits into a regression alongside spending on ALMP, the latter remains strongly correlated with reduced low-skilled unemployment. In contrast, unemployment benefit levels still do not seem to matter (see Model 2 in Table 3).

The third set of explanations focusing on *globalization* receives mixed empirical support. During the period under study, there is no significant effect of trade openness: low-skilled workers are not more likely to be unemployed in countries and periods with more pervasive international trade than in economically more sheltered countries and periods. On the contrary, the regression coefficient (albeit not significant) suggests that high levels of trade openness are associated with better results in terms of low-skilled unemployment. A similar result is found with respect to migratory openness. This seemingly paradoxical finding is probably best explained by reverse causality: countries with thriving labour markets offer better job prospects and thus attract more immigrants than countries with high unemployment (Blanchflower et al., 2007).<sup>6</sup>

Finally, the fourth explanation emphasizing *monetary policy* is clearly supported by our empirical evidence. Countries and periods with higher long-term real interest rates have significantly higher rates of low-skilled unemployment. Of course, monetary policy is itself influenced by the functioning of labour market institutions: central banks set interest rates, in part, in response to wage-bargaining (Soskice, 2000). At the same time, high world interest rates act on the country-level like an external demand shock (Blanchard and Wolfers, 2000). Fitoussi et al. (2000) thus argue that monetary policy in continental Europe increased unemployment for most of the 1990s for reasons having to do with EMU, the Maastricht Treaty and the tight-money policies instituted by the *Bundesbank* to offset expenditure for German unification. After having fallen in disgrace in the 1980s and early 1990s, explanations of unemployment that emphasize demand-side factors seem to gain centre-stage again (Ball, 1999; Blanchard, 2005; Solow, 2000).

The question, however, is whether tight monetary policy only affects cyclical unemployment or whether – if it remains restrictive for too long a period – it increases structural unemployment as well. Neoclassical theory pleads for the former interpretation; cross-country empirical evidence points to the latter (Ball, 1999; Blanchard and Wolfers, 2000). What is undisputed is that macroeconomic conditions are always filtered by labour market institutions. Except in non-existing textbook economies where prices and wages are perfectly flexible and adjust overnight, negative shifts in aggregate demand always have an influence on jobs (Blanchard and Wolfers, 2000).

Accordingly, we estimate a further regression in which we integrate all explanatory variables together with real interest rates.<sup>7</sup> This allows us to determine the impact of an institution, having controlled for the tightness of monetary policy. The results are shown in Table 3 (Model 3) and suggest that even if we control for real interest rates, the different measures of wage-setting (union density and bargaining coverage) and employment policy (unemployment benefits and job protection) do not significantly affect low-skilled

**Table 3.** Regression Results of the Determinants of Low-skilled Unemployment Rate

Dependent variable	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	Beta	Std error	Beta	Std error	Beta	Std error	Beta	Std error	Beta	Std error	Beta	Std error
Trade union density	0.02	0.046			-0.00	0.032						
Bargaining coverage	-0.67	0.554			0.02	0.052						
Initial unemp. benefit			0.01	0.058	0.03	0.055						
replacement 5-year unemp. benefit			0.07	0.059	0.02	0.057						
replacement Active labour market policy			-16.50*	6.217	-16.16*	5.821	-10.06**	3.272	-7.38**	2.181	-9.96†	5.065
Employment protection legislation					-0.40	1.141			-10.96**	3.576		
International trade					0.01	0.017						
Real long-term interest rates					1.05**	0.354	1.04*	0.378	0.90*	0.376	0.77*	0.293
Time-period	-1.14*	0.480	-0.84*	0.380	0.65	0.783	0.68	0.743			0.19	0.564
Constant	13.54**	2.001	10.68**	3.100	1.63	3.672	4.62	3.511	1.27*	0.328	5.26	3.337
N	57		80		70		82		78		82	
R <sup>2</sup>	0.093		0.196		0.336		0.251		0.223		0.269	
									0.293			

Significant at: †p < 0.1; \*p < 0.05; \*\*p < 0.01. Coefficients: see note Table 2. Jackknife regressions show the range of coefficients (extreme values) in regressions with one country omitted at a time.

unemployment. The two only determinants significantly linked with the unemployment rate of low-skilled workers are spending on ALMP and real interest rates. The same two factors have been singled out by Kenworthy (2003) as the determinants explaining cross-country variation in employment growth.

In a further regression (Model 4 in Table 3), we estimate the joint impact of these two measures on low-skilled unemployment. Spending on ALMP and real interest rates explain about a quarter of variation in low-skilled unemployment across OECD countries between 1991 and 2006. The relative impact of both determinants is sizeable. The coefficient for interest rates indicates that a rise of one percentage point in long-term real interest rates increases the unemployment rate among low-skilled workers by one percentage point. This reminds us that disinflation policies – the tightening of monetary conditions – are very costly in terms of unemployment (Ball, 1999). The coefficient for ALMP suggests that an increase in spending by 10 percent (for a given GDP and unemployment rate) reduces the low-skilled unemployment rate by one percentage point.

We run two robustness checks for these results. First, we test for outliers by using the ‘jackknife’ resampling technique which consists in dropping one country at a time from our regression. Results (Model 5 in Table 3) show that our findings are not driven by a single country: no matter which country we exclude from the regression, the association between real interest rates and ALMP on the one hand and low-skilled unemployment on the other remains statistically significant. Second, we examine whether the effect of ALMPs and real interest rates holds true if the dependent variable is total unemployment instead of low-skilled unemployment (Model 6 in Table 3). The theory predicts that real interest rates – through their link with aggregate demand – are as relevant for total unemployment as for low-skilled unemployment. In contrast, ALMPs often specifically target the difficult-to-place unemployed and should thus be of greater relevance for low-skilled than for total unemployment (de Koning, 2001). The regression results show that interest rates and ALMP significantly affect total unemployment. However, the impact of ALMP spending is almost as large in reducing total unemployment as for the low-skilled.

## Discussion of findings

We examine the plausibility of our findings by briefly discussing them in the light of a few countries’ unemployment experiences since 1991. The goal is to see whether monetary policy and ALMP help us to make sense of changes in countries’ unemployment rates over the last 15 years. We look at the four European countries that achieved the most spectacular turnaround in their low-skilled unemployment rates between 1991 and 2006: Denmark, Ireland, the Netherlands and Spain.

Before doing so, a few words are needed to highlight the disparity between the real interest rate cycle of the early 1990s and that of a decade later. In the early 1990s, restrictive monetary policy was one of the main causes for the large unemployment increase in Western Europe. Between 1990 and 1992, most European countries had already entered recession, whereas Germany’s economy still soared as a consequence of the positive demand shock induced by unification. When the *Bundesbank* put an end to the inflationary unification boom in 1992 by raising the interest rate, other European countries had to follow suit to avoid capital outflow and to stabilize their exchange rates within the European

Exchange Rate Mechanism (ERM). This tightening of monetary policy further depressed aggregate demand and increased unemployment (Fitoussi et al., 2000; Soskice, 2000). Particularly hard hit was Sweden, where the real interest rate rose from 4.4 percent in 1990 to 9 percent in 1992. This deflation resulted in a steep increase in Sweden's low-skilled unemployment from 2.6 percent in 1991 to 10.1 percent in 1995.

At the end of the 1990s, monetary policy changed from an impediment to a stimulus for employment growth in many European countries. In terms of real interest rates, the transition to the single currency was particularly beneficial for the Mediterranean countries plus Ireland. Thanks to the common currency, these countries profited after 1999 from the same *nominal* interest rate as Germany, while having higher growth and inflation. Hence, Ireland's *real* interest rate remained below 1 percent in the four consecutive years after the introduction of the Euro (1999–2002). Over the same period, Ireland's low-skilled unemployment rate came down from 9.2 to 5.9 percent. Likewise, expansionary monetary policy also plays a substantial role in explaining Spain's – temporary – success in bringing down low-skilled unemployment. In the run-up to EMU, Spanish real interest rates stood at an annual average of 6.0 percent. Once in the EMU, they fell to an average of 0.5 percent over the period 2000–06. This expansionary monetary policy stimulated domestic demand (particularly in construction) and was essential for the reduction of low-skilled unemployment from 17 percent in 1998 to 9 percent in 2006.

What about the role of ALMP? In the 1990s, several countries overhauled their public employment services with the goal of improving the matching process between jobseekers and firms. The reforms simultaneously aimed at giving the unemployed better job-search assistance and at tightening the conditions that apply to receiving benefits. Denmark and the Netherlands were the two EU countries making greatest efforts to implement ALMP. In labour market reforms of the 1990s, both countries launched the principle of early activation of the unemployed: alongside stricter job-search monitoring and the obligation of programme participation, this implied ensuring that every jobseeker receives offers of work or training within a year of becoming unemployed. The evidence suggests that this investment in ALMP was money well spent. Between 1990 and 2000, Denmark almost tripled the share of GDP spent on ALMP per unemployed. Over the same period, the low-skilled unemployment rate decreased from 14.2 percent to 6.9 percent and remained at or below this level for the following six years. Likewise, the increase on ALMP spending per unemployed also went hand-in-hand with significantly less low-skilled unemployment in the Netherlands. The greater reliance on active measures has been found to be the decisive determinant – alongside increased wage coordination (Visser, 1998) – of the spectacular reduction in Dutch unemployment since the mid-1980s (Nickell and van Ours, 2000).

## Conclusion

This article has started from the observation that the burden of unemployment weighs mainly on the shoulders of low-skilled workers in the OECD. Accordingly, the objective has been to review and test different hypotheses as to the causes of low-skilled unemployment: wage-setting institutions, employment policy design, globalization and monetary policy. The results of a series of pooled regressions for 21 OECD countries give us an

indication of what is related – and, above all, what is *not* related – to unemployment among low-skilled workers.

Particularly noteworthy is the absence of an empirical link with unemployment for three institutions. First, the data provide no support for the hypothesis that strict employment protection goes along with higher unemployment. Second, we find no evidence for the assumption that low-skilled unemployment is linked to the level of legal minimum wages. Third, this result is further substantiated by the finding that higher wage inequality is not associated with less unemployment among low-skilled workers – if anything, the contrary applies. Our data thus indicate that large wage differentials are not a *necessary condition* for countries to obtain low unemployment among the low-skilled. Added to the missing empirical link between the level of minimum wages and unemployment, this result throws serious doubt on the frequently echoed expectation that post-industrial economies can only achieve full employment if they open their wage structure downwards in order to create low-paid service jobs (Krugman, 1994; Scharpf, 2000; Siebert, 1997). The insistence on greater wage differentials as the solution of the ‘service trilemma’ (Iversen and Wren, 1998) seems exaggerated.<sup>8</sup>

While these results are in stark contrast with the recommendations that Europe’s unemployment problem should be resolved through a reduction in minimum wages, an increase in wage dispersion and a weakening of job protection (Siebert, 1997; St Paul, 2004), they confirm the findings made by Nickell and Layard over a decade ago: ‘time spent worrying about strict labour market regulations, employment protection and minimum wages is probably time largely wasted’ (1999: 3029). In view of these results, the vehemence with which many economists and state officials insist on the necessity to deregulate the labour market is all the more surprising, as these reforms – while probably not very efficient – are socially highly divisive (Solow, 2000).

We conclude by discussing the two hypotheses that receive support from our data. First, investment in ALMP seems to pay off in form of lower unemployment of low-skilled workers. Second, high real interest rates over an extended period are associated with significantly higher unemployment rates of low-skilled workers. Hence, the combination of efficient job-placement services, adequate training programs and strict job-search controls with a monetary policy that allows the economy to exploit its growth potential seems to lead to lower unemployment of the low-skilled.<sup>9</sup> A good labour market outcome may thus be the result of the coordinated use of instruments on the micro- and macroeconomic level. On the microeconomic level, a strong nexus between ALMPs and the unemployment benefit system seems to contribute to enabling people to move from welfare to work (Nickell and Layard, 1999). On the macroeconomic level, monetary policy should be used to support aggregate demand to shorten recessions. Its role is thus to avoid a persistent rise in unemployment (hysteresis) and, more generally, to take advantage of opportunities to expand the economy whenever inflationary pressure is weak (Solow, 2000). In other words, ALMP seems an efficient microeconomic measure to make sure that jobseekers are willing to work, while expansive monetary policy creates a macroeconomic context which effectively enables jobseekers to find work.

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## Notes

1. The dataset is available from the author and can be downloaded from his webpage at the University of Geneva or obtained by e-mail.
2. In order to permit cross-national comparison, the OECD (2008) defines countries' educational levels on the basis of the International Standard Classification of Education (ISCED). Hence, low-skilled workers have ISCED-levels of 0/1 (pre-primary and primary education) and 2 (lower secondary education); medium skilled workers have level 3 (upper secondary education) and 4 (post-secondary non-tertiary education) and high-skilled workers levels 5 (tertiary education) and 6 (advanced research programmes).
3. Inevitably, there are a few missing country observations for most variables. In the case of statutory minimum wages, this is because in several countries they do not exist. Values of the bargaining coordination index developed by Kenworthy (2000) only exist up to 2000. Finally, the OECD provides no country data for low-skilled unemployment in 1993; hence, the average reported for the period 1991–4 is based on three years only.
4. This is done by using Stata's 'cluster' subcommand. Robust regressions with Huber-White standard errors account for the fact that observations are independent between countries, but not within countries across periods. This estimator is preferable to alternatives based on random-effects models. These latter rely on the (unrealistic) assumption of random distribution of observations within the same country over time.
5. Following the OECD, we count as active measures: public employment services, labour market training, youth measures, subsidized employment and measures for the disabled.
6. Moreover, in countries with a tradition of immigration, labour supply probably reacts more quickly to cyclical slumps in labour demand. If these countries enter a recession, migration policy serves as a safety valve. Falling aggregate demand leads to a reduction in immigration – often through the bias of a more restrictive migration policy – and thus results in a lesser increase in unemployment (see Flückiger, 1998, for a discussion of this mechanism in Switzerland).
7. In order to minimize the number of missing observations, we do not integrate the measures for the legal minimum wage, bargaining coordination and wage dispersion – three variables that seem not central for the explanation of low-skilled unemployment and for which we lack observations for a third of the 84 country-periods. To avoid an endogeneity problem, we also leave aside the measure of labour migration: this is probably determined by the level of low-skilled unemployment rather than determining it.
8. Wage inequality may in part mirror the skill distribution of labour supply: empirical comparisons between the earnings structure of the USA and Western Europe suggest that higher wage dispersion in the former is the result of larger skill differentials within its workforce (Freeman and Schettkat, 2001; Nickell and Bell, 1996).

9. Of course, a loose monetary policy and low interest rates only succeed in stimulating aggregate demand if credit markets are functioning. In the 2008–09 financial crisis, this is not the case. As inter-bank lending and credit markets are frozen, interest rates set by central banks do not determine access to credit.

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