Explaining high unemployment among low-skilled workers: Evidence from 21 European and Anglo-Saxon countries, 1991-2006

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Abstract

The OECD's unemployment problem is largely concentrated among low-skilled workers. In this paper, four explanations of low-skilled workers' unemployment are examined: 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. Our findings provide no support for the hypothesis that low-skilled workers' employment prospects are hindered by legal minimum wages or strict employment protection. Likewise, large wage inequality does not seem to be a necessary condition for countries to achieve low rates of low-skilled unemployment. In contrast, investment in active labour market policies pays off in form of less low-skilled unemployment. Additionally, 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 policies with a monetary policy that allows the economy to fully exploit its growth potential.

Keywords: unemployment, low-skilled workers, wage inequality, monetary policy

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Introduction

The burden of unemployment mainly weighs on the shoulders of low-skilled workers in both Europe and North America. In 2006, the unemployment rate in the OECD stood at 10 per cent among the low-skilled as compared to 5 per cent among the medium-skilled and 4 per cent among the high-skilled (OECD, 2008). While there seems to be a general trend towards the disaffection of low-skilled workers since the 1970s, large country differences persist within Western Europe. Hence, in 2006, 20 per cent of low-skilled workers were unemployed in Germany and 12 per cent in Belgium, but less than 5 per cent in the Netherlands and Norway (OECD, 2008). Our paper's objective is to examine the determinants of these cross-country differences in the unemployment rate of low-skilled workers. The literature in labour economics and comparative political economy proposes a large array of culprits for low-skilled workers disproportionate unemployment rate.

We review and empirically analyze four different sets of explanations. A first set highlights wage-setting institutions and more particularly minimum wages and wage inequality. A second set emphasizes employment policy design and focuses on unemployment benefits, active labour market policies and employment protection legislation. A third set insists on globalization by highlighting the role of international trade and labour migration. A fourth and final set recalls the importance of the macro-economic context and, more particularly, of monetary policy.

These different explanations are first discussed and then examined on the macro-level for 21 economically advanced European and Anglo-Saxon countries. Based on OECD labour market data, we analyze the influence of labour market policies and institutions on unemployment rates of low-skilled workers for 4 four-year periods since German reunification 1991 until 2006. These pooled time-series cross-section regressions show no evidence for the hypothesis that low-skilled unemployment is fostered by legal minimum wages or by strict employment protection. Likewise, higher wage inequality or lower exposition to international trade do not seem to be associated with less unemployment among low-skilled workers in the OECD. In contrast, two hypotheses are supported by our data. Firstly, investment in active labour market policies seems to pay off in form of lower unemployment of low-skilled workers. Secondly, high real interest rates are associated with

significantly higher unemployment rates among the low-skilled. Hence, our analysis suggests that 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 fully exploit its growth potential at the macro-level.

Our paper is structured as follows. Section 1 starts out with a review of different explanations accounting for low-skilled unemployment. Section 2 then discusses methodological issues, presents the data and shows the actual extent of low-skilled unemployment in the 21 European and Anglo-Saxon countries of our sample. Section 3 presents the empirical results of our pooled regressions. In section 4, these findings are discussed in the light of a few countries' unemployment experiences over the last 15 years. Section 5 concludes by highlighting the implications of our findings for labour market policy.

Explanations for high unemployment among low-skilled workers

Schematically, explanations of low-skilled workers' unemployment can be divided into four sets of hypotheses, depending on whether their central argument lies on wage-setting institutions, employment policy design, globalization, or monetary policy. The theoretical foundations of these four sets of explanations shall be outlined in what follows.

Wage-setting institutions

Statutory minimum wages have regularly been accused of hampering 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. The minimum wage's effect should be felt most strongly 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. In this line, Siebert (1997: 45) maintains that 'a country that institutionally prohibits flexible wages at the lower end can be expected to have a low percentage of employment in low-paid jobs' and thus higher low-skilled unemployment.

Theoretical expectations as to minimum wages' influence on unemployment become less clear-cut once we make admission for firms' monopsony power. If firms possess some discretion in wage-setting – due to imperfect information or workers' inertia to change jobs – and are thus also 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: 75; Manning, 2003: 347). There may thus be a certain degree of non-linearity in the employment response to minimum wages: positive effects occur for minimum wages below a certain level, job losses thereafter (OECD, 1998: 44).

In most OECD countries, the structure of earnings is affected more strongly by collective bargaining than statutory minimum wages. Hence, the Scandinavian and German-speaking countries as well as Italy do not have a legal minimum wage, but a close-knit web of collective agreements setting minimum wages for different occupations and sectors. These wage floors should affect low-skilled unemployment in the same way as legal minimum wages: A high coverage rate with 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: 47). This argument is closely linked with 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 containing wage costs in order not to jeopardize the viability of their industries.

Concerning collective bargaining, theoretical expectations may again be more complicated once account is made for nonlinear relationships. Trade union influence on wage formation may primarily depend on the structure and coordination of collective bargaining. Thereby, extremes may work best: on the one hand, decentralized bargaining at the company level with weak unions may be employment-friendly, because it comes close to a market process. On the other hand, very centralized and coordinated bargaining across sectors may be beneficial for employment as well, because powerful unions act as encompassing organizations and 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: 46; Kenworthy, 2002: 368; Traxler and Kittel, 2000).

The detrimental effect of wage-setting institutions is often deduced from arguments focusing on skill-biased technical change (SBTC). The crucial argument is that the diffusion of information technology favours high skilled personnel 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 situated 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 differentials (Krugman, 1994). Where labour markets are highly regulated, the forces preventing the prevention of larger earnings' dispersion would instead result in higher unemployment among low-skilled workers (Iversen and Wren, 1998; Scharpf, 2000).

Employment policy design

Employment policy is expected to primarily impact on low-skilled unemployment through unemployment insurance. Unemployment benefits affect work incentives, the reservation wage and labour productivity in multiple ways. On the one hand, more 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. On the other hand, this negative impact may be offset by better job matching: generous unemployment benefits give jobseekers more time to find an efficient match and thus both lower the likelihood of subsequent separations and increase work productivity (Baccaro and Rei, 2007: 538; Bassanini and Duval, 2006: 60; Gangl, 2004). Whether the

detrimental or beneficial effect of generous unemployment benefits prevail is thus an empirical question.

Theoretical expectations are less ambiguous with respect to the impact of benefit duration on unemployment. A longer benefit entitlement period lessens jobseekers' incentive to accept a job within a few months after job leave and thus increases the risk of jobseekers 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: 74; Nickell and Bell, 1995: 41).

Moreover, the negative impact of generous unemployment benefits may be offset by active labour market programs (ALMP) (Bassassini and Duval, 2006: 75). ALMP are expected to reduce unemployment through three channels: firstly, employment services and individual case management increase the efficiency of the job search process; secondly, training programs improve unemployed workers' competencies and make them, often combined with hiring subsidies, more attractive to prospective employers; thirdly, job search monitoring and enforcement of work tests make the unemployed more willing to accept jobs and thus lower their reservation wage (Martin and Grubb, 2001; OECD, 2005). Hence, ALMP – notably efficient job placement services and training programs – are expected to decrease unemployment in general and low-skilled unemployment in particular.

Finally, several authors consider job protection rules to be at the core of labour market rigidities and the European unemployment crisis (Saint-Paul, 2004: 52; Siebert, 1997: 49). During demand slumps, dismissal regulations restrict employers' ability to adjust the workforce. In deciding whether to hire new workers, employers will take into account the likelihood that firing costs will be incurred in the future. Higher dismissal costs in the form of strict employment protection legislation may thus have a negative impact on hiring and push up unemployment. Theoretical predictions become more ambiguous if we extend our analysis to an entire demand cycle. Higher employment protection decreases hiring rates in periods of rising demand, but reduces dismissals during economic downturns (OECD, 2004a: 76). The two effects may cancel each other out with respect to unemployment.

Still, employment protection may affect job creation through a two-fold impact on wages: on the one hand, strict employment protection strengthens the wage bargaining power of employed insiders by making them less vulnerable to unemployment. On the other hand, strict job protection 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 formation only marginally and leads to a higher equilibrium unemployment.

International trade and migration

Rising international trade, in particular with emerging economies, may have weakened the labour market position of low-skilled workers in OECD countries. According to schoolbook economics, developed countries that are well endowed with skilled labour have a comparative advantage in the production of goods requiring a highly educated workforce. In contrast, 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. Consequently, increased international trade between developed and developing countries may 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). Guest workers may reduce native workers' employment opportunities under the assumption that 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 come close to being interchangeable. Hence, a large influx of immigrants may – if wages do not rapidly adjust downwards – increase a country's low-skilled unemployment rate.

However, expectations are less clear-cut if immigration is analyzed within a macro-economic context. Explanations focussing on the economy's demand-side insist on the fact that immigration increases population and thus also leads to higher demand for goods and services and more jobs.

Unemployment should thus only rise if the displacement effect due to a larger pool of low-skilled labour is not compensated by a simultaneous increase in aggregate demand. Explanations insisting on the economy's supply-side even attribute immigration a positive impact on jobs: By amplifying labour supply, work immigrants increase an economy's productive capacity and thus enable it to grow faster and longer without running into inflationary pressures (Bentolilla et al., 2008).[1] Accordingly, the theoretical expectations as to the impact of immigration on employment differ widely.

Monetary policy

A last explanation focuses on macro-economic policy and aggregate demand management. Unskilled workers are particularly sensitive to the economic context. This is due to two advantages that skilled workers possess over unskilled workers. Firstly, skilled workers can do many of the unskilled jobs. Secondly, they possess specific skills and are thus more costly to replace. In a cyclical downturn and the associated fall in demand for labour, firms thus have an interest in 'hoarding' skilled workers. This means that the burden of adjustment is shifted to lower educated workers, who are more easily replaced than skilled workers once the recession is over (Nickell and Bell, 1995: 41; Gautier et al., 2002). During a recession, unskilled workers are thus the first to be laid-off and the last to be reemployed.

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 through the phenomenon of long-term unemployment. A slump in aggregate demand that lasts too long increases the number of long-term unemployed, whose job perspectives become increasingly grim 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: Restrictive monetary policy in the form of high real interest rates depresses 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: 540; Ball, 1999). The 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 for low-skilled unemployment

These theoretical expectations are tested for 21 affluent OECD countries. Our sample consists of the 15 countries making up the European Union (EU) prior to the 2004 and 2007 enlargement rounds, plus the two Western European countries outside EU, Norway and Switzerland, and the four extra-European Anglo-Saxon countries Australia, Canada, New Zealand and the United States. For these countries, we examine the link between institutions and low-skilled unemployment for a sixteen-year period after German reunification, 1991–2006. Table 1 shows how the different explanations outlined above are translated into quantitative variables and gives an overview of the data.[2]

About here table 1

A few words are needed to shed light on our dependent variable: the unemployment rate of unskilled workers. Some scholars suggest that the employment rate is a more meaningful indicator (Bradley and Stephens, 2007: 1489; Scharpf, 2000). We do not share this view. Comparatively low employment rates may not necessarily imply poor labour market health, but be partly due to – culturally and politically determined – married women's labour force participation. In contrast, high unemployment rates unambiguously point to the unsatisfactory functioning of the labour market (Kenworthy, 2002: 372). Moreover, unemployment is of much greater relevance for people's *individual wellbeing* 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: 70). Not surprisingly then, governments keen to be re-elected fear high unemployment rates much more than low employment

rates. Hence, there are theoretical reasons why we prefer unemployment over employment rates. However, empirically, this question is of lesser relevance as the two indicators are strongly correlated: in 2006, the correlation coefficient between low-skilled unemployment rates and low-skilled employment rates in 29 OECD was -0.82.

We focus on low-skilled unemployment with the argument that affluent countries' unemployment problem mainly afflicts low-skilled workers. The argument's empirical basis is shown in table 2, displaying for the 21 countries in our sample the average unemployment rate of low-skilled, medium-skilled and high-skilled workers over the four-year period 2003-2006.[3] Besides giving a feel for the data, this table also shows that unemployment is much lower among workers with secondary and, above all, tertiary education than among unskilled workers. In 9 out of the 21 countries analyzed, the high-skilled unemployment rate is less than 3 per cent: in these countries, unemployment policy is primarily about how to get the low- and medium-skilled back to work. Even more so, unemployment is a problem mainly plaguing the low-skilled in Ireland, the Netherlands, New Zealand, Norway, Switzerland and the United Kingdom. In these countries, the unemployment rate among both the medium and high-skilled stands at 3.5 per cent or less.

About here table 2

If we express the low-skilled unemployment rate as a multiple of the high-skilled unemployment rate, it clearly emerges that the low-skilled are comparatively more vulnerable in the labour markets of the Continental European countries. Here, they are 3.2 (Austria and Belgium) to 3.7 (Germany) times more likely to be unemployed than the high-skilled. The disparity between the low-skilled and the high-skilled unemployment rate is also substantial in the two Anglo-Saxon countries U.S. (where the ratio is 3.2) and Ireland (ratio of 2.7). In comparison, the gap in unemployment rates between low-skilled and high-skilled employees is somewhat smaller in the Scandinavian and, above all, the Mediterranean countries where the ratio of low-skilled over high-skilled unemployment amounts to 1.5 or less.

When looking at the evolution of low-skilled unemployment over time (1991-2006), four periods can be distinguished. During the post-reunification recession 1991-1994, unemployment of

low-skilled workers in our country sample increased from 9 to 11.4 per cent. It then remained at comparatively high 11 per cent during the years 1994-1997 when European governments prepared for entry into the Euro-area. When the upswing finally set in, 1997-2001 brought a substantial fall in low-skilled unemployment averaged across our country sample from 11 to 7 per cent. It then remained at a slightly higher level of 8 per cent during the last period 2001-2006.

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: C19; Kenworthy, 2007: 348). Instead, we divide our time period into 4 four-year subperiods: 1991-1994, 1995-1998, 1999-2002, 2003-2006. Having 21 countries in our sample, this leaves us with 84 observations.[4] 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: 131). [5]

In our analysis, we follow Kenworthy's (2007: 345) recommendation for independent-variable centred research and start out 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 3. We briefly comment 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 countries' 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; OECD 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 seems not fuelled by high union density. This may be due to the fact that high union density tends to be linked with coordinated wage bargaining. While we do not find evidence for such a link (see regression results in table A.1 in the annex), studies based on data for earlier periods suggest that coordination of wage bargaining has a significant downward impact on unemployment (Blanchard and Wolfers, 2000; Bassanini and Duval, 2006) and thus cancel out the potentially detrimental influence of union density on unemployment (OECD, 2004b; Baccaro and Rei, 2007). 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 not associated with less, but *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 over the period under study.

When turning to the explanations focussing on *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). In the same vein, we find no significant relationship between the two measures of unemployment benefits (the 1-year and 5-year replacement rates) and low-skilled unemployment. The finding that unemployment insurance generosity – the replacement rate during the first year after layoff – 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 unemployment benefits. Benefit duration has regularly been singled out as one of the main culprits of persistent European unemployment (Ball, 1999: 207; Esping-Andersen, 2000: 79).

About here table 3

An explanation of low-skilled unemployment strongly supported by our data is spending on active labour market programs (ALMP).[6] Attributing a larger share of GDP to ALMP (for a given rate of unemployment) seems to go along with consistently lower unemployment rates among the low-skilled. This beneficial impact of ALMP possibly explains why we do not find a detrimental influence for unemployment benefits: States with comparatively generous unemployment insurances such as the Scandinavian countries, the Netherlands or Switzerland also spend more in terms of GDP on ALMP. However, if we introduce the measures for 1-year and 5-year unemployment benefits into a regression alongside spending on ALMP, the latter remains strongly correlated with low-skilled unemployment. In contrast, unemployment benefit levels still do not seem to matter (see table A.1 in the annex).

The third set of explanations focusing on *globalization* receives mixed empirical support. During the period under study, there is no significant correlation between trade openness and low-skilled unemployment. 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: higher levels of labour migration are significantly correlated with *lower* unemployment among low-skilled worker. This seemingly paradoxical finding of countries with a strongly positive migratory balance having less low-skilled unemployment 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).[7]

Finally, the fourth explanations emphasizing *monetary policy* is clearly supported by our empirical evidence: Countries and periods with higher long-term interest rates are linked to significantly higher rates of low-skilled unemployment. Our finding is consistent with the argument made by Fitoussi et al. (2000: 260) that monetary policy in Continental Europe increased unemployment for most of the 1990s, for reasons having to do with the EMU, the Maastricht Treaty,

and the tight-money policies instituted by the *Deutsche 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 (see Ball, 1999; Blanchard, 2005; Solow, 2000). One important question about monetary policy remains unanswered: do high interest rates only affect cyclical unemployment or do they end up – if they remain high for too long a period – in increasing structural unemployment as well? Neoclassical theory pleads for the former interpretation. Cross-country empirical evidence points to the latter conclusion (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 countries where prices and wages are perfectly flexible and adjust over night, negative shifts in aggregate demand always have an influence on jobs, leading to more or less deep scars in employment depending on a country's labour market institutions (Blanchard and Wolfers, 2000; Fitoussi et al., 2000).

Accordingly, we estimate a further regression in which we integrate all explanatory variables together with real interest rates.[8] This allows us to determine the impact of an institution, having controlled for the tightness of monetary policy. The results shown in table 4 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 unemployment. The two only determinants significantly linked with the unemployment rate of low-skilled workers are spending on active labour market programs and real interest rates. The same two factors have been singled out by Kenworthy (2003: 1195) as the determinants explaining cross-country variation in employment growth.

In a last regression (model 2 in table 4), we estimate the joint impact of these two measures on low-skilled unemployment. A look at the models' explanatory power indicates that 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 on low-skilled unemployment 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. It reminds us that disinflation policies – the tightening of monetary conditions –

are costly in terms of unemployment (see Ball, 1999). The coefficient for ALMP suggests that an increase in spending on ALMP by 10 per cent (for a given GDP and unemployment rate) reduces the low-skilled unemployment rate by one percentage point.

About here table 4

We run two robustness checks for these results. Firstly, we test for outliers by using the 'Jackknife' resampling technique which consists in dropping each country one at a time from our regression. Results from these regressions (shown in table 4) 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. Secondly, we examine whether the effect of ALMP and real interest rates holds true if the dependent variable is total unemployment instead of low-skilled unemployment (see table A.1 in the annex). The theory predicts that real interest rates – through its link with aggregate demand – are as relevant for total unemployment as for low-skilled unemployment. In contrast, active labour market programs are often specifically targeting the difficult-to-place unemployed and should thus be of greater relevance for low-skilled than total unemployment. The regression results show that interest rates and ALMP significantly affect total unemployment. However, as expected, the impact of ALMP spending is larger in reducing low-skilled than total unemployment.

Discussion of findings

We examine the plausibility of our findings by discussing them in the light of a few countries' unemployment experience since 1991. When looking at real interest rates, two very different cycles can be distinguished. In the early 1990s, restrictive monetary policy was one of the main causes for large unemployment increase in Western Europe. Between 1990 and 1992, most European countries had already entered into recession, whereas Germany's economy still soared as a consequence of the positive demand shock induced by reunification. When the German central bank finally put an end to the inflationary reunification boom in 1992 by raising the interest rate, the other European countries

had to follow suit to avoid capital outflow and to stabilize their exchange rates. This further depressed aggregate demand and resulted in rising unemployment (Fitoussi et al., 2000: 260). Particularly hard hit was Sweden, where the real interest rate increased from 4.4 in 1990 to 9 per cent in 1992. This disinflation resulted in a gradual increase in Sweden's low-skilled unemployment from 2.6 in 1991 to 10.1 per cent in 1995.

At the end of the 1990s, monetary policy changed from being an impediment to becoming a stimulus for employment growth in a number of European countries. In terms of real interest rates, the transition to the common European monetary policy in 1999 was particularly beneficial for the Mediterranean Euro-countries plus Ireland. Thanks to the common European currency, these countries profited after 1999 from the same *nominal* interest rate as Germany, while still having somewhat higher inflation. Hence, Ireland's *real* interest rate remained below 1 per cent in the four consecutive years after the introduction of the Euro 1999-2002. Over the same period, Ireland's low-skilled unemployment rate decreased 9.2 to 5.9 per cent. Monetary policy also plays a substantial role in explaining Spain's success in bringing down low-skilled unemployment (see figure 1). In the run-up to EMU 1990-1996, Spanish real interest rates stood at an annual average of 6.0 per cent. Once in the EMU, real interest rates fell to an average of 0.5 per cent over the period 2000-2006. This expansionary monetary policy stimulated internal demand (particularly construction) and was essential for the reduction of low-skilled unemployment from 17 per cent in 1998 to 9 per cent in 2006.

About here figure 1

What about the role of active labour market policies (ALMP)? In the 1990s, several countries overhauled their public employment services with the goal of improving the matching process between job seekers and firms. The reforms simultaneously aimed at giving the unemployed better job-search assistance and at tightening the conditions that apply to receive benefits. Denmark and 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 program participation, this implied

ensuring that every jobseeker gets offers of work or training within a year of becoming unemployed. A look at low-skilled unemployment rates 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 (1991) to 6.9 per cent (2000) and remained at or below this level for the following six years. Likewise, figure 2 shows that 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: 166).

About here figure 2

Conclusion

This paper has started out from the observation that the OECD's unemployment problem concerns, to a large extent, low-skilled workers. 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 as to 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. Firstly, the data provide no support for the hypothesis that strict employment protection goes along with higher unemployment among the low-skilled. Secondly, we find no evidence for the assumption that low-skilled unemployment is linked to the level of legal minimum wages. Thirdly, 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 legal 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; Siebert, 1997, Scharpf, 2000). The insistence on greater wage differentials for the solution of the modern 'service trilemma' seems exaggerated (Iversen and Wren, 1998).[9]

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 Stephen Nickell and Richard Layard ten years 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: 13).

We conclude our paper by discussing the two hypotheses that receive support from our data. Firstly, investment in ALMP seems to pay off in form of lower unemployment of low-skilled workers. Secondly 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 services, training programs and job-search controls with a monetary policy that allows the economy to fully exploit its growth potential seems to lead to lower unemployment of the low-skilled.[10] A good labour market outcome may thus be the result of the coordinated use of instruments on the micro- and macro-economic level. On the micro-economic level, a strong nexus between active labour market policies and the unemployment benefit system seems to contribute to enabling people to move from welfare to work (Nickell and Layard, 1999). On the macro-economic 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: 9). In other words, ALMP seems an efficient micro-economic measure to make sure that jobseekers are willing to work, while expansive monetary policy creates a macro-economic context which effectively enables jobseekers to find work.

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Tables

Table 1: Variable descriptions and descriptive statistics

Variable	*Operationalization of variable*	*Mean*	*Min.*	*Max*	*Source*
Low-skilled unemployment	Unemployment rate of workers with less than upper secondary education	9.0	2.1	19.6	OECD
Legal minimum wage*	Legal minimum wage as % of median wage of full-time workers	47.1	29.4	62.5	OECD
Bargaining coverage rate	Percentage of employees covered with collective bargaining	70.7	14.0	98.0	OECD
Bargaining coordination*	Wage-setting coordination index developed by L. Kenworthy	3.1	1.0	5.0	Kenworthy (2000)
Trade union density*	Percentage of employees organized in a trade union	37.5	9.6	83.0	OECD
Wage inequality	Earnings inequality: ratio of 5th to 1st decile earnings of full-time workers	1.6	1.3	2.5	OECD
Initial unemployment benefit replacement rate	Initial net replacement rate as percentage of net earnings	63.4	34.0	86.0	OECD
Five-year unemployment benefit replacement rate	Unemployment insurance averaged over a five-year period	31.1	9.6	63.7	OECD
Active labour market policy (ALMP)*	Spending on ALMP as % of GDP, divided by unemployment rate	13.1	1.8	62.7	OECD
Employment protection legislation	OECD indicator of strictness of employment protection legislation	2.1	0.2	4.1	OECD
International trade*	Trade openness ratio: sum of exports and imports divided by GDP	78.3	20.7	268.7	OECD
Labour migration*	Yearly average net migration per 1000 population	3.6	-1.2	10.7	OECD
Real long-term interest rates*	Annual long-term nominal interest rate (yield of a 10-year benchmark government bond) minus annual GDP deflator	3.9	-0.5	8.6	OECD

* 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: OECD indicators are taken from the OECD online-database (http://stats.oecd.org/wbos/default.aspx)

Table 2: Mean unemployment rate of different skill levels, 2003-2006 (in %)

	Low-skilled unemployment	*Medium skilled unemployment*	*High-skilled unemployment*	*Ratio of low- to high-skilled unemployment*
Australia	6.3	3.8	2.7	2.4
Austria	8.0	3.7	2.5	3.2
Belgium	11.8	6.8	3.7	3.2
Canada	10.0	6.0	4.7	2.1
Denmark	6.7	4.0	4.0	1.7
Finland	10.8	7.8	4.2	2.6
France	10.8	6.6	5.4	2.0
Germany	19.6	10.6	5.3	3.7
Greece	7.7	9.4	6.6	1.2
Ireland	6.0	3.1	2.2	2.7
Italy	7.9	5.3	5.3	1.5
Luxembourg	4.8	3.3	3.3	1.4
Netherlands	5.2	3.5	2.6	2.0
New Zealand	3.6	2.5	2.6	1.4
Norway	5.0	3.0	2.2	2.2
Portugal	6.8	6.1	5.0	1.4
Spain	10.1	8.3	6.6	1.5
Sweden	7.1	5.5	4.2	1.7
Switzerland	6.9	3.4	2.7	2.6
United Kingdom	5.3	3.4	2.2	2.4
United States	9.4	5.3	2.9	3.2
Sample mean	*8.1*	*5.3*	*3.9*	*2.2*

Source: own computation based on OECD (2008)

Table 3: Regression results of the effect of a given institution or policy on the low-skilled unemployment rate in 21 OECD countries, 1991-2006

		Coef.	Std. err.	R^2	N obs.
Wage-setting institutions	Legal minimum wage	-12.01	12.300	0.155	48
	Bargaining coverage rate	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†	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**	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*	0.195	0.165	83
Monetary policy	Real long-term interest rates	1.20**	0.366	0.186	82

Significant at: † $p<0.1$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$

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).

Table 4: Regression results of the determinants of low-skilled unemployment rate, 1991-2006

	Model 1		Model 2		Model 3 (jackknife)°	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Trade union density	-0.00	0.032				
Bargaining coverage	0.02	0.052				
Initial unemployment benefit replacement rate	0.03	0.055				
Five-year unemployment benefit duration	0.02	0.057				
Active labour market policy	-16.16*	5.821	-10.06**	3.272	-7.38** -10.96**	2.181 3.576
Employment protection legislation	-0.40	1.141				
International trade	.01	0.017				
Real long-term interest rates	1.05**	0.354	1.04*	0.378	0.90* 1.27*	0.376 0.328
Time-period	0.65	0.783	0.68	0.743		
Constant	1.63	3.672	4.62	3.511		
N observations	70		82		78	
R squared	0.336		0.251		0.223 0.293	

Significant at: † p<0.1; * p<0.05; ** p<0.01; *** p<0.001

See notes below table 3.

° Jackknife regressions show the range of coefficients (extreme values) in regressions with one country omitted at a time.

Annex

Table A.1: Table 4: Regression results on the determinants of (low-skilled) unemployment1991-2006

Dependent variable	*Low-skilled unemployment rate*		*Low-skilled unemployment rate*		*Total unemployment rate*	
	Coef.	Std. err.	Coef.	Std. err.	Coef.	Std. err.
Trade union density	0.02	0.046				
Bargaining coverage	-0.67	0.554				
Initial unemployment benefit replacement rate			0.01	0.058		
Five-year unemployment benefit duration			0.07	0.059		
Active labour market policy			-16.50*	6.217	-9.96†	5.065
Real long-term interest rates					0.77*	0.293
Time-period	-1.14*	0.480	-0.84*	0.380	0.19	0.564
Constant	13.54**	2.001	10.68**	3.100	5.26	3.337
N observations	57		80		82	
R squared	0.093		0.196		0.269	

Significant at: † p<0.1; * p<0.05; ** p<0.01; *** p<0.001

See notes below table 3.

Figures

Figure 1: real interest rates and low-skilled unemployment in Spain (1991-06)

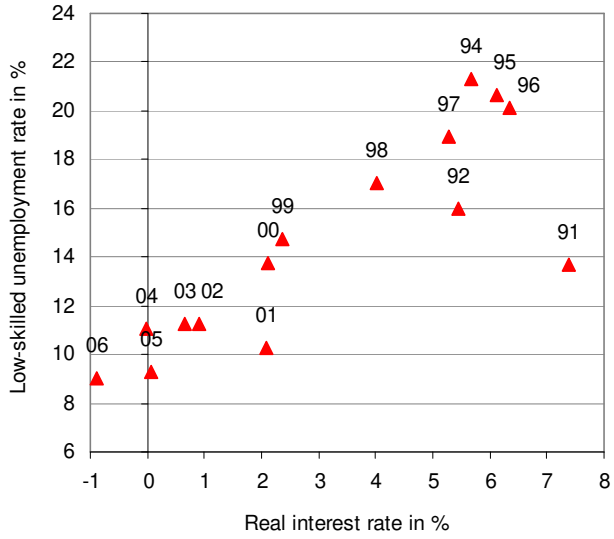
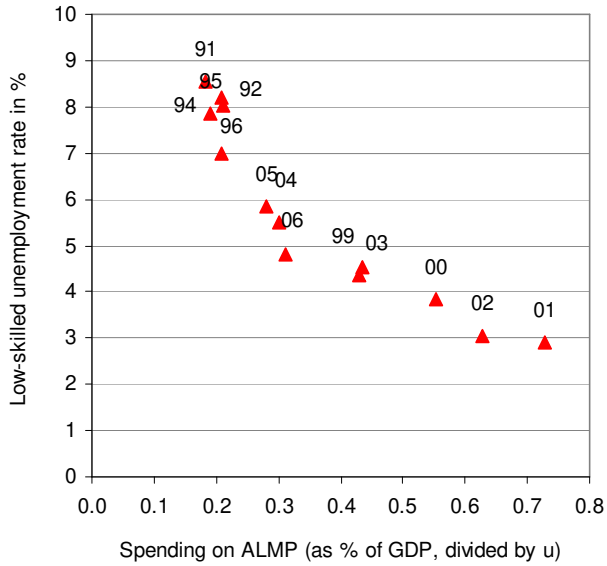


Figure 2: ALMP spending and low-skilled unemployment in the Netherlands (1991-06)



[1] Immigration is thus expected to decrease the NAIRU (the Non-Accelerating Inflation Rate of Unemployment). Bentolilla et al. (2008) argue that Spain's substantial fall in unemployment between 1995 and 2006 could only be achieved without high inflation because the country witnessed an immigration boom over the same period.

[2] The dataset is available from the author and can be obtained by e-mail.

[3] Low-skilled refers to people who did not complete upper secondary education (either vocational or general). Medium-skilled refers to people with upper secondary and post-secondary non-tertiary education, but without a tertiary degree. Finally, high-skilled refers to people with tertiary education (OECD, 2008).

[4] Inevitably, there are a few missing country observations for most variables. In the case of legal minimum wages, this is due to the fact that in several countries they do not exist. Values of the bargaining coordination index developed by Kenworthy (2000) only exist up to 2000.

[5] 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.

[6] Footnote ALMP: Following the OECD, we count as active measures public employment services, labour market training, youth measures, subsidised employment and measures for the disabled.

[7] Moreover, in countries with a tradition of immigration, labour supply probably reacts more quickly to cyclical slumps in labour demand. If these countries enter into 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).

[8] 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: labour migration is probably determined by the level of low-skilled unemployment rather than determining it.

[9] More plausible than expecting wage inequality to be the price to be paid for a successful service economy is the explanation that wage inequality simply mirrors the skill distribution of labour supply. Empirical enquiries into the earnings structure of the U.S. and Western Europe thus suggest that higher (lower) wage dispersion is the result of larger (smaller) skill differentials within the workforce (Nickell and Bell, 1996, Freeman and Schettkat, 2001).

[10] Of course, a loose monetary policy and low interest rates only succeed in stimulating aggregate demand if credit markets are functioning. In the current 2008-2009 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 credits.