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Title: Labour market regimes in Europe and labour market performance

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Abstract:

During the 1990s, a number of predominantly smaller EU countries implemented reforms of their labour market policies. As a result, their structural unemployment is today comparable with U.S. figures. However, structural unemployment in the EU15 countries as a whole remains at an historical height. This paper evaluates the labour market policies in the EU15 countries. Statistical methods show that different regimes of labour market policies exist within the EU, and that the performance of the regimes, in terms of structural and long-term unemployment, is closely related to the implemented policies in the regimes. In particular, the North-European and Anglo-Saxon regimes display better performance than the Central and South-European regimes. The extent to which reforms in labour market policies have contributed to the reduction in structural unemployment in the second half of the 1990s is assessed using results from panel-data regressions of 19 OECD countries. Finally, the actual policies implemented, relating to both labour market and employment policies, are described in some detail.

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1. Introduction

During the 1990s unemployment was reduced to low levels in a number of, primarily smaller, EU countries, while unemployment remained at historical heights in a number of larger EU countries, see section 2.

The substantial variation in structural unemployment across European countries can be ascribed to differences in labour market policies and other institutions such as tax systems and the organization of wage negotiations as well as the competitive pressure in product markets.

High unemployment compensation tends to increase structural unemployment, but the quantitative effects depend on other policies. For example, active labour market policies (ALMP), strict requirements for availability for work on unemployed, strict eligibility requirements, and low costs of hiring and firing tend to reduce structural unemployment and may counterbalance the effects of a high unemployment compensation, see section 3.

Some EU-countries pursue similar labour market policies. Using statistical methods, the EU15 countries may be subdivided into four regimes according to their actual policies.

The *North-European* regime (A) counts Denmark, the Netherlands and Sweden. In these countries unemployment benefits are high, but disincentive effects from generous benefits are counterbalanced by active policies, strict rules governing availability for jobs, and low to medium employment protection regulations.

The *Anglo-Saxon* regime (B) counts the United Kingdom and Ireland. Low unemployment benefits, varying expenditures spend on passive on active labour market policies, few demands for availability, and a low level of employment protection characterize this regime.

The *Central-European* regime (C) includes Austria, Belgium, Finland, and Germany. Labour market policies in these countries are for the most relative passive and employment protection is at average European levels. However, the levels of unemployment compensation vary between the countries.

The *South-European* regime (D) includes France, Greece, Italy, Portugal, and Spain. In these countries, employment protection is high and unemployment compensation close to the European average, but labour market policies are passive.

The relative performance of the four regimes is measured by the structural unemployment and long-term unemployment prevailing in the regimes. Structural and long-term unemployment is lowest in the North-European and Anglo-Saxon regimes. The main difference between these regimes is that the countries in regime A use active policies to counterbalance disincentive effects of high unemployment compensation, whereas reasonable incentives are obtained in the regime B countries by means of low replacement rates. The labour market policies in the North-European regime may reflect political preferences for equality and implies higher costs compared to the Anglo-Saxon regime.

2. Twenty Years of High Unemployment

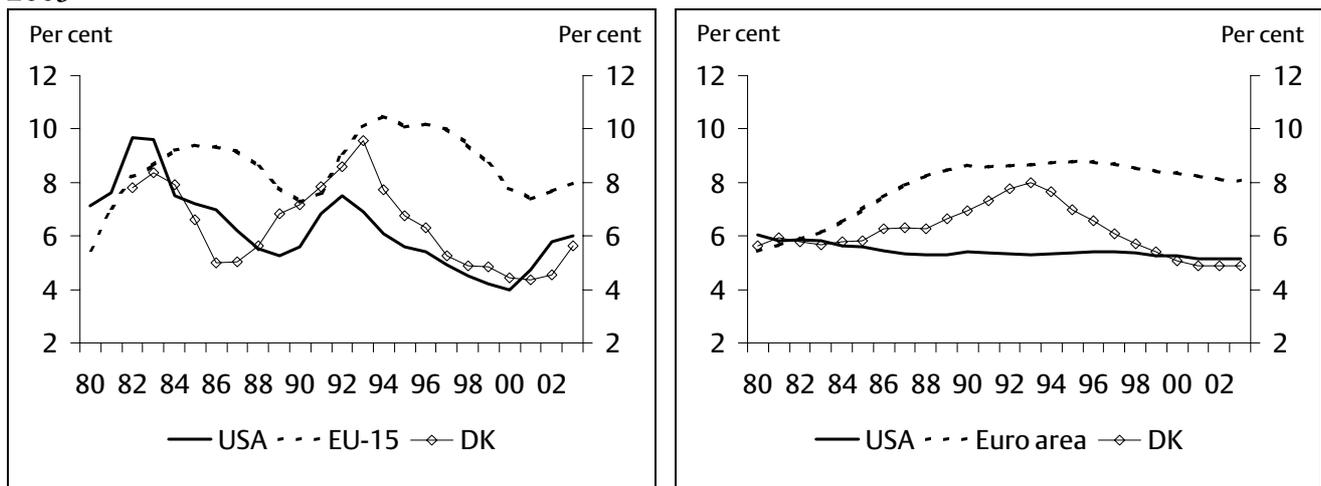
Unemployment was low in Europe during the 1960s and 1970s. After a series of negative supply shocks in the 1970s, unemployment rose to levels above U.S. figures in the mid-80s, see *Figure 1.a*. Unemployment reached an historical height in 1994 but has since been reduced by approximately 3 percentage points. The U.S. unemployment rate was reduced by 3.5 percentage points from 1992 to 2000, when unemployment reached the lowest level in recent decades.

Despite the upward trend in European unemployment until the mid-1990s, the ups and downs have followed the U.S. business cycle with a small lag.

Unemployment has risen the last three years in both Europe and in the United States due to the setback in the world economy. In a number of smaller EU-countries, including Denmark, unemployment was reduced significantly during the second half of the 1990s and is now at U.S. levels or below.

Structural unemployment has been largely unchanged in Europe since the late 1980s, except in a few smaller countries. The reduction in actual unemployment in Europe in the second half of the 1990s has therefore been primarily demand-driven. In the United States, structural unemployment decreased in the first half of the 1980s and again in the second half of the 1990s².

Figure 1a. Standardized unemployment, 1980-2003 **Figure 1b. Structural unemployment, 1980-2003**

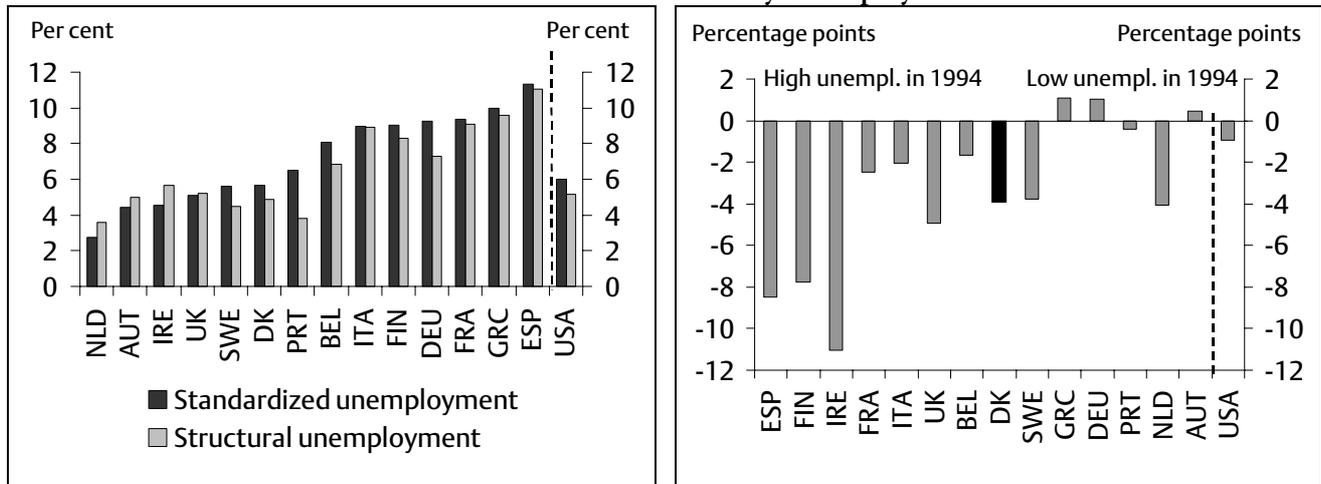


Note: Only West Germany is included in the Euroarea up to and including 1989, while East Germany is included from 1990 and on.
Source: Eurostat and OECD, *Main Economic Indicators*.

Within Europe, there is substantial variation in unemployment. In a number of smaller European countries, including Austria, Denmark, the Netherlands, Portugal, Sweden, and the UK, unemployment is at U.S. level or below, see *Figure 2.a*. High structural unemployment prevails in Central- and South-European countries such as France, Germany, Italy, and Spain.

² Other estimates of structural unemployment often display larger reduction in structural unemployment in the U.S. than the estimates from the OECD secretariat, see Ball and Mankiw (2002) and Gordon (1998).

Figure 2a. Actual and structural unemployment, Figure 2b. Change in actual unemployment 1994-2003 by unemployment in 1994



Note: Figures for Italy, Netherlands, Greece and the U.K. refer to 2002. In Figure 2b the change in unemployment is calculated on the basis of 1993 for Austria, Denmark, Netherlands, and United Kingdom, when unemployment peaked in these countries.
Source: OECD, *Economic Outlook* and *Main Economic Indicators*.

In most countries actual unemployment is above, but close to, its estimated structural level. The scope for reducing unemployment without an increase in wage inflation when employment picks up is therefore limited.

Spain, Finland and Ireland have reduced actual unemployment markedly, see *Figure 2.b*, but from preceding very high levels of cyclical unemployment. The reduction in structural unemployment in these countries has been more modest, see below.

Unemployment has also been reduced significantly in Denmark, the Netherlands, the United Kingdom and Sweden. In Denmark and the Netherlands, structural reforms in labour market policies have contributed significantly to this reduction.

3. Unemployment and Institutions

The substantial variation in structural unemployment in EU countries is often ascribed to differences in labour market policies, levels of regulation of product markets and employment protection, tax policies, and the determination of wages.

In this paper we find evidence that generous unemployment benefits (both in terms of compensation and duration), passive labour market policies, weak requirements on unemployed for availability for work, requirements for previous employment (eligibility), and strong employment protection regulations all increase structural unemployment.

This is the result of an empirical analysis using a panel of 19 OECD countries over the period 1983-99, see *Table 1*. The qualitative effects of each policy, i.e., the signs of the effects, are determined with fair precision while the quantitative effects are considered more uncertain due to measurement errors, omitted variables bias, and multicollinearity. The measurement errors relate to that the indicators doesn't always describe all aspects of a given policy relevant for job search, that only few observations are available over time for some indicators, and possible difficulties in comparing the indicators between

countries and over time. Furthermore, the estimated effects are averages over countries, and the estimates do not take into account interactions between different labour market policies.³

The results indicate that an increase in the average gross replacement rate by 10 percentage points will, on average, increase structural unemployment by approximately 0.5-1.2 percentage points, see Table 1. The adverse effect on unemployment reflects that generous benefits reduce the incentive for job search and increase wage demands. High unemployment benefits may also impede the integration of low-skill workers.

Table 1. Effects of labour market policies and institutions on actual and structural unemployment, panel of 19 OECD-countries, 1983-99

	Effect on standardized unemployment rate Sign	Effect ¹⁾
More generous (overall) unemployment compensation	+ ***	Ca. 0.5-1.5
Longer duration of benefits.....	+ ²⁾	Ca. 0.5 ²⁾
Stronger requirement on availability	÷ **	-
Higher expenditures on ALMP ³⁾	÷ **	Ca. 0.15-0.30
Stronger employment conditions	÷ *	Ca. 0.5
Higher job protection	+ *	-
More centralized wage negotiations	÷ ***	-
Higher Union Membership	+ ***	-
Higher total taxes on labour ⁴⁾	+ **	-

Notes: ***, **, and * means statistical significance at 1%, 5%, and 10% levels, respectively. The deviation from HP-trend in log of real GDP is included in all estimations as control for business fluctuations, and in some regressions also the real interest rate and country dummies, see Box 5.2 and Appendix C for discussions of the empirical strategy and results.

- 1) The quantitative effects are only stated for indicators for which the effects have direct interpretation. The figures state the effect on actual unemployment in percentage points by:
 - i) An increase in the replacement rate of 10 percentage points throughout the benefit period.
 - ii) An extension of the maximum duration of unemployment by one year.
 - iii) An increase in the expenditures on ALMP of 1 percentage points GDP per unit of unemployment, corresponding to approximately ½ billion Danish kroners from current Danish policy.
 - iv) Tightening of employment condition by 26 weeks, corresponding to the tightening in Denmark in 1997.
- 2) All effects are calculated from Danish policy.
- 3) The maximum duration of unemployment benefits is found to be insignificant. A possible explanation is that the maximum duration is included implicitly in the OECD indicator for overall unemployment compensation, see Appendix A, and that the effect of increasing the maximum duration of unemployment is measured through the effect of the (overall) replacement rate (first row in the Table).
- 4) Measured as expenditures per unemployed to the ratio of GDP per person in the labour force, see Box 2.
- 5) The result was derived from an estimated relationship using data over the period 1963-99. The indicator was found not to have statistical significance over the period 1983-99.

Source: Own calculations.

The adverse effects of generous benefits may be counterbalanced by other policies. A short period of maximum benefit entitlement reduces risks of long-term unemployment and may reduce insider's bargaining strength. The adverse effects are also counterbalanced by strict rules for availability for work if they are backed by suitable sanctions, because these measures increase job search activity. More strict conditions for entitlement to benefits, for instance stronger employment conditions, may increase job

³ The importance of interactions between different policies and institutions has been stressed recently by Nickel *et al.* (2003). For instance, they find that the positive impact on unemployment of taxation is moderated if coordination of wage bargaining is high (the coefficient on the interaction term is negative). However, the interactions that are most relevant for the current paper, namely interactions between labour market policies such as the generosity of unemployment benefits and availability restrictions and/or ALMP, are not easily investigated here, since several of the relevant indicators are included in the regressions as constants over time for technical reasons, see Appendix C.

search among laid-off workers still in employment, increase geographical and professional mobility, and decrease wage demands.

Box 1. Included indicators

To assess whether differences in labour market policies and institutions can explain differences in unemployment rates among OECD countries, a relationship between the unemployment rates and the policies and institutions has been estimated using a panel of 19 OECD-countries over the period 1983-99. The sample period is confined by available data, in particular information on the generosity of the benefit systems and expenditures on ALMP.

There exist differences between countries that are not explained by the included indicators and might bias the results if not accounted for. These unexplained differences are accounted for by including country-specific constant terms, see Appendix C. The following indicators are included in the analysis, see Appendix A:

Generosity of unemployment benefits: OECD-indicator constructed as an average of unemployment compensation rates (gross) for two income levels and three family types over a five-year period. Figures for Denmark have been adjusted, see Appendix A.

Duration of benefits: Index constructed from the gross unemployment rates over five years. When the rate does not change over the five year period, the index is 1, while the index is 0 when the duration of unemployment benefit is equal to or less than one year.

Availability for work requirements: Index calculated by the Danish Ministry of Finance from survey of OECD countries. The index takes values between 1 and 5, increasing with the strictness of availability requirements.

Employment conditions: Index constructed from demands on previous employment as well as contribution conditions. The indicator yields the ratio of the employment condition to the contribution condition.

Active labour market policy: Gives the ratio of expenditures on active labour market policies as percentage of GDP to the unemployment rate.

Employment protection: Index for the ranking of countries on strictness of employment protection.

Product market regulation: Index constructed by the OECD for the degree of regulation of product markets. The index is increasing in the strictness of the regulation.

Total taxes on labour: The sum of the payroll tax rate, the income tax rate, and the consumption tax rate.

Wage negotiations: Index for the co-ordination of wage negotiations. Takes values from 1 to 3, with 3 indicating centralized negotiations and 1 decentralized.

Union membership: Number of union members to employed workers.

Business cycle: Deviations from HP-trend of log of real GDP ($\lambda = 100$).

The evidence reported in Table 1 also indicates that active labour market policies reduce structural unemployment and may thereby limit the adverse effects of generous unemployment benefits, *see Figure 3.a*. According to the point estimates, an increase in spending on ALMP by 1 percent of GDP per unemployed may reduce structural unemployment by approximately 0,1-0,2 percentage points.

The effectiveness of active policies in reducing structural unemployment is probably larger in countries with high replacement rates, since the need to test availability for work and to improve job search by other measures is larger in these countries.

The expenditure-based indicator for ALMP yields only a very simplified description of the various effects that may be attributed to ALMP, including behavioural effects, human capital effects, etc. Furthermore, the indicator does not discriminate between the various activation measures. For example, evidence shows that private job placement has the largest effect in terms of regaining employment. Finally, the effects of ALMP on total unemployment (open unemployment plus participants in ALMP)

may be smaller than on open unemployment, if unemployed in activation programs report that they are not available for work, despite formal requirements in some countries, *see box 2*.⁴

Box 2. Statistical definition of unemployment and the causal effect of ALMP

Participants in ALMP do not count as registered unemployed in many national unemployment statistics, including the Danish statistic. Even if there were no causal effect of ALMP on unemployment, there would, probably, be a (negative) correlation between registered unemployment and expenditures on ALMP across countries due to the statistical definitions of registered unemployment.

If there are formal requirements for availability for work while participating in ALMP, participants in training programs should, in principle, count as unemployed in the standardized figures. However, if participants themselves report that they are not searching for jobs or are otherwise unavailable for work according to the ILO definition of unemployment, they do not count as unemployed in the standardized figures. Furthermore, unemployed in job replacement programs are counted as employed in the labour force survey. Hence, part of the estimated effect of ALMP on the unemployment rate is due to the statistical definition of unemployment. Consequently, a conservative estimate of the effect of ALMP is applied when evaluating the contribution to the reduction in unemployment during the second half of the 1990s given in section 3.

Microeconomic evidence shows that an important effect of ALMP is to increase availability for work and job search among unemployed, and that unemployed obtain jobs more quickly in periods leading up to the start of a program. This may be the most important effect through which ALMP reduces structural unemployment.

The positive impact on job search, termed the motivation effect, may only come about, if remuneration is below the going wage. If remuneration corresponds to the going wage, the increase in income may equalize the utility loss from participating in activation schemes and there might only be a small effect on search behaviour. Thus, it is decisive for ALMP to have positive incentive effects that remuneration corresponds to the level of benefits.

Employment protection legislation (EPL) has profound impact on the labour market. In particular, high costs of hiring and firing reduce job creation, job destruction, and hiring and firing of workers, i.e., it reduces churning in the labour market and increase long-term unemployment.⁵

However, it is difficult to establish a cross-sectional correlation between measures of reallocation (the sum of job creation and job destruction) and EPL empirically, because of varying measures of reallocation across countries due to different sectoral coverage, firm sizes, time periods, etc. Controlling for firm size, however, it seems clear that reallocation is lower in countries with stricter EPL.⁶ Furthermore, stricter EPL may impede reduction in unemployment after negative shocks to the economy, that is, reduce responsiveness to shocks, *see Box 3*.

⁴ This is taken into account in the estimated interval given in Table 1.

⁵ See, for example, Bentolila and Bertola (1991).

⁶ See Blanchard and Portugal (2001) and OECD (2004).

Box 3. EPL and the persistence of unemployment

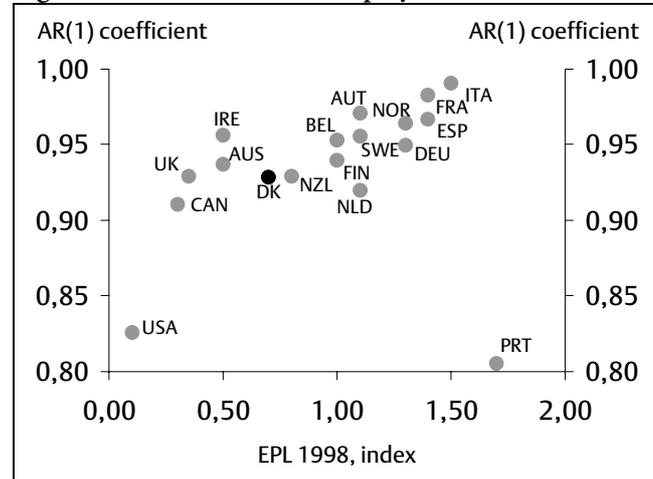
Employment protection regulations may affect the persistence in unemployment (the speed by which unemployment reacts to economic shocks). The persistence of unemployment in each country is characterized by the α parameter in a first-order autoregressive model,

$$(1) \quad u_{it} = \mu + \alpha u_{i,t-1} + \varepsilon_{i,t}, i = 1, 2, \dots, N,$$

where u_{it} is the unemployment rate at time t in country i , μ the constant term, and ε_{it} the residual. A larger value of α implies a higher degree of persistence of unemployment.

The point estimates of country-specific regressions of (1) reveal that the persistence of unemployment is larger in countries with stricter EPL, see *Figure A*. This conclusion is supported by an OECD study that controls for labour market policies and institutions, see Scarpetta (1996). Portugal is a clear, well-known outlier with respect to EPL and unemployment performance, which may be the result of factors not included in a simple univariate regression. The result indicates that strict EPL makes it difficult to reduce unemployment from high levels after a negative shock, probably because firms are reluctant to hire new labour. On the other hand, firms in countries with strict EPL keep labour employed for an extended period after a negative shock, and unemployment increases more gradually than in countries with less strict EPL.

Figure A. Persistence of unemployment and EPL



Note: The first-order AR coefficient is estimated for the periode 1963-1999. EPL refers to 1998. By definition, the unemployment rate cannot contain a true unit root, hence, no unit root test have been performed.

Source: Own calculations.

Since both hiring and firing are reduced by strict EPL, a priori the effect of EPL on aggregate unemployment is ambiguous. Across European countries, however, there is a clear positive correlation between structural unemployment and EPL, see *Figure 3.c*. This evidence goes against a commonly held view that it is difficult to establish such a cross-country relationship. This view arises when a very heterogeneous set of countries is examined, whereas a much clearer relationship emerges in more homogenous panels, see *Box 4*.

Box 4. EPL and aggregate unemployment

It is often held that empirical evidence does not support a clear relationship between EPL and structural unemployment, see the OECD *Employment Outlook* 1999 and 2004, and Nickell, Nunziata, Ochel, and Quintini (2003). For instance the R-squared is nil in a cross-section regression of the aggregate unemployment rate on the overall EPL index in the late 1990s covering all OECD countries, see OECD (1999). Using the updated index from 2003, results are largely unchanged, see OECD (2004).

However, in large heterogeneous cross-sections, as in these OECD studies, causal effects may be blurred by other determining factors for unemployment. For instance, including Asian and Latin America countries introduces the risk of a strong omitted variables bias, since these countries have very different labour markets and financial institutions from those in European and North American countries.

To detect partial correlation it is imperative to include only a relatively homogenous set of countries, yielding a much less disputable conclusion, as shown in *Figure 3.c*. This is, of course, recognized by the OECD secretariat, which calls for multivariate analysis of this possible link. Such analysis is supportive of the view expressed in this paper, namely that EPL has detrimental effects on structural unemployment, for example the results reported in *Table 1*, Blanchard and Wolfers (2000), and Elmeskov, Martin, and Scarpetta (1998) for evidence on industrialized OECD countries and Heckman and Pagés (2000) for results on Latin America.

Excessive regulation of product markets and/or a moderate level of competitive pressure in products and other markets may increase profits, and hence prices. In standard models of wage bargaining, workers will require higher nominal wages in order to restore real wages, which in turn may result in higher prices due to increased labour costs. Higher labour costs results in higher unemployment, which, eventually, puts a halt to real wage demands.

Countries with more regulated product markets typically have stricter EPL, *see Figure 3.d*. Thus the regulation of product markets may reinforce the detrimental effects of EPL and vice versa.⁷ On the other hand, this implies that it is difficult to estimate the effects of EPL precisely, as part

The institutional settings of wage determination may affect both the level of unemployment and the speed by which unemployment responds to shocks. The degree of unionization may be used as a very simple indicator of workers' strength in wage negotiations. The results indicate that a stronger bargaining strength may increase unemployment, probably because of an increase in wage pressure⁸.

The results further indicate that more coordinated wage negotiations are associated with lower unemployment. This effect may arise if economic rents caused by unions in industry-wide negotiations are internalized in more coordinated and/or centralized wage negotiations⁹. It is commonly held that decentralized wage negotiations are also beneficial for low unemployment, since wages are closer to the marginal product of labour in these systems. Furthermore, industry wide negotiations are held to be most detrimental for unemployment because unions may have monopoly power at industry level and these negotiations may not take into account the effect on aggregate unemployment of their wage demand, Calmfors and Drifill (1988). This inverted U-shaped relationship between coordination and/or centralization of wage determination is flatter in more open economies and in countries with more competitive product markets, Calmfors (1993). This may explain why it has been difficult to establish a clear and significant hump-shaped relationship empirically in this line of research¹⁰.

Finally, the results indicate that higher total taxes on labour may increase wage demands, and hence increase unemployment. This measured effect is most likely a consequence of short to medium-term real wage rigidities, whereas the long-run effect – after real wages have been adjusted – of total taxes on unemployment seems to be limited.

⁷ It is difficult to include the indicator for product market competition in a panel regression, because there is only one observation relating to 1998 and because some countries have deregulated their regulation of the product markets during the sample period.

⁸ In some countries, such as France, collective agreements are extended to non-union members at large and unionization in France may be low due to this fact rather than to a low bargaining strength. See OECD (2004) for a description of extension mechanisms and their relevance for bargaining outcomes.

⁹ The literature usually distinguishes between coordination and centralization. Coordination refers to the extent that unions and/or employer's organizations coordinate their wage claims and the coordination dimension of wage negotiations is usually associated with Layard et al. (1991); centralization refers to whether wage negotiations are conducted at decentralized, industry-wide, or centralized level and is usually associated with Calmfors and Drifill (1988). Only the index for coordination is applied in the current study, since only this index is available over a long period of time.

¹⁰ Scarpetta (1996) and Elmeskov, Martin, and Scarpetta (1998) find some evidence of an inverted U-shaped relationship between centralization/coordination and unemployment, but the estimated coefficients are not always significantly different from zero.

Figure 3a. Unemployment and ratio of expenditures in ALMP per unemployed to GDP per person in labour force, 1999

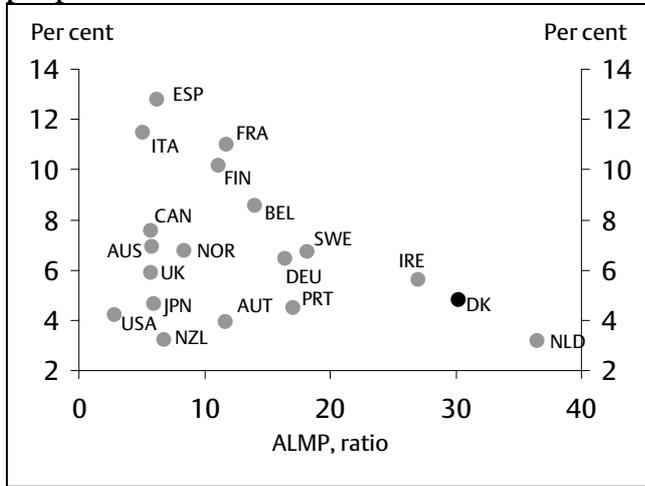


Figure 3b. Employment protection, 1998, and change in unemployment, EU countries, 1994-2003

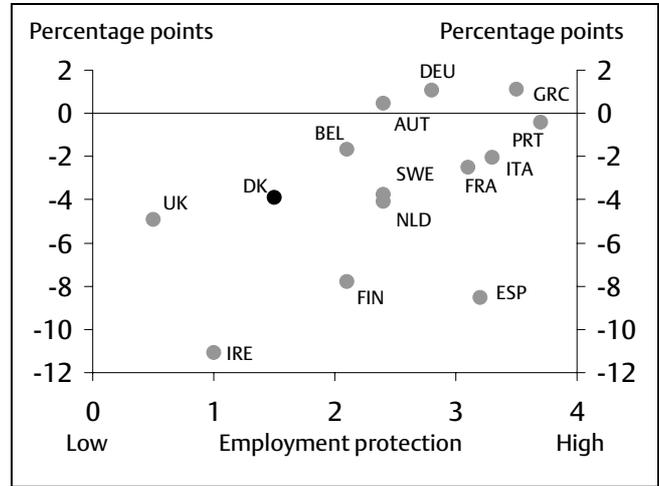


Figure 3c. Structural unemployment and employment protection in EU countries, 2003

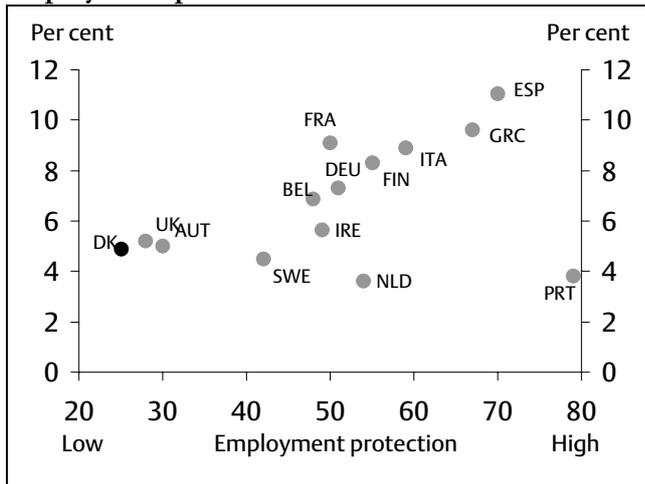
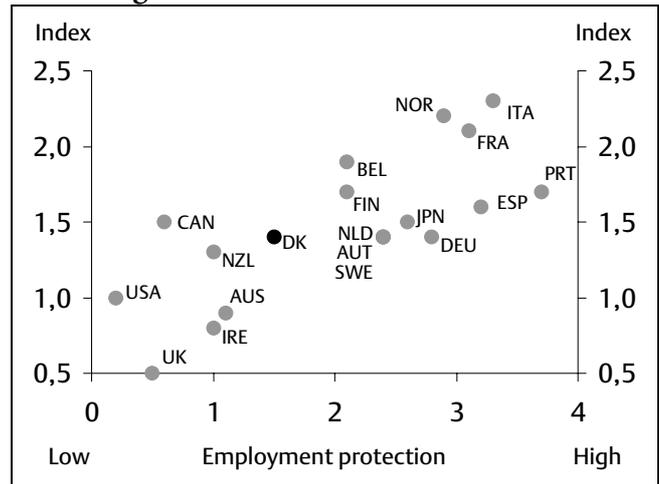


Figure 3d. Employment protection and product market regulation, 1998.



Note: The EPL index in Figure 3c has range 0 to 100 (increasing with strictness of protection). The index is compiled by the World Bank and may be downloaded at <http://rru.worldbank.org/DoingBusiness/default.aspx>. The World Bank index does not exist for 1998, and the OECD index is used instead in Figures 3b and 3d in order to facilitate comparison with the 1998 index for product market regulation. After the completion of this research, OECD has published an updated version of the indexes for 2003. Both indices are compiled using similar criteria.

Sources: OECD, *Economic Outlook* and *Main Economic Indicators*, Nicoletti, Scarpetta and Boylaud (2002), Botero, Djankov, Porta, Lopez-de-Silanes and Shliefer (2003), and the World Bank.

3. Labour Market Policy Regimes

From the indicators of labour market policies in the EU-countries included in the analysis presented in the previous section, it is possible to identify collections of countries that have similar policies. The results of a formal statistical analysis, a so-called cluster analysis, indicate that the fourteen included countries may be classified in four regimes characterized by the labour market policies in the countries belonging to each cluster¹¹, see Box 5 and Figure 4.

¹¹ Madsen, Munch-Madsen and Langhoff-Roos (2003) also perform a cluster analysis of the labour market policies in the EU using the indicators of labour market policies contained in the national action plans (NAP),

Regime A: The *North-European* regime includes Denmark, the Netherlands and Sweden. The policy mix in this regime is characterized by generous unemployment benefits counterbalanced by active policies, strict requirement of availability for work on unemployed, and low to medium levels of employment protection regulations.

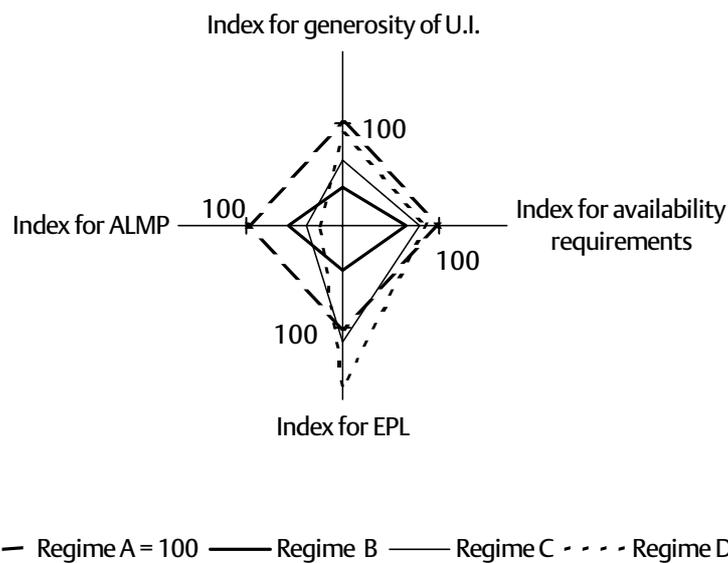
Regime B: The *Anglo-Saxon* regime includes United Kingdom and Ireland. This regime is characterized by low unemployment benefits, relatively passive labour market policies, few demands for availability, and low employment protection.

Regime C: The *Central-European* regime includes Austria, Belgium, Finland, and Germany. Labour market policies in these countries are mostly relatively passive and employment protection at average European levels. The levels of unemployment compensation vary.

Regime D: The *South-European* regime includes France, Greece, Italy, Portugal, and Spain. In these countries, employment protection is high, unemployment compensation at average European level, and labour market policies are passive.

Figure 4. Characteristics of labour market policies in regimes

Regime	Policy	Countries
<i>Regime A</i> <i>North European regime</i>	<ul style="list-style-type: none"> • High replacement rate • Strict availability for work requirements • Active LMP • Low to average employment protection 	Denmark Netherlands Sweden
<i>Regime B</i> <i>Anglo-Saxon regime</i>	<ul style="list-style-type: none"> • Low replacement rate • Few formal demands on availability • Varying degree of active LMP • Limited employment protection 	Ireland United Kingdom
<i>Regime C</i> <i>Central European</i> <i>Regime</i>	<ul style="list-style-type: none"> • Varying replacement rates • Varying demand on availability • Passive LMP • Average to high employment protection. 	Austria Belgium Finland Germany
<i>Regime D</i> <i>South European regime</i>	<ul style="list-style-type: none"> • Average replacement rates • Strict availability for work requirements • Passive LMP • High employment protection 	France Italy Spain Portugal Greece ¹⁾



Note: The index for each regime is a simple average of the indices for each country in that regime of the particular labour market policy, normalized with the index for regime A, see Box 1 for a description of the indicators.

1) Greece is excluded from the cluster analyses due to missing information on several indicators. It is assessed that Greece belongs to regime D.

Source: Own calculations.

Box 5. Cluster analysis of labour market policies

This box presents the results of a statistical cluster analysis of the labour market policies (LMP) in fourteen EU countries (EU15 excluding Greece). The indicators included in the analysis are the gross replacement rate over five years, employment protection, expenditures on active labour market policies, and employment and availability criteria. The gross replacement rate over five years takes into account the maximal duration of unemployment benefits. All indicators have been standardized so the results are unaffected by the scaling of variables.

There are several methods for partition observations into clusters. In the current study, two general methods have been applied, using three different distance measures in each method as a test of the robustness of the results. In this box two results are presented. The first set of results is based on a method in which countries are classified into four clusters, where the number of clusters has been imposed a priori. Each country is classified, using an iterative process, according to its closeness to the mean value of the indicators in each cluster. Several distance measures may be applied for comparing the distance between a country and the average in each cluster. This method may be termed the *partition method*, see for example StataCorp (2003). *Table A* displays the result using the Euclidian distance as distance measure.

The second result is obtained using a method in which each country constitutes a separate cluster to begin with. Then the two closest countries are clustered according to the distance between the indicators in each country, and this process continues until all countries are classified in one cluster. This method may be termed the *hierarchic method*, see e.g., StataCorp (2003). *Figure A* displays the result of a hierarchic method using the Euclidian distance as distance measure. Read from below, countries with the most similar LMPs will be clustered first. Hence, Spain and France have more similar LMPs than each country has compared with Ireland and United Kingdom.

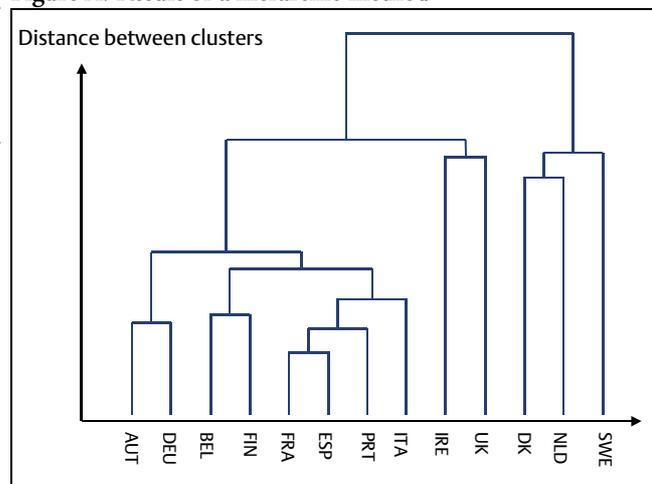
The results indicate that labour market policies in Belgium and Finland are closer to the LMPs in the South-European regime than to the LMPs in Austria and Germany, which belong to the Central-European regime. In the main text, Belgium and Finland is set to belong to the Central-European regime (regime C), as the policy in those countries on other dimensions not included in the analysis are most similar to the policy in regime C. For example, Nicoletti, Scarpetta, and Boylaud (2002) find that Belgium and Finland belong to the same cluster as Austria and Germany with respect to employment protection and product market regulation.

Table A. Result of a partition method

Regime A	DK, NLD, SWE
Regime B	IRE, UK
Regime C	AUT, DEU
Regime D	BEL, FIN, FRA, ITA, PRT, ESP

Note: Greece is excluded due to missing data. The Euclidian distance is used as measure of distance.
Source: Own calculations.

Figure A. Result of a hierarchic method



Note: See Table A.
Source: Own calculations.

Note that the EU15 countries were clustered according to their policies. The next section describes the performance of each regime in terms of unemployment and long-term unemployment.

Structural Unemployment across Regimes

There is a clear ranking of the four regimes according to the average structural unemployment rate in each regime. Unemployment is lowest in the North European regime (A) followed by unemployment in the Anglo-Saxon regime (B), see *Figure 5a*. The South European regime displays the most dismal performance on this dimension, again with Portugal as an outlier.

Figure 5a Structural unemployment, 2003

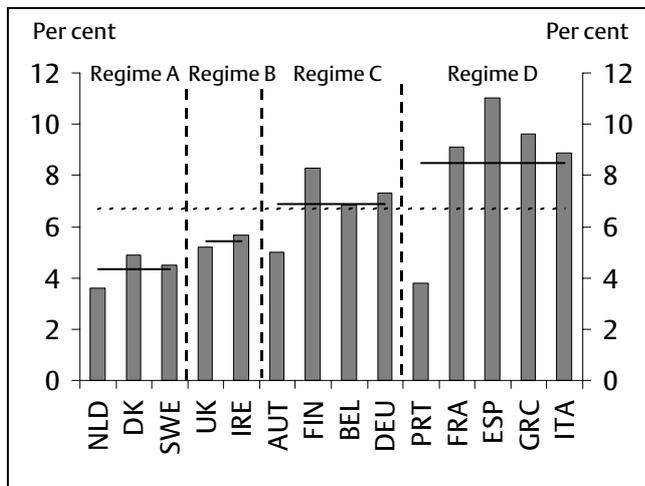
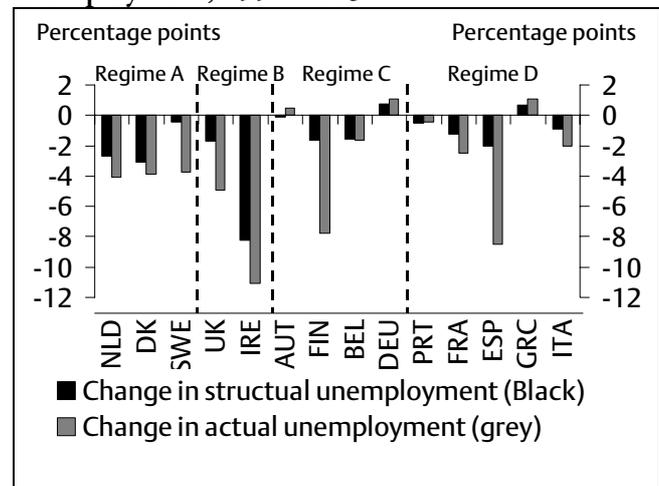


Figure 5b. Change in actual and structural unemployment, 1994-2003



Note: Structural unemployment is measured as the NAIRU indicator estimated by OECD secretariat.

Source: OECD, Eurostat and own calculations.

The lower level of unemployment in regime A compared to regime B - according to the results given in the previous section - may be explained by more active labour market policies and stricter requirements on unemployed for availability for work. Thus, active policies and strict availability for work regulation seem to more than counterbalance the negative effects of generous unemployment benefit systems in regime A compared to the policy in regime B.

The lower level of unemployment in regime A may also to some extent be explained by a high level of ALMP which could be reflected in the measured unemployment rates, because unemployed participating in job placement programs are counted as employed in the labour force statistic, and because participants in other programs may be counted as outside the labour force to the extent that they are not available for work according to the ILO definitions, see Box 2.

Furthermore, to evaluate the overall success of each regime's labour market policy mix, the cost-effectiveness of the policies must be taken into account. The intensity of ALMP in regime A is more expensive than the Anglo-Saxon system. This is a consequence of expenditures on ALMP and direct costs for unemployment benefits. These costs may reflect preferences for a more equal income distribution and to avoid a supply and demand for jobs with low hourly wages (working-poor). Measured by the Gini coefficient and the share of the population with incomes below 50 percent of the median income, the income distribution is more equal in the regime A countries than in the Regime B countries, Ministry of Finance (2004).

Structural unemployment is high in countries with average to generous replacement rates and high levels of employment protection (regimes C and D). This indicates that structural unemployment may be reduced in the regime C and D countries by choosing a policy mix that is similar to the policy mix in either regime A or B. The full benefits of reform will probably not be reaped, however, if the policies in the two regimes A and B are mixed. For instance, choosing low replacement rates and strong ALMP will not be cost effective, since a high level of active policies probably does not have the strong incentive effects on job search in a system with low replacement rates that they have in a system with high replacement rates.

In Germany and Italy there are large regional disparities in unemployment – high unemployment in North and East Germany and in southern Italy – which constitutes a separate issue not included in the current analyses.

Structural unemployment has been reduced most significantly in the regime A countries, *see Figure 5b*. In contrast, the nature of the reduction of unemployment in Finland, United Kingdom, Spain, and Sweden has been mostly non-structural. In Sweden, for instance, unemployment rose from approximately 2 per cent in 1989 to between 9 and 10 percent of the labour force in the mid-1990s. The increase in unemployment was caused by pro-cyclical tax cuts, a subsequent overheating of the economy, and a sharp decrease in exports due to the collapse in Eastern Europe following the breakdown of the Berlin Wall, Holmlund (2002). Thus only a minor fraction of Swedish unemployment in 1994 seems to have been structural in nature. Since then, there has been an improvement in the macroeconomic conditions, which reduced actual unemployment.

The reduction in unemployment in France can probably be ascribed largely to a significant reduction in employers' social contributions since the mid-1990s, which may have contributed to an increase in employment of up to 2 percent and a reduction in unemployment, *see Pisani-Ferry (2002)*.

From the analysis in the previous section, it can be established, although with some uncertainty, that a large fraction of the reduction in actual unemployment in regimes A and B can be ascribed to changes in active labour market policies and, hence, is structural in nature, *see Figure 6a*. A considerable fraction of the reduction in actual unemployment seems to be caused by factors other than changes in the various labour market policies, including cyclical factors, changes in product markets, marginal taxes, etc.

Figure 6a. Contribution to change in actual unemployment from labour market policies, 1994-99

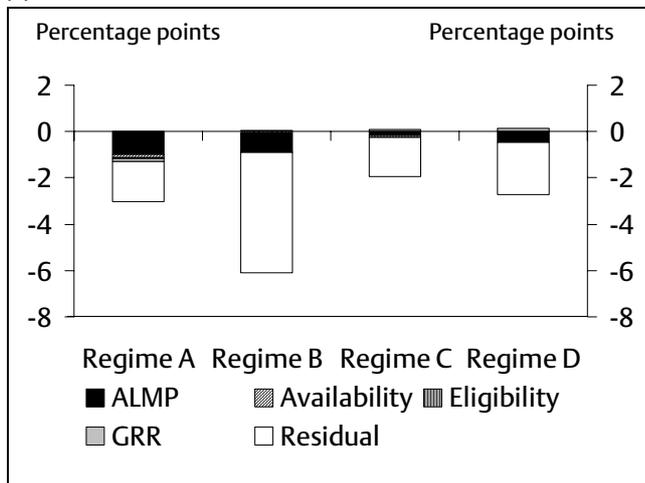
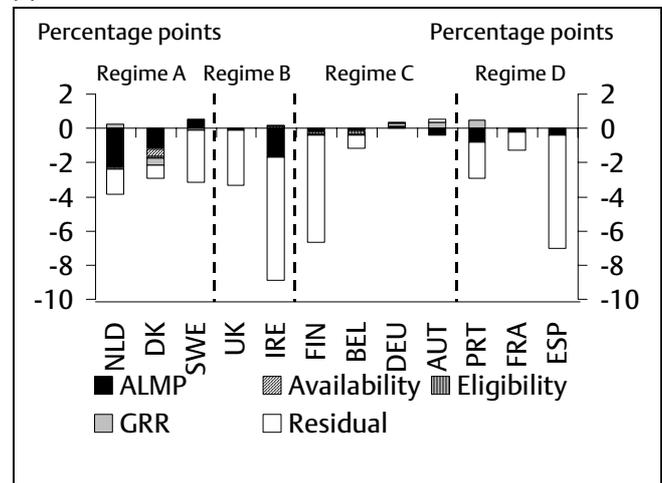


Figure 6b. Contribution to change in actual unemployment from labour market policies, 1994-99



Note: The contribution from each policy is calculated as the actual change in the indicator describing that policy multiplied by the estimated coefficient, *see the note to Table 1 in Appendix C*. It is only possible to calculate the contribution from changes in availability requirements for Denmark, as no information on the strictness of these requirements in mid-1990s is available for the remaining countries. The availability indicator for Denmark in 1993 is taken from Ministry of Finance (1998).

Source: Own calculations.

Measured by the effects due to labour market policies, the largest structural improvements seem to have occurred in Netherlands and Denmark, *see Figure 6b*. In addition, an increased focus on ALMP,

tightened demands on availability for jobs, and previous employment have contributed to the reduction in structural unemployment.

The reduction in structural unemployment in regime B can mainly be attributed to a reduction in Ireland over the period 1994-99, see Figure 6b, probably due to more weight on active policies. The reduction in actual unemployment in Ireland stands out and is probably explained by cyclical factors and factors not included in the analysis.

Long-term Unemployment in Regimes

Long-term unemployment is lowest in regimes A and B and in Austria, while long-term unemployment is high in the countries constituting regimes C and D, see Figure 7a.

Figure 7a. Long-term unemployment, 2002

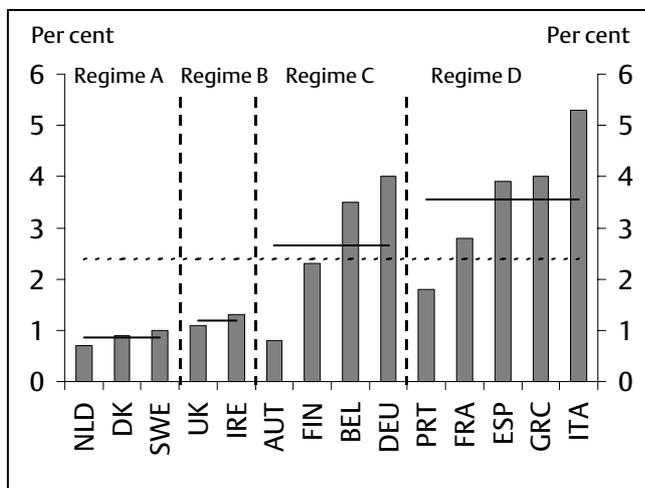
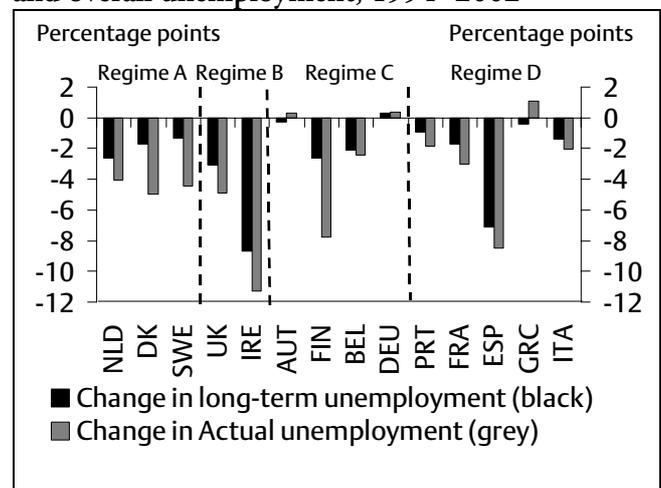


Figure 7b. Change in long-term unemployment and overall unemployment, 1994- 2002



Note: Long-term unemployment is defined as persons unemployed for one year or more as a percent of the labour force. Regime averages gives simple averages for the individual countries.

Source: Eurostat and own calculations.

Long-term unemployment is typically higher in countries with more generous unemployment benefits, especially in terms of duration of benefits, and in countries with strict EPL, see Section 3. However, active policies may reduce long-term unemployment technically to the extent that participation in programs affects the measured unemployment rate, see Box 2, and the share of long-term unemployment is typically higher in countries with high overall unemployment than in countries with low overall unemployment.

Long-term unemployment has been reduced in most EU countries since the mid-1990s, see Figure 7b. This follows naturally from long-term unemployment being more responsive to market fluctuations than overall unemployment, but may also be a result of the labour market reforms in regime A and Ireland.

5. Labour Market Policies in the EU

The following describes the labour market policies in the EU countries on the dimensions usually held to be most important for structural unemployment, see paragraph 3¹².

Unemployment Benefits

Benefit systems in the EU countries are comprised by a large set of elements that define the income support unemployed can obtain and the requirements unemployed must fulfil in order to be eligible for benefits.

Of particular importance for the level of structural unemployment are:

- The replacement rate
- The maximum duration of benefits (unemployment insurance and/or assistance)
- Possibility of temporary compensation in case of partial unemployment, vacation, etc.
- Eligibility rules, availability rules and sanctions associated with non-availability.

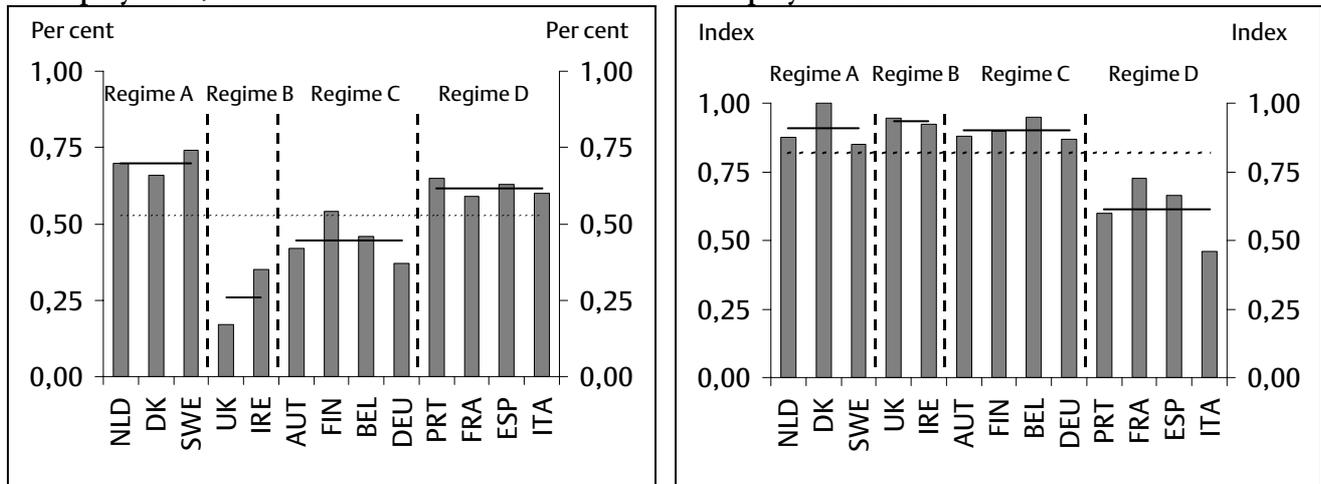
These aspects of the unemployment insurance (and assistance) systems are important determinants of search behaviour and of wage determination and, hence, structural unemployment. Policy on these dimensions will also affect the composition of unemployment with respect to short-term and long-term unemployment.

Gross replacement rates in the first year of unemployment are most generous in the regime A countries, followed by the regime D countries, see *Figure 8a*. On other hand, gross replacement rates are lowest in the regime B countries (Ireland and United Kingdom). Thus different levels of unemployment compensation are a marked distinguishing feature of labour market policies in regimes A and B.

¹² OECD and the European Commission collect detailed information on labour market policies in the member countries. Every second year the OECD publishes information on rules on key dimensions of benefit systems and calculates various replacement rates in the series *Benefits and Wages*. The EU Commission has compiled a database on the regulation of social protection (MISSOC). Finally, the EU Commission's Employment Committee, EMCO, collects a large set of quantitative indicators for labour market and employment policies that draws on information contained in the national action plans, see box 6 below. This information is more detailed than the information collected by the OECD, but it is assessed that some of the indicators are not comparable between countries and these indicators are therefore not used in the paper.

¹² See Ministry of Finance (1999).

Figure 8a. Gross replacement rate first year of unemployment, 1999¹⁾ Figure 8b. Index for maximum duration of unemployment benefits²⁾



Note: The horizontal full lines display regime (simple) averages, while the horizontal dotted line display the EU14 average. The indicators are not available for Greece. The indicator for maximum duration is constructed as in Nickell and Nunziata (2001).

- 1) Gross replacement rate first year gives the average over three family types and two income levels (2/3 and 100 pct. of the income of an average production worker). For Italy the figure relates to "Mobility benefits" that are only paid in the case of collective dismissals.
- 2) The index for maximum duration of benefits is constructed from the OECD net replacement rate for the first five years of unemployment, see Appendix A. The net replacement rate is used because the OECD gross rates does not take into account that unemployed in some countries become eligible for unemployment assistance after a relatively short period of unemployment or are participating in activation programs with a different, but similar, remuneration as unemployment benefits. In Sweden, for instance, unemployed will be included in active programs after approximately one year of unemployment and are therefore not entitled to unemployment benefits after this period. Sweden appears, therefore, with very low unemployment duration when measured by either the formal unemployment benefit period or the OECD summary measure of unemployment compensation.

Source: OECD (1999) and own calculations.

In Denmark, the replacement rate is particularly generous for low-income individuals, reaching 90 percent of previous wage income for persons with previous yearly income below approximately 27,000 euros (2004). For high-income individuals, unemployment compensation is relatively low compared with other European countries.

It is difficult to construct a measure for maximum duration of unemployment benefits that describes all relevant incentive effects. The reason is that unemployed in some countries become eligible for other benefits either at the level of unemployment benefits (for instance, participating in active programs), or close to it (unemployment assistance). These alternative benefit schemes may contain similar incentive effects, as do unemployment benefits. To construct a measure that is relevant for structural unemployment, these benefits should be included as well.

There is a clear tendency for the maximum duration – including social assistance and activation remuneration – to be significantly shorter in the regime D countries than in the other countries, *see Figure 8b*.

In a number of countries, there is a waiting period before benefits are paid to unemployed in case of dismissal. This period ranges from 3 to 7 days, *see Table 2*.

Table 2. Waiting periods before eligibility for benefits, 2003

Waiting periods	Countries
None	AUT, BEL, DK, DEU, ITA, NLD, PRT, ESP
3 days	IRE, UK
5 days	SWE
6 days	GRE
7 days	FRA, FIN

Note: In some countries there are specific conditions attached to effectuation of the waiting period.

Source: European Commission, *MISSOC data base*.

Finally, demands on previous employment for eligibility for unemployment benefits varies from four months within 8 months (France) to two years of employment preceding the unemployment spell (United Kingdom), *see Table 3*. In Denmark, the condition is 52 weeks within three years.

Table 3. Conditions for previous employment

	Employment condition/Qualifying period
Austria	1 year/2 years
Belgium	312 days /18 months increasing to 624 days/3 years, depending on age
Denmark	52 weeks/3 years
Finland	43 weeks/2 years
France	4 months /8 months
Germany	12 months /3 years
Greece	12 months/3 years
Ireland	39 weeks/1 year
Italy	52 weeks/2 years
Luxembourg	26 weeks/1 year
Netherlands	26 weeks/39 weeks
Portugal	540 days/2 years
Spain	12 months/6 years
Sweden	6 months/1 year
United Kingdom	2 år/ -

Source: OECD (2002, Table 2.2).

During the 1980s Sweden was often quoted for its active labour market policy, because unemployment was low during a period when unemployment rose in many EU countries. In the beginning of the 1990s, unemployment rose markedly, which necessitated adjustment in the unemployment and activation program. In 2000/01 a reform was implemented. The reform implied a change in the profile of unemployment benefits so that benefits are now reduced after a period with unemployment benefits. Furthermore, participation in active programs no longer qualifies, in general, for a renewed benefit period, *see* Frederiksson and Runeson (2002).

Availability Criteria and Sanctions

Regulations governing demands on availability for work in order to be eligible for benefits cover aspects such as job search requirements, availability during activation, occupational mobility, and geographical mobility. These demands vary greatly between the EU countries.

Strict availability criteria and consistent enforcement of them will increase job search and may counterbalance the negative effects on job search behaviour of high unemployment benefits.

The Danish Ministry of Finance has previously conducted a survey of availability rules among the OECD countries. An updated survey was conducted during 2003 and 2004, and an updated version of the availability indicator has been constructed, *see* Appendix B.

The indicator is constructed as a weighted average of different aspects of availability and possible sanctions in case of non-compliance. Both dimensions in the indicator are important for evaluating the effects on structural unemployment, as strong demands on availability are probably not very efficient without effective enforcement of sanctions. Evidence from the Netherlands indicates that an increase in the sanction rate has led to a significant increase in the transition rate from unemployment to employment, see Abbring, van den Berg, and van Ours (1997).

A number of countries with relatively generous compensation rates (such as Denmark, the Netherlands and Portugal) have enforced strict availability demands and sanctions, probably in order to counterbalance disincentive effects from unemployment benefits and warrant job search, for example Denmark, Netherlands, and Portugal, see Figure 9a. In Ireland and the UK the availability criteria is the least stringent. In these countries job search is facilitated by low replacement rates.

Figure 9a. Availability for work requirement indicator, 2004

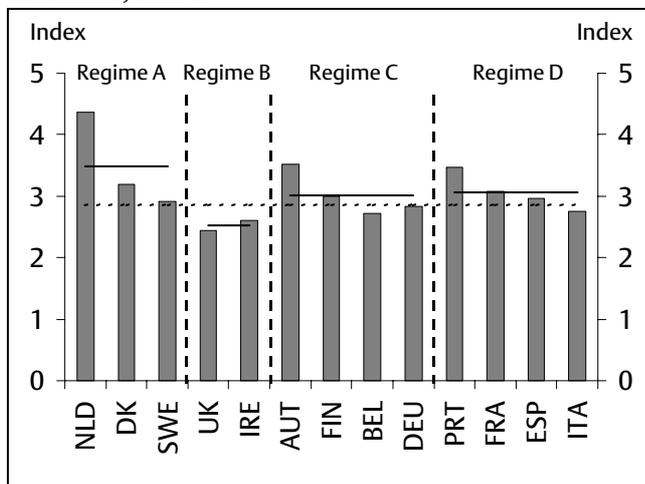


Figure 9b. Availability for work requirement indicator, 1997

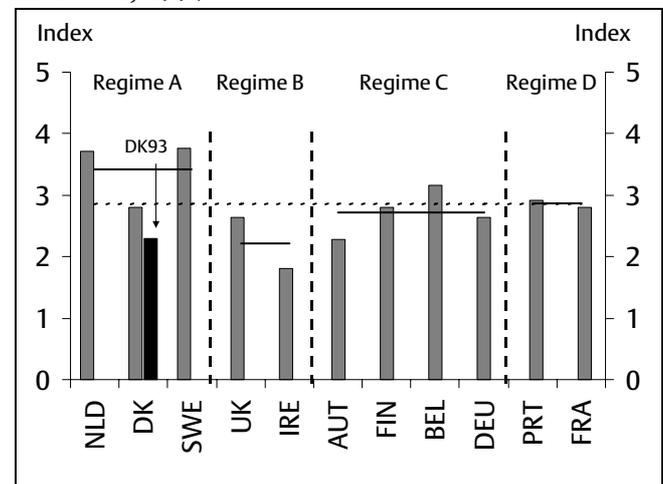


Figure 9c. Specific demands on availability, 2004

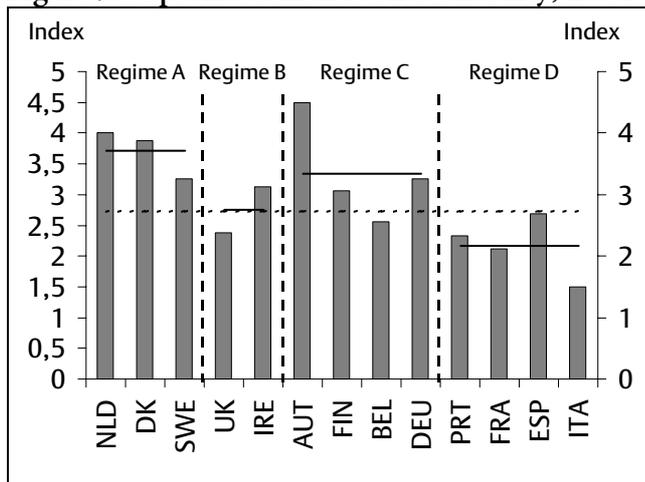
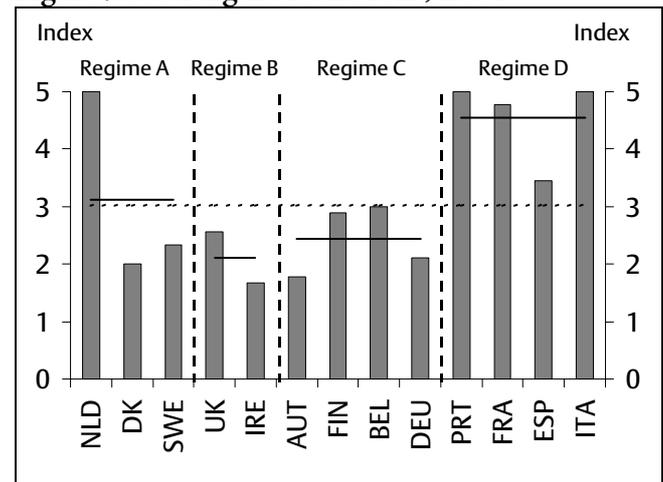


Figure 9d. Strength of sanctions, 2004



Note: The indicator for specific demands on availability is calculated as a weighted average of the points given to a country on questions 1 through 5, and the indicator for the strength of sanctions as a weighted average of the points given to a country on questions 6 through 8 see Appendix B. The indicator was not calculated for Greece, Italy, and Spain in 1997 and Greece in 2004.

Source: Survey from 1997 and 2004 and own calculations.

In comparison with the 1997 survey, a number of countries, including Austria, Ireland, and the Netherlands, have tightened the requirements for availability, *see Figure 9b*. Sweden has on the contrary reduced those requirements, although from a strict level. In the beginning of the 1990s, Denmark was among the countries having the weakest requirement for availability for work, but is today among the countries that put the strongest demands on availability for work. The main motivation for this change has been a political determination to keep unemployment benefits at high levels but to increase job search by other measures.

The variation of the availability indicator among the EU countries is a consequence of even larger variations – although in the opposite direction – in the indicators covering availability rules and sanctions.

In general, South-European countries (including France) have less stringent availability rules, while sanctions are stronger. This is opposite of weight given to these measures in regime A and B countries, *see Figure 9c and 9d*.

It should be noted that the indicators do not show whether the rules are actually enforced, and a number of countries have informed the Danish Ministry of Finance that rules are not enforced as stringently as laid down in law.

Active Labour Market Policies

Active labour market policies cover a wide range of measures aimed at increasing access to the labour market, job-related skills and the functioning of labour markets in general, *see Martin and Grub (2001)*. Active measures, as opposed to passive policies, constitute a central element of the European Employment Strategy as well as the OECD *Jobs Strategy* from 1994.

Activating unemployed is not by itself an expedient measure, if the active measures and the other rule governing eligibility for unemployment benefits are not directed towards bringing unemployed back to work.

Active measures have been an important element in Danish labour market policies going back to mid 1970s. However, up to 1994 unemployed became entitled to a renewed benefit period by participating in an activation program. Thus, the unemployment insurance system and activation programs seemed more directed at renewing benefit entitlement rather than bringing unemployed back at work. The Danish system before 1994 is therefore more properly characterized as passive rather than active despite the fact that a large number were participating in active measures. In Sweden, unemployed were entitled to a renewed benefit period by participating in active measures up to the reform in 2001.

It is very difficult to measure the causal effect of ALMP on unemployment. Microeconomic studies usually seek to identify the causal effect of activation by estimating the transition rate from unemployment to employment, controlling for systematic selection into programs and unobserved heterogeneity. However, in systems like the Danish, where participation is mandatory for all unemployed with a certain unemployment history, this may not identify the treatment effect.

The reason is that an important part of the activation strategy is to test availability for work among unemployed. Availability is tested by requiring participation in a program, which implies a significant loss in utility due to the reduction in leisure. The utility loss constitutes a substantial incentive for unemployed to search harder for a job. There is ample evidence from Denmark that unemployed do

find jobs more quickly in the time period just before activation is supposed to begin, see Geerdsen (2002).

Macroeconomic studies suffer from lack of good data over a long time span. They usually rely on expenditures on ALMP as an indicator for the weight given to active measures in each country, see, e.g., Martin (2000).

The Netherlands is the EU country that uses the most resources on ALMP, due to a large increase in spending since the mid-1990s, see *Figure 10a* and *10b*. Denmark and Ireland have greatly increased expenditures since 1994 and use significantly resources on ALMP. Italy, UK, Greece, Spain and Finland and Germany have the least active labour market policy among EU15.

The Netherlands and Denmark seem to compensate for the disincentive effects on job search of generous unemployment benefits by using ALMP to test availability for work. In countries with less generous benefit systems, activation may not be required to ensure sufficient job search among unemployed, since low replacement rates and/or a short benefit period themselves entail significant job search incentives.

Figure 10a. Expenditures on ALMP per unemployed to GDP per person in the labour force, 2001

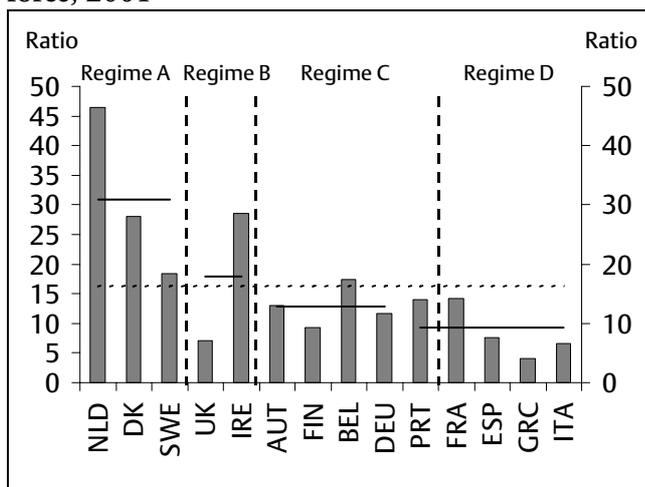
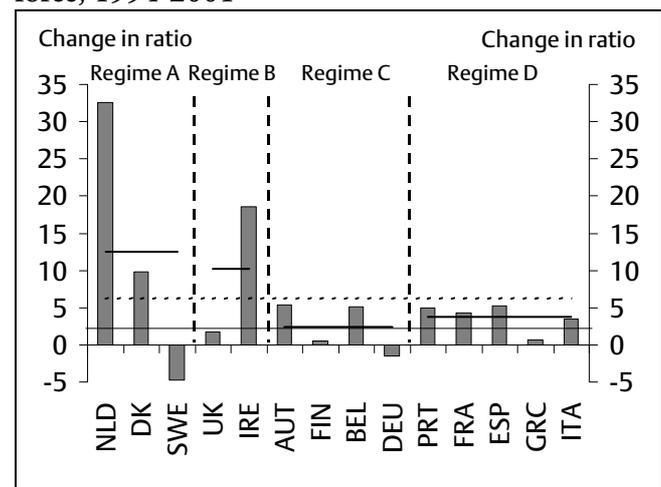


Figure 10b. Change in expenditures on ALMP per unemployed to GDP per person in the labour force, 1994-2001



Note: Expenditures are given as total active expenditure excluding expenditures on disability measures. The figures refer to 2000 for Denmark and Portugal, and 1998 for Greece. In Figure 10.b, the 1996 ratio is used as substitute for the 1994 ratio for Italy due to a missing observation.

Source: OECD, *Labour Force Statistics* and *Main Economic Indicators*.

The indicators displayed in Figure 10 give only a broad picture of the large differences in policies at a more detailed level. Furthermore, an apparently similar evolution in expenditures on ALMP may conceal different policies. In some countries more weight is put on job placement programs, e.g., Ireland, while in other countries more weight is put on different form of primarily educational activities with relatively short duration, e.g., Denmark. Educational activities demand more resources and differences in the relative weight of programs may explain some of the differences in the expenditures across countries. However, these differences in overall expenditures are much larger than can be explained by differences in the relative weight put on different instruments.

The use of resources for ALMP has been reduced since 1991 in Sweden, but from a high level, and Sweden is still among the countries that devote most resources to ALMP. The reduction has been a consequence of, among other things, the significant increase in unemployment during the first half of the 1990s, which put high pressure on the Swedish system.

Employment Protection Legislation

Employment protection varies greatly between countries. Employment protection is low or moderate in Austria, Denmark, and the UK, and substantial in South-European countries, *see Figure 11a*. Despite low employment protection in Denmark, workers' perception of employment security is very high in Denmark, which may be related to Denmark's active labour market policies¹³.

Figure 11a. EPL index, 2003

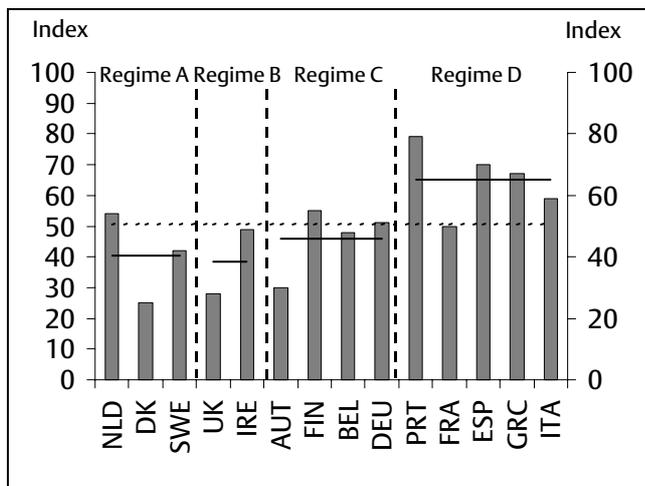
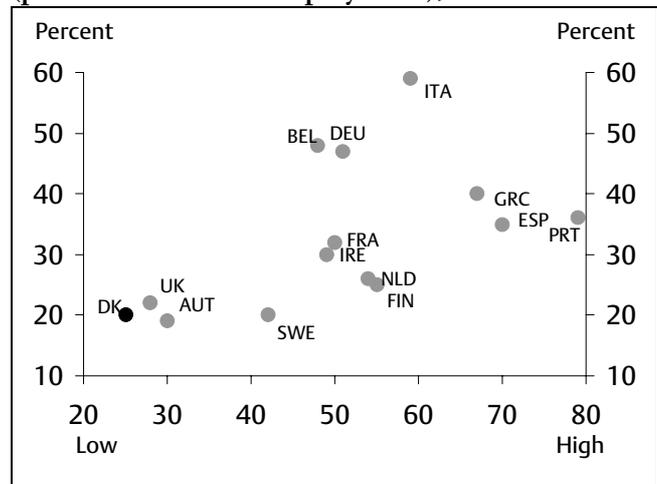


Figure 11b EPL and long-term unemployment (per cent of total unemployment), 2002



Note: See note to Figure 3.

Source: See Figure 3, and OECD, *Economic Outlook*.

A high level of employment protection implies, as discussed above, lower turnover in the labour market, and, typically, that long-term unemployment comprises a higher fraction of total unemployment than in countries with low employment protection, *see Figure 11b*.¹⁴

The detrimental effects of high EPL seem to affect most workers except middle-aged men, OECD (1999), and may furthermore hinder integration of immigrants.

Finally, in a number of countries the level of protection is different for permanent jobs and temporary jobs. Furthermore, a number of countries have liberalized the use of temporary jobs but uphold a high level of job protection in permanent job, see below.

¹³ OECD (2004) shows that there exist a positive relationship between expenditures on ALMP and worker's perception of employment security in the late 1990s. Thus, low strictness of EPL may not hamper employment security in systems generous unemployment benefits and an active labour market policy (may be termed the Danish "flexicurity approach", OECD (2004, p. 97)).

¹⁴ It should be noted that employment protection legislation does not protect employment but rather the individual job.

6. Employment Policy in the EU

There is an increasing focus on improving labour supply in the European countries, which is reflected in increasing benchmarking and monitoring of employment policies and labour market policies.

The European Commission monitors the employment policy in each member country on a yearly basis, and state recommendations for each member country are based on the Lisbon criteria which were adopted by the Council in 2000, see *Box 6*.

Box 6. Employment policy in the EU

Within the framework of the European Employment Strategy (EES) from 1997, the Luxembourg process, the European Commission monitors and benchmarks the employment policies in member countries. The purpose of the Luxembourg process is to realize three main objectives: full employment, quality and productivity in jobs, and an inclusive labour market. The targets will be met by means of adapting common objectives, sharing information and knowledge of the best practice.

The most important element in the EES is the yearly *Employment Guidelines and Recommendations*. The European Commission prepares the guidelines that are subsequently adopted by the Council. In 2004 the guidelines cover ten specific guidelines for three main objectives.

Each member country prepares a yearly National Action Plan for Employment (NAP), which states the national strategy for reaching the objectives and the implementation of the strategy relating to the Council guidelines. However, the national action plans and the employment report of the Commission are not binding, and no formal co-ordination of the employment policies exists.

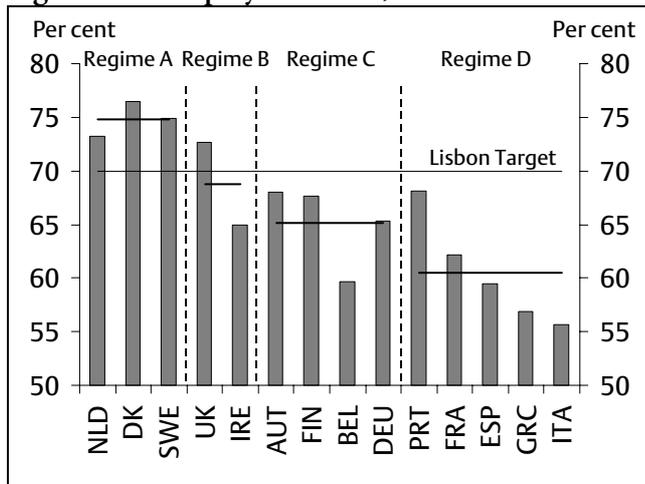
The Lisbon objectives

An important element in the EES is the realization of the Lisbon criteria that are part of the Lisbon strategy. The Lisbon strategy was adopted by the European Council's meeting in Lisbon on employment, economic reform, and social inclusion in the spring of 2000.

The member countries agreed on a number of objectives, including that the overall employment rate should reach 70 percent in all member countries by 2010, that the employment rate of woman should reach 60 percent by 2010, and that the employment rate among 55-64 year olds should reach 50 percent by 2010. The regime A countries and UK have already met these targets.

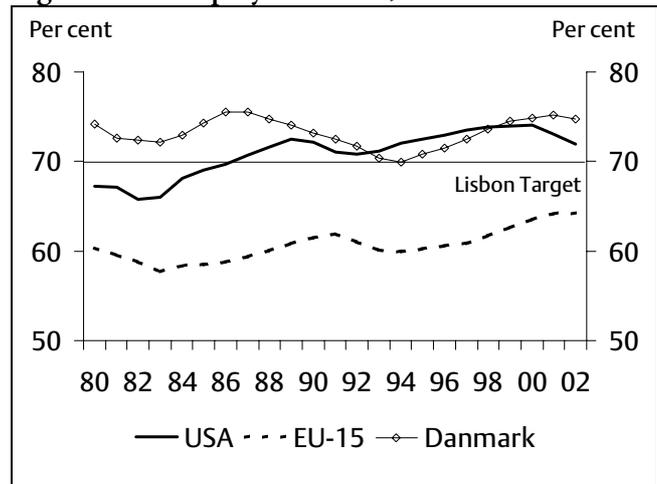
Among the objectives is that the overall employment rate in each member country should reach 70 percent by 2010. The regime A countries and the UK have already met these targets, while the employment rates in most of the countries in regime D and in Belgium are substantially lower than the Lisbon criteria, see *Figure 12a*.

Figure 12a. Employment rate, 2002



Note: For Austria the employment rate refers to 2001.
 Source: OECD, *Labour Force Statistics* and ADAM databank.

Figure 12b. Employment rate, 1980-2002



In all the countries where the employment rate is relatively low, this is primarily due to a low employment rate for woman. Thus, cultural differences are important elements in explaining cross-country differences in employment rates, including whether elderly are taken care of by the family or publicly funded. Participation of women is high in the regime A countries – in the Netherlands due to part time work. The cross-country variation in employment rate may also to some extent be explained by differences in employment rates among young and elderly workers, see below.

The average overall employment rate in the EU is approximately 6 percentage points below the Lisbon criteria, and somewhat more below the employment rate in the U.S, see *Figure 12b*. Employment rates in several EU countries, including in Denmark, are similar to or above American figures.

Employment rates have increased significantly in some countries, although from low levels, while employment rates have increase less markedly in other countries but from a higher level (Denmark, the Netherlands, the UK, and Sweden).

Several of the regime D countries have sought to increase the employment rate and reduce unemployment by liberalising the use of temporary jobs, supposedly to increase the transition from unemployment to employment via temporary jobs¹⁵.

Temporary jobs may support the inclusion of low-skilled workers in the labour market, and the growth in temporary jobs has contributed to a reduction in long-term unemployment in some countries. However, a country that liberalize the use of temporary jobs but maintains high job protection for permanent jobs runs the risk that workers are kept in a combination of temporary jobs (that are typically low paying and where employers train workers less) and thus unemployment, and that the transitions into permanent jobs are not increased, see *box 7*. Temporary jobs are, however, important for the flexibility in firms.

Experiences with previous reforms have been mixed. The share of temporary jobs out of total employment has increased markedly in some countries, but it has not been followed by a clear

¹⁵ Temporary employment covers, inter alia, temporary agency work, temporary contracts, and seasonal jobs.

reduction in unemployment. Employers seem to have substituted temporary for permanent jobs rather than increasing job creation.

Box 7. Temporary employment

For a number of years it has been discussed whether temporary employment might contribute to reduce high levels of structural unemployment, particularly in countries with high employment protection. Spain liberalized the use of temporary contracts during the 1980s, and the share of temporary employment out of total employment increased markedly by almost 20 percentage points from 1985-1994, see Dolado, García-Serrano, and Jimeno (2001). This share has increased by 5-10 percentage points in Finland, France, Italy, Netherlands, Portugal, and Sweden. However, there is no general trend in the OECD countries, and the share has been more or less constant in Denmark, see OECD (2002, Chap. 3).

Temporary employment is beneficial for firms' ability to adjust production in response to shocks due to decreased product demand or technological change. In countries with low employment protection in permanent jobs, the share of temporary employment is low (Austria, UK, and the U.S.), as the need for flexibility through these jobs is more limited.

Temporary jobs may furthermore facilitate inclusion of low-skilled workers and long-term unemployed. Between 1/3 and 2/3 of employed in temporary jobs gain permanent jobs within two years, depending on the type of temporary employment (temporary agency work, temporary contracts, seasonal jobs, etc.), OECD (2002).

Temporary jobs may also improve the matching process in the labour market, since they can be used by workers to learn about the job and by employers to learn about the worker. Some estimates indicate that the growth in the temporary help industry in the U.S. may have contributed to a reduction in structural unemployment by up to 0.4 percentage points during the 1990s, see Katz and Krueger (1999). Finally, an increase in temporary jobs may have contributed to cushioning the effect of negative economic shocks in Finland and Sweden in the beginning of the 1990s, see Holmlund and Storrie (2002).

The experiences from France and Spain indicate that the increase in temporary employment has contributed to a reduction in long-term unemployment. However, the effect on aggregate unemployment – and the youth unemployment rate in France – is more questionable, since job reallocation has increased as well. Firms seem to have substituted temporary jobs for permanent jobs. Because wages in temporary jobs are typically lower and employers provide significantly less training to workers, the reforms may have affected the longer-term attachment to the labour market, OECD (2002) and Blanchard and Landier (2002) for evidence on France.

Overall, the conclusion from the experience of previous reforms seeking to increase the use of temporary jobs seems to be that a superior employment strategy is to implement a balanced level of job protection in both temporary and permanent jobs, rather than to liberalise the use of temporary jobs while maintaining job protection in permanent jobs.

Youth

In 2002, unemployment among 15-24-year-olds was approximately 15 percent in the EU, corresponding to twice the rate of other age groups, see *Figure 13a*.

Figure 13a. Age-specific unemployment rates, EU-15, 1980-2002

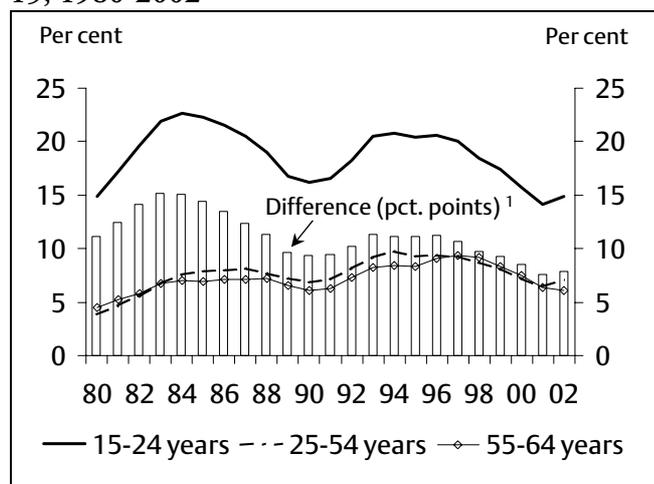
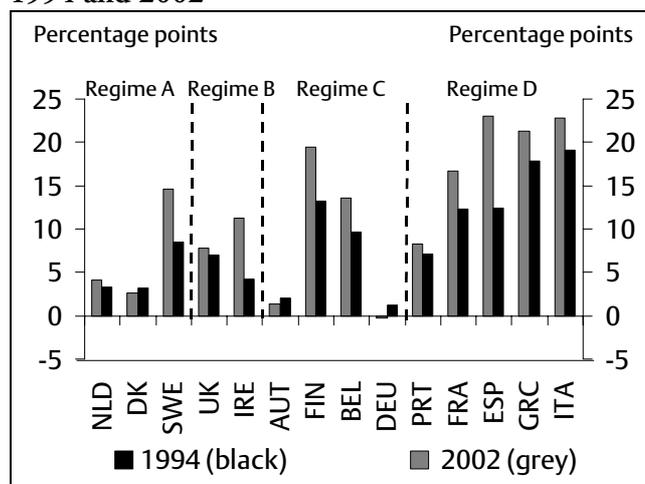


Figure 13b. Unemployment differential, youth, 1994 and 2002



Note: 1 Figure 13b the unemployment differential for Austria refers to 2001.

1) Difference between unemployment rate for 15-24-year-olds and 25-54-year-olds.

Source: OECD, *Labour Force Statistics*.

Part of the unemployment differential can be ascribed to transitions from education to work, which often imply short spells of unemployment. Measures that increase the cost of hiring – directly or indirectly – typically affect young workers more as they often have lower skills and experience than prime-aged workers. In contrast, targeted measures, such as age-specific minimum wages, that compensate for young workers' skills and experience may improve the transition from school to work, see Jimeno and Rodríguez-Palenzuela (2002).

In all regimes, unemployment for the 15-24-year-olds has been reduced more than for prime-aged, thereby reducing the gap, see Figure 13b. This is to some extent explained by an improvement in business conditions, since the unemployment rate for the 15-24-year-olds is more responsive to business conditions than the unemployment rate for other workers, see, Figure 13a. This probably reflects the fact that young workers have less firm-specific human capital and more often hold temporary jobs. Furthermore, the transition from school to work may be impeded in downturns.

The unemployment differential is still considerable in Finland and in several of the regime D countries. Thus, labour market policies in countries with a low unemployment differential are characterized by active policies. Denmark, Ireland and the United Kingdom are countries that have shown good results with targeted youth measures, see Martin and Grubb (2001).

The targeted youth program in Denmark for below 25-year-olds show that unemployment may be reduced by active labour market policies and strict demands on availability for work. Unemployment benefits for youth are cut in half after 6 months of unemployment, and unemployed have a right as well as a duty to participate in activation. The targeted youth program has recently been imposed for social assistance as well.

In Ireland, good results have been obtained with a wage subsidy for employers (Market-oriented program), and the "New Deal for Young People" in United Kingdom has increased the transition rate from unemployment to employment for young men, primarily as a result of a wage subsidy and stricter availability demands.

In the Netherlands there is a similar separate benefit rate for youth and also targeted youth programs.

Elderly Workers

The employment to population ratio in the EU is significantly lower for the 55-64-year-olds than for the prime-aged population. This is a consequence of early retirement, and also because a larger share of older woman has very low participation rates compared with prime-aged women.

The employment differential of 55-64-year-olds relative to the prime-aged population has increased by 10 percentage points from 1980 to 2002 in EU15. This covers a fall in the employment to population ratio among older workers and an increase of 7 percentage points among the prime-aged population, *see Figure 14a*.

Figure 14a. Age-specific employment to population ratios, EU15, 1980-2002

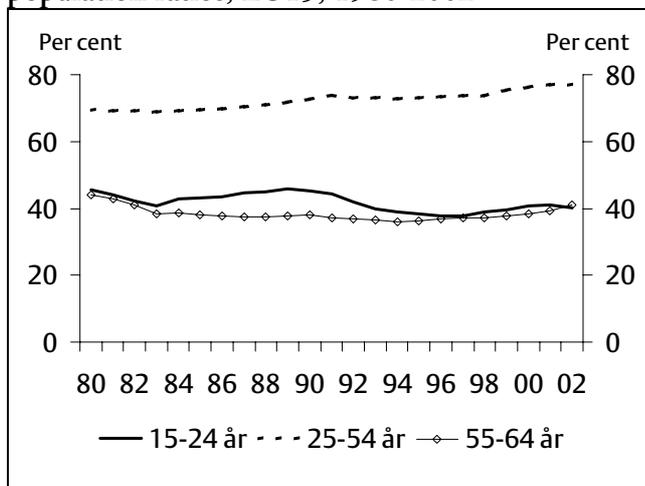
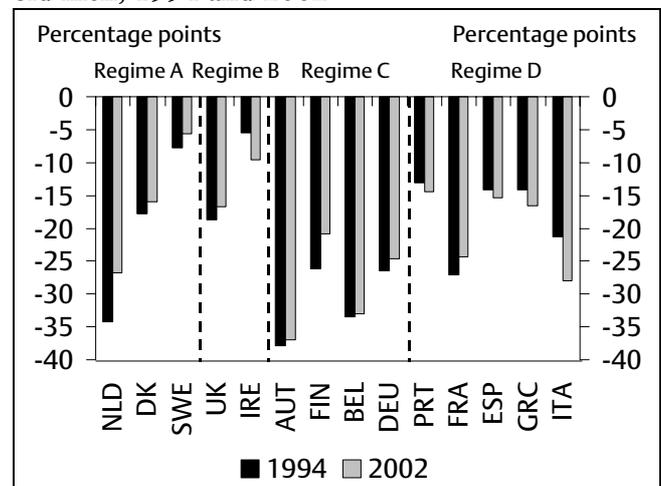


Figure 14b. Employment differential, 55-64-year-old men, 1994 and 2002



Note: The employment differential is measured as the difference in the employment rate for 55-64-year-old and 15-64-year-old men. For Austria, the differential refers to 2001.

Source: OECD, *Labour Force Statistics*.

Early retirement is most prevalent in Austria, Belgium, Italy, and Netherlands when measured by the employment differential for men, *see Figure 14b*¹⁶.

The very low employment rate among Dutch men is the result of policies that increased early retirement in the 1970s and 1980s. During that period, so-called employer retirement schemes were introduced, which gave the elderly incentives for early retirement by carrying replacement rates of 80-90 percent of previous income. Since 1994 activity rates have increased, and it was recently decided that tax exemptions for contributions to pension schemes that carry incentives for later retirement will replace tax exemptions for contributions to employer retirement schemes.

The highest employment rate among the 55-64-year-olds, measured by the employment differential, is found in Sweden. This is attributed to a high (relative) employment rate among the 60-64-year-olds, significantly higher than in Denmark. Sweden implemented a pension reform in 1998 that in effect abolished the previous compulsory age of retirement (61) by increasing the incentives for later retirement through actuarial pension payments. The pension payments are now reduced if retirement

¹⁶ To isolate the effect of early retirement women are excluded from Figure 14b.

occurs before the age of 65. The replacement rates in the new pension system are lower than the replacement rate in the Danish early retirement schemes.

In Denmark, the employment rate has increased since the mid-1990s, particularly among the 50-59-year-olds (not shown). This is a result of supportive business conditions and the abolition of early retirement schemes for 50-59-year-old long-term unemployed. Among the 60-66-year-olds, employment rates have only increase by a small amount as a consequence of an increase in early retirement over the period.

In Spain, the employment rate among elderly is relatively high. This reflects, among other things, Spain's active policies for helping elderly to stay attached to the labour market, which give older workers the possibility of a more flexible retirement or thus enabling more flexible retirement. Early retirement schemes have been abolished. Finally, workers aged 65 or above pay a reduced contribution and have other favours, *see* Martin (2004).

Immigrants

The employment rate for non-EU citizens is on average 10 percentage points lower than for EU-citizens, but the differential has decreased by approximately 2½ percentage points since 1997, *see* Figure 15a.

In a few countries, the employment rate for non-EU citizens is close to or higher than the employment rate for EU citizens, particularly in Greece, Portugal, and Spain, where it is higher by up to 10 percentage points (Greece), *see* Figure 15b.

Figure 15a. Employment rates, EU15, 1980-2002

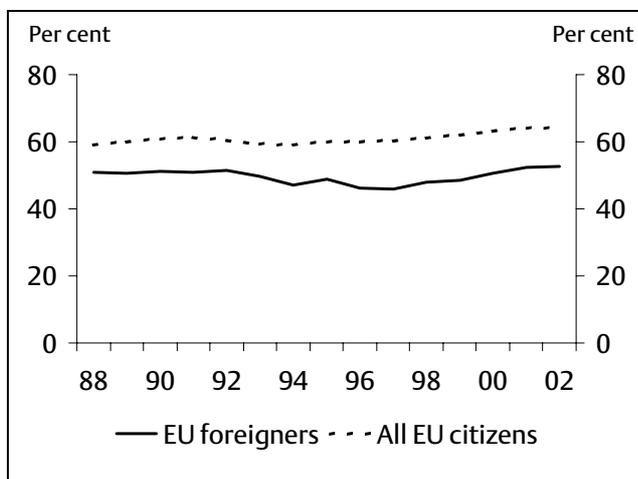
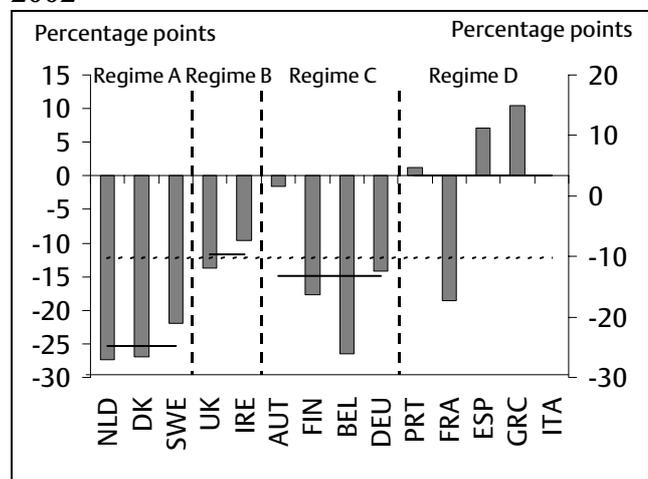


Figure 15b. Employment differential, immigrants, 2002



Note: The employment differential for immigrants from outside the EU is calculated as the average over the last four quarters where the information is available (for most countries the four quarters of 2002).

Source: Eurostat, *Labour Force Survey*.

However, the employment differentials may reflect differences in employment rates for EU citizens rather than differences in employment rates among immigrants. If the characteristics of immigrants with regard to education, language skills, etc., are more or less alike in the EU countries one would expect employment rates for immigrants to be similar. The employment differentials would then reflect differences in the employment rate for EU-citizens. This is indicated by that in most of the countries

with below average employment differentials for immigrants the overall employment rate is above average, see Figure 12a and 15b.

However, illegal immigration comprises a significant problem in these countries. There is a measurement problem and the measured employment rates are likely to be biased in an upward direction. On the other hand, immigrants probably have better opportunities for obtaining work in these countries as a result of large wage dispersion. The employment differential is, thus, smallest in the countries in regimes B and D, which are countries with a large wage dispersion. Minimum wages are high in the regime A countries and the overall replacement rate is high, which hinders the inclusion of immigrants in the labour market.

In recent years, a number of countries have tightened regulations for residence and employment permits as well as for immigrants. Most reforms have been directed to a targeted tightening of border controls, simplification of regulations, and speeding up casework, *see* OECD (2001). The focus in many EU countries is today on integrating both immigrants who are already resident and foreigners planning longer-term stays in the countries.

Appendix A

Data Sources and Construction

The data sources and the construction of various indicators are described in the following. For some indicators, information is only available every second year. Data points for missing observations were constructed by linear interpolation.

Several of the data series were obtained from a database compiled by researchers from London School of Economics, see Nickell and Nunziata (2001)¹⁷. The database, denoted LMIDB in what follows, contain information over the period 1960-95. The data was updated up to and including 1999 using various data sources.

Standardized Unemployment Rates

The main source is the OECD standardized unemployment rates. For several countries, the standardized unemployment rates are not available throughout the 1960-99 period. In most of these cases, data was obtained from LMIDB for those years not published by the OECD, adjusted in levels for some countries so that the unemployment rate in the LMIDB corresponds to the OECD figure. For Italy and Sweden adjusted series were obtained from the *U.S. Bureau of Labor Statistics* (BLS). The OECD figures contain large data breaks and are, therefore, less comparable over time. The series from BLS are adjusted (roughly) for these breaks.¹⁸ Since the information in the LMIDB mostly corresponds to West Germany, the unemployment rates for Germany have been adjusted so that the standardized figures follow the unemployment rate in West Germany after 1991. The data is displayed in *Figure A.1a-1d*.

Figure A.1a. Standardized unemployment

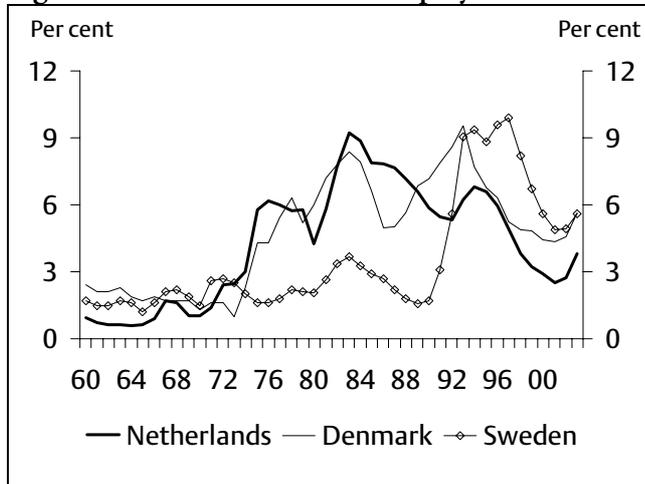
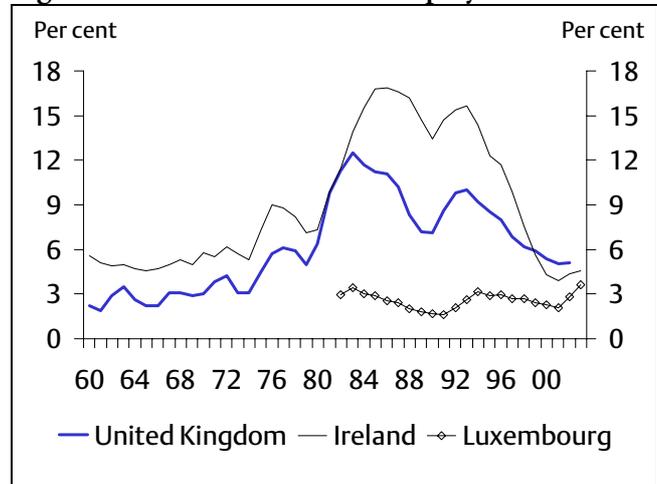


Figure A.1b. Standardized unemployment



¹⁷ <http://cep.lse.ac.uk/pubs/download/data0502.zip>.

¹⁸ The figures for Sweden is available from the BLS homepage, while the figures for Italy is an adjusted series obtained directly from the BLS, see Sorrentino (2002, box on page 16) for a description.

- figure A.1 continued

Figure A.1c. Standardized unemployment

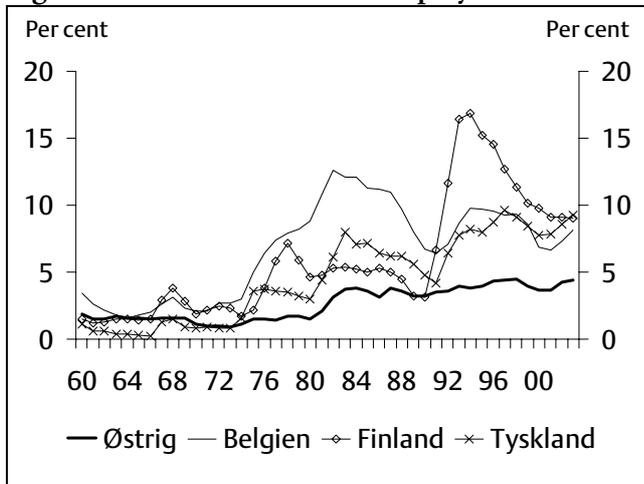
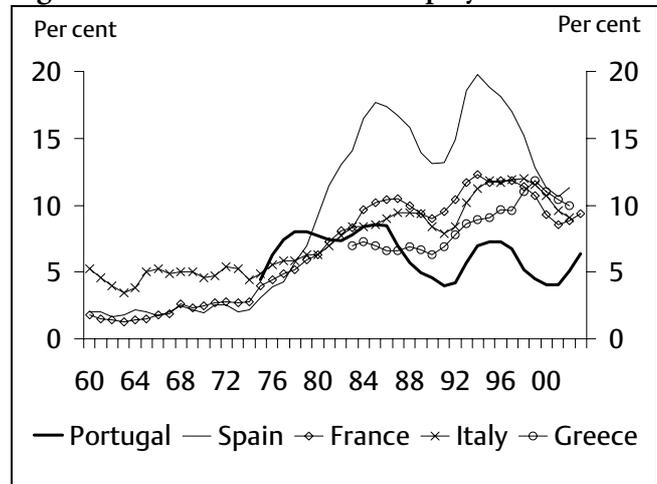


Figure A.1d. Standardized unemployment



Source: See text.

Expenditures on Active Labour Market Policies

The expenditures are given as total expenditures on ALMP in the OECD database on *Labour Market Statistics* minus expenditures on disability measures¹⁹. To adjust for country size and inflation, the expenditures are measured relative to GDP based on fiscal years. This ratio is then divided by the standardized unemployment rate in order to take into account the counter-cyclical nature of the expenditures. Furthermore, using this ratio in empirical work takes indirectly into account the efficiency in the active programs since it measures the expenditures relative to the number of unemployed.

Sources: OECD, *Labour Market Statistics Database*²⁰ and standardized unemployment rates.

Replacement Rates

A number of measures of replacement rates that cover different aspects of unemployment compensation are applied.

Overall Generosity of Unemployment Compensation in the UI System (Gross)

The OECD calculates an indicator of the overall unemployment compensation measured over 5 years. The indicator is calculated as the average of the gross replacement rate of unemployment insurance benefits for two income levels (66,7 percent and 100 percent of an average production worker), three family types, and at three durations of unemployment (first year, second to third year, and fourth to fifth year). The indicator is calculated every two years for the period 1961-99.

The indicator does not take into account that unemployed in some countries would regain entitlement to unemployment benefits by participating in activation programs in the period considered. Countries with a short formal duration of unemployment benefits therefore come out with a low value on the indicator, even if remuneration during activation is comparable with unemployment benefits (or

¹⁹ Expenditures on employed are included. It is assessed, however, that excluding these expenditures would not change the main results.

²⁰ <http://www1.oecd.org/scripts/cde/members/lfsdataauthenticate.asp>.

higher), as Sweden²¹, while countries with a long unemployment period but where unemployed does not have this possibility will come out with a high value on the indicator, as Denmark.

The indicator for Denmark jumps up from 1991 to 1993 because of the extension of the benefit period from 2½ to 7 years in 1993, although the maximum *possible* benefit period was unchanged, since the right to a renewed benefit period after participation in activation was simultaneously abolished.

No other indicator is available over a long period of time, however. In some empirical regressions, see Appendix C, an adjusted indicator is applied in which the official OECD indicator is adjusted for Denmark from 1993 and on, so the indicator for Denmark is unaffected by the increase in the formal duration of unemployment²².

Net Replacement Rate (NRR)

The OECD also calculates a net replacement rate as the average over several family types, income levels and durations of unemployment benefits, unemployment assistance, etc. This indicator is only available over a shorter period of time, since the construction of the NRR is more complicated.

The difference between the NRR and the gross replacement rates (GRR) are that the NRR takes into account tax and social contributions, housing benefits, the effects of children on various benefits and/or tax and social contributions, and that the NRR includes unemployment assistance and social assistance. The GRR are often lower than the NRR.

Adjusted Gross Replacement Rate

In the cluster analysis in Section 4, an adjusted gross replacement rates is applied. The adjusted rate takes into account that unemployed in a number are eligible for unemployment assistance after exhaustion of UA benefits. The adjusted indicator is constructed by first calculating an index for the maximum duration of UI and UA benefits from the OECD net replacement rates using the method described below. Then the gross replacement rate calculated by the OECD secretariat is adjusted by this index.

Sources: OECD, *Benefits and Wages*, 2002 and previous editions.

Maximum Duration of Unemployment Benefits

Three measures of the maximum duration are applied in the paper:

1. Durations according to the law.
2. An index calculated from the gross replacement rates at three durations of unemployment: $BD = (0.6 \cdot rr23 + 0.4 \cdot rr45) / rr1$, where $rr1$, $rr23$, and $rr45$ are the gross replacement rates for the first year of unemployment, year two to three, and year four to five. The index was developed by researchers at London School of Economics. If unemployment benefits are only paid in the first year of unemployment, $BD=0$. If the gross replacement rate is unchanged during the first five years of unemployment, $BD=1$. The replacement rate in the second and third year is given a greater weight by the LSE researchers. The advantage of this index is that it is available throughout the 1961-99 period.
3. As (2), but calculated using the net replacement rates in 1995.

²¹ The possibility of regaining eligibility for a renewed benefit period after participation in active programs was (partly) abolished in 2001, see Frederiksson and Runeson (2002).

²² The OECD secretariat acknowledges that the marked increase in the indicator from 1993 to 1995 is not the result of a genuine change in the unemployment system, see Martin (1996, Footnote 7)

Sources: LMIDB and OECD, *Benefits and Wages*, 2002 and previous editions.

Availability for Work Indicator

The index is constructed from a survey in 1997 and an updated survey in 2004, see Appendix B. In section 3, only information for 1997 is included, though information for 2004 is used for Italy and Spain that was not included in the 1997 survey.

Sources: Ministry of Finance (1998) and Hasselpflug and Thorball (2004).

Employment Condition

Index calculated as the ratio of requirements on previous employment to the reference period (or, contribution period, see OECD 2002, Table 2.2). For Norway, the index is constructed from auxiliary information on equivalent income conditions, because the employment condition is stated in terms of income rather than in terms of hours or weeks²³. Information for 1995, 1997, and 1999. Previous to 1995, the indicator attains the value for 1995.

Sources: OECD, *Benefits and Wages*, 2002, and previous editions, and Torp (1999).

Unionization

Number of active union members as percentage of employed (*Net density I* in Ebbinghard and Visser (2002)).

Sources: 1960-95: LMIDB. After 1995: Ebbinghard and Visser (2002), and Nickell (2002, Table 13).

Coordination

Index in range from 1 to 3 describing the degree of coordination between employers and unions in wage negotiations. Increasing with the degree of coordination.

Sources: LMIDB and Nickell (2002, Table 14, Series 2).

Index of Product Market Regulation

Index for 1998 describing the degree of regulation of product markets. Increasing in the degree of regulation.

Source: Nicoletti, Scarpetta, and Boylaud (2002).

Employment Protection Legislation (EPL)

Two measures are applied:

1. A time varying index covering 1960 through the end of the 1990s. Constructed by Olivier Blanchard (MIT) and Justin Wolfers (Harvard University) from various sources.
2. Index for the ranking of countries according to the index in 1. Is also applied by Blanchard and Wolfers.

²³ The income condition can be met within an one-year or a three-year period, with a higher income requirement within the three year period. Furthermore, there exists a basis system and supplementary system. The income requirement is equivalent to between 20 and 40 per cent of the average salary in a full time job, see Torp (1999, p. 71). The mid-point, 0.3, is chosen as the indicator for Norway.

Sources: LMIDB, Nicoletti et al. (2000), and Blanchard and Wolfers (2000).

Total Taxes on Labour (Tax Wedge)

Gives the sum of the payroll tax rate, the income tax rate, and the consumption tax rate (from national accounts data).

Sources: LMIDB and Nickell (2002, Table 16).

Appendix B

Availability Indicator

In December 2003 the Danish Ministry of Finance conducted a survey on availability for work regulations in a number of OECD-countries. The survey was a follow up of a 1997 survey, see Ministry of Finance (1998). The survey covers questions on 8 dimensions on demands for availability on unemployed and sanctions in the case of non-compliance:

Availability criteria:

1. Job search.
2. Availability during activation.
3. Occupational mobility and whether the demands change with time spend in unemployment.
4. Geographical mobility and whether the demands change with time spend in unemployment.

Sanctions:

5. Valid reasons to refuse a job offer or offer to participate in an activation program.
6. Sanctions in the case of self-induced resignation from job.
7. Sanctions after refusal of a job offer or offer to participate in an activation program.
8. Sanctions after repeated refusals.

Each country is assigned a number on a scale from 1 to 5 on each dimension, with numbers increasing with the strictness of the regulation. Administrative practice is not included in the indicator.

The overall indicator for a country is given as a weighted average of the assigned numbers on each dimension. The weights are given in *Table B.1*.

Table B.1. Weight given to each dimension in the indicator

Dimension:	1	2	3	4	5	6	7	8
Weight:	0,75	1	1	1	0,25	0,5	1	0,75

Note: The dimensions correspond to the listed numbers given in the text.

The weight given to each dimension of the indicator is determined from assessments of which requirements that are most important for job search behaviour and availability for work. Most weight is given to occupational and geographical mobility and sanctions after refusals of job and activation offers.

The number of valid refusals is given a modest weight, since the countries didn't report comprehensive lists on this dimension, and since the number of valid reasons allowed will depend on other regulations that may not be included in the survey.

When comparing the indicator across countries, it should be take into account that the requirements on availability is implemented so that it supports the mobility among unemployed but also that the implementation depends on the specific regulation on other dimensions of labour market policies.

Appendix C

Detailed Econometric Results

A detailed description of the result reported in the main text is given in the following. The results are obtained from econometric estimates of a relationship between the standardized unemployment rate and a number of indicators for labour market policies, institutions and the business cycle, *see Box C.1.*

Box C.1. Labour market policy, institutions and unemployment

The estimated relationship between unemployment in each country and the included indicators is given as the reduced form

$$(1) \quad u_{it} = c_i + \sum_j \beta_j x_{ijt} + \sum_j \gamma_j z_{ij} + \sum_j \phi_j \tau_{ijt} + \lambda_t + \varepsilon_{it}, \quad i=1,2,\dots,19,$$

where i is a country index, t is a time index, and j an index for labour market policies, institutions and macroeconomic conditions; u_{it} denotes the unemployment rate in country i at time t , and x_{ijt} labour market policy or institution j in country i at time t , z_{ij} represents the indicators that are included as constants over time, while τ_{ijt} represents macroeconomic conditions, and λ_t time varying dummies. There exists differences in unemployment between countries that are cannot be explained by the included indicators and that are constant over time. These differences are represented by time invariant country effects (dummies), c_i . Finally, ε_{it} is the residual.

The model is estimated using feasible generalized least-squares (FGLS). Since some indicators are included as constants over time it is not possible to estimate the model using the fixed effects estimator, because the estimated country dummies might be highly correlated with the constant indicators. Instead, the model is estimated using the random effects estimator, where the country specific constant terms are assumed to be drawn independently from a normal distribution. Only the parameters of the distribution, and not the constant terms, are estimated. Furthermore, Heckman and Pagés (1999) show that the fixed effect estimates may be biased. This strategy is similar to Scarpetta (1996) and OECD (2004). Using the random effects estimator implies that the estimated effects are obtained using both the correlation over countries and the correlation over time.

Information on some indicators is available over a longer period. The effects of these indicators are also assessed using the fixed effects estimator over this longer sample period, as in Nickell et al. (2003), and the effects from this model is compared with the results obtained using the random effects estimator.

The sample period is 1983-99 in most regressions, since information on expenditures on ALMP is only available from the mid-1980s and information on replacement rates are only available up to 1999 at the time when the analysis was completed²⁴. The sample period covers a full business cycle.

The included countries count 13 EU countries (EU-15, exclusive Greece and Luxemburg), Australia, Japan, New Zealand, Norway and the United States. The OECD countries outside EU are included, because information on these countries are important for evaluating more precisely the effects of labour market policies. However, some countries are excluded from some regressions due to missing data.

Information on some of the indicators exists only for a few years. These indicators are included with the average value over observations for each country. This demands particular statistical considerations, *see Box C.1.* Several of the indicators are furthermore correlated, because there is a tendency for the countries to implement similar policies, see the cluster analysis in paragraph 4. It may therefore be difficult to measure the partial effect of each indicator precisely. To evaluate this potential error, several

²⁴ The OECD *Employment Outlook* 2004 contains updated information on replacement rates etc., but they were not available when this analysis was completed.

models are estimated using different combinations of policies. The results are relative robust across specifications.

Information on expenditures on ALMP are available from the mid-1980s for most countries. The included indicator for ALMP corresponds to expenditures on ALMP per unemployed normalized by GDP per person in the labour forces. A similar measure is used by, among others, the OECD. The indicator is, by construction, highly correlated with the unemployment rate, and the estimated coefficients may therefore be biased if this is not taken into account. However, it is difficult to find other measures that are not correlated with the unemployment rate by construction²⁵. The indicator is therefore included as the average over the sample period for each country. A similar strategy is applied by other authors, for example Scarpetta (1996) and Blanchard and Wolfers (2000).

Results

Table C.1 displays the results from including a large set of indicators of labour market policy. More generous (overall) unemployment compensation, a higher level of employment protection or a higher share of union members increase unemployment according to estimated relationships. Stronger demands on availability for work on unemployed, higher expenditures on ALMP, or more coordinated wage negotiations induces lower unemployment, *see* column (1). The results are relatively robust to a change in the specification of the empirical model where the indicators for availability, employment condition, and EPL are included separately in the regressions (results are not shown here).

Australia, Italy, and New Zealand are excluded from (1) due to missing observations on ALMP and/or employment conditions. Excluding these countries affect the estimated coefficient on the overall gross replacement rate. Including these countries – which requires that indicator for ALMP and the employment condition index must be excluded from the regression – reduces the effect of the overall replacement rate, *see* (2).

In columns (1)-(2) and (4)-(5) the official OECD indicator for overall generosity of unemployment benefits have been adjusted for Denmark. The indicator is adjusted, since the official OECD indicator does not take into account that the formal extension of the benefit period in 1994 from 2½ to 7 years did not represent a *genuine* extension, since participation in ALMP programmes would no longer entitle to a renewed benefit period. The 7-year benefit period from 1993 and on corresponded approximately to the actual average benefit period before the 1993-reform, *see* Appendix A²⁶. The OECD indicator displays a significant increase from 1991 to 1993, and including the official indicator reduces, as expected, the estimated effect, *see* column (2) and (3). The size of the estimated coefficient corresponds roughly to the results in analyses performed by the OECD secretariat, *see* Scarpetta (1996) and Elmeskov, Martin, and Scarpetta (1998), that, however, may underestimate the effect due to the measuring error in the indicator with respect to Denmark.

²⁵ In technical terms: it is difficult to find a proper instrument for the expenditures of ALMP that are not correlated with the unemployment rate.

²⁶ *See* also footnote 7 in Martin (1996)

Table C.1. Estimated models

Sample period	(1)	(2)	(3)	(4)	(5)
	-----1983-99-----				1963-99
Overall gross replacement rate	-	-	0,147 (0,023)	-	-
Overall gross replacement rate, adjusted for DK.....	0,250 (0,029)	0,183 (0,024)	-	0,157 (0,028)	0,054 (0,014)
Duration of benefit period	-	-	-	-	0,006 (0,005)
Availability requirements	-0,020 (0,010)	-0,023 (0,010)	-0,041 (0,011)	-	-
Expenditures on ALMP	-0,006 (0,001)	-	-	¹ -0,001 (0,000)	-
Employment condition	-0,007 (0,003)	-	-	-0,037 (0,020)	-
EPL ²	0,004 (0,002)	0,002 (0,001)	0,002 (0,001)	-	0,008 (0,005)
Centralisation of wage negotiations.....	-0,013 (0,004)	-0,014 (0,003)	-0,012 (0,003)	-0,009 (0,004)	-
Union membership	0,189 (0,010)	0,130 (0,017)	0,122 (0,017)	0,166 (0,027)	0,097 (0,017)
Total taxes on labour	-	-	-	-	0,047 (0,015)
Deviations from HP trend of log real GDP.....	-1,069 (0,093)	-1,057 (0,086)	-1,072 (0,088)	-0,723 (0,065)	-0,545 (0,037)

Note: Standard deviations in parentes. Numbers in italics denotes those coefficients that are used to calculate the contribution to the reduction in structural unemployment from changes in labour market policies in Figure 5.a and 5.b in the main text. These are relatively conservative estimates of the effects on unemployment. Italy is excluded from (1) through (3) due to missing observations on expenditures on ALMP. Australia and New Zealand are excluded from (1) and (4) due to missing observations on employment condition. For Spain and Japan the availability indicator for 2004 is used due to missing observation in 1997. (1) through (3) is estimated using the random effects model, while (4) and (5) is estimated using the fixed effects model corrected for autocorrelation and heterogeneity in the residuals. Time varying dummies are included in all specifications.

1. The coefficient is $-0,0004$ and is significant at a 5 percent level. The effect of ALMP on the unemployment rate is assumed to be $-0,001$ in Figure 5, since the estimation method probably implies a downward bias in the estimated effect, see the appendix text.
2. In (1) through (3) the ranking of countries by the index of EPL is used as indicator, while in (5) an index constructed from various data sources over the 1960-1999 period is used, see Appendix A.

Source: Own calculations.

For some of the indicators, only a few observations are available over time, see Appendix A. The estimated effects therefore primarily show the effects on the cross-country variation in unemployment, and not necessarily the effect over time. A method that uses the variation over time in the indicators to identify the effects have also been applied, see column (4)-(5).

Information on ALMP is available from the mid-1980s, but it is difficult to use the variation over time in the expenditures on ALMP in full due to statistical considerations. In order to investigate the effect of using more of the time variation in the indicator, column (4) displays results when the ALMP indicator is included with two observations over time, the average over the 1980s and the average over the 1990s. The result indicates the effect of changes in the average expenditures between the two sub-periods (per unemployed to the ratio of GDP per person in the labour force). The estimated effect is lower than estimated in column (1). This method is likely to underestimate the true effect on the unemployment rate, however, and since the fixed effects estimator only uses the time variation to identify the effect, and since only the average value of the indicator over two sub-periods are included.

In addition to the time varying indicator for ALMP, the indicator for the employment condition is included in (4) with time varying information from 1995 to 1999. The indicator is assumed to be

constant before 1995. The index departs slightly from the index included in (1), since the coefficient on the index included in (1) is insignificant in (4), see Appendix A for details on the indicators. Thus, some caution should be taken in interpreting the estimated coefficient. This furthermore indicates that it is not clear exactly how a relevant measure of employment condition should be constructed.

Higher total taxes on labour seem to have a small positive impact on unemployment but supposedly only in the short run, see column (5). The indicator is simple and does not describe all aspects of taxes relevant for search behaviour. The estimated quantitative effect is therefore uncertain. It hasn't been possible to find a statistical significant effect over the period 1983-99.

In column (5) only indicators for which information is available over a long period (1963-99) is included²⁷, and the model is estimated so that the effects are measured using the time varying information over time (fixed effects model, see Box C.1), as in (4). The estimated effects are similar to the other specifications, except for the overall unemployment compensation that has a somewhat smaller effect on unemployment in this specification.

The maximum duration of unemployment benefit wasn't found to have any statistical significant in itself, see, for example, column (5). There are two explanations for this result: Firstly, the constructed indicator does not include all relevant aspects that are relevant for job search behaviour; for instance, the indicator does not take into account that unemployed become entitled to a new benefit period by participation in active programs in some countries in the sample period²⁸. Secondly, the maximum duration of unemployment benefits enter the OECD indicator of overall unemployment compensations indirectly, because that indicator is an average of the replacement rates of five years. The effect of maximum duration on the unemployment rate is therefore included in the effect of the overall unemployment compensation.

Other authors find a statistical significant positive impact on unemployment of the duration of unemployment benefits, for example, Nickell et al. (2003). They usually use the gross replacement rate the first year as measure of unemployment compensation rather than the average replacement over five years, as in the current study, which may explain the significant effects in those papers.

It hasn't been possible to find a significant (positive) effect of product market regulation on unemployment. This is supposedly a consequence of that several countries have liberalized their regulation of product markets significantly over the sample period, but that there only exists information on the strength of this regulation by the end of the 1990s (1998). Available information indicates, however, that there exists a clear partial relationship between stronger regulations of product markets and higher unemployment at the end of the 1990s, see *Figure C.1a*.

²⁷ In column (5) a time varying index for EPL is included corresponding to Nickel et al. (2003) with updates given in Nickell (2002).

²⁸ See the discussion in the main text.

Figure C.1a. Product market regulation and structural unemployment, 1998

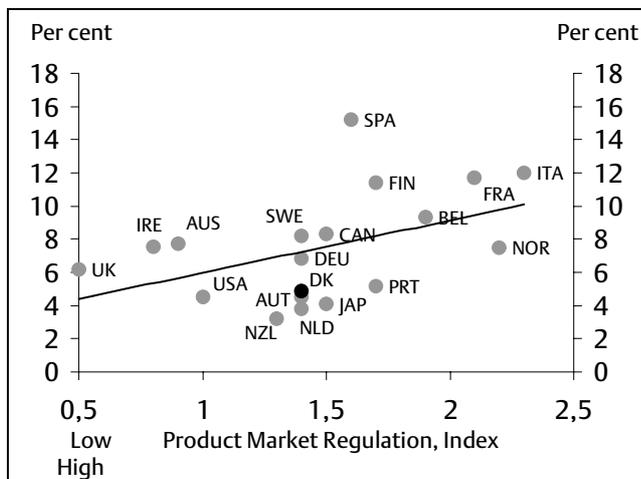
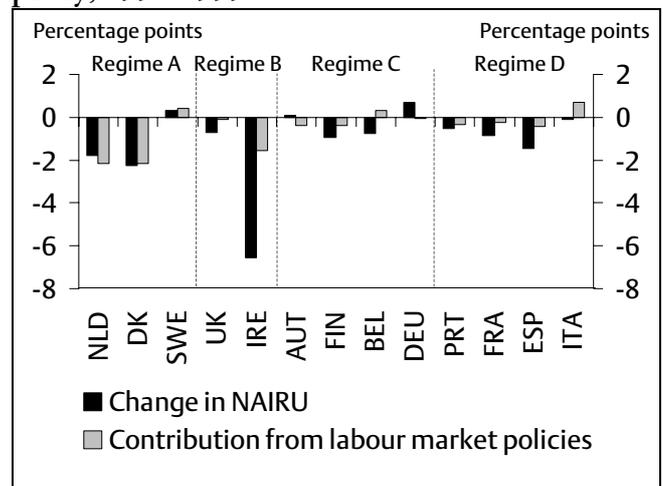


Figure C.1b. Change in NAIUR and estimated contributions from changes in labour market policy, 1994-1999



Note: "Contributions from labour market policies" in Figure C.1b shows the change in the unemployment rate that are attributed to changes in labour market policies as predicted by the estimated model, see the note to Table C.1 for an precise description of the calculation.

Source: See Appendix A and own calculations.

The effect of each indicator is relatively stable across the estimated models (1)-(5).

The explanatory power of the estimated model may be illustrated by comparing the change from 1994 to 1999 in the NAIUR-indicator estimated by the OECD and the contribution to the change on the standardized unemployment rate from labour market policies predicted by the model, which may be interpreted as structural in nature. The model predicts that a significant share of to the reduction in the NAIUR indicator in the EU countries may be attributed to reforms in labour market policies, particularly in Denmark and Netherlands, see *Figure C.1b*. For Ireland, the model predicts that changes in labour market policies explain a smaller fraction of the reduction in structural unemployment. This is intuitive, since the reduction in structural unemployment in Ireland may also a consequence of other reform initiatives, including deregulation of product markets, as suggested above.

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