

# RESEARCH REPORTS

## WHY DO JOBLESS RATES DIFFER?

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**The Beveridge Curve plots the relationship between unemployment and job vacancies. Stephen Nickell, Luca Nunziata, Wolfgang Ochel and Glenda Quintini look at the evidence on unemployment and wages in all OECD countries from 1960 to the 1990s and conclude that changes in labour market regimes explain most of the observed shifts.**

*“The main message transmitted by the Beveridge curves for France and Germany goes squarely against the cliché that high and persistent unemployment is entirely or mainly a matter of worsening functioning of the labour market. It is precisely in France and Germany that there is no sign of a major unfavourable shift of the Beveridge curve during the period of rising unemployment.”*

**R. Solow, 2000, p. 5**

*“Explanations [of high unemployment] based solely on institutions also run however into a major empirical problem: many of these institutions were already present when unemployment was low. ... Thus, while labour market institutions can potentially explain cross country differences today, they do not appear able to explain the general evolution of unemployment over time.”*

**O. Blanchard and J. Wolfers, 2000, p. C2**

*“Despite conventional wisdom, high unemployment does not appear to be primarily the result of things like overly generous benefits, trade union power, taxes, or wage ‘inflexibility’.”*

**A. Oswald, 1997, p. 1**

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It is widely accepted that labour market rigidities are an important part of the explanation for the high levels of unemployment that are still to be found in many OECD countries. However, this view is not universally accepted and there remain serious problems, our starting quotations indicate.

Labour market rigidities cannot explain why European unemployment is so much higher than US unemployment, because the institutions generating these rigidities were much the same in the 1960s as they are today and, in the 1960s, unemployment was much higher in the United States than in Europe. Before going any further, it is worth looking at the actual numbers reported in Table 1.

This confirms that the United States indeed had the highest unemployment in the OECD in the early 1960s, but the picture today is not quite as clear-cut as is commonly thought. In fact, many of the smaller European countries have unemployment rates that are in the same ballpark as the United States, although none has reached the extraordinarily low levels ruling in the early 1960s.

Our aim is to see how far it is possible to defend the proposition that the dramatic long term shifts in unemployment seen in the OECD countries over the period from the 1960s to the 1990s can be explained simply by changes in labour market institutions in the same period. The institutions concerned will be the usual suspects: generous benefits, trade union power, taxes and wage “inflexibility”. Our strategy is very straightforward. We analyse shifts in the Beveridge Curve, real wages and unemployment over time and explain these shifts by institutional changes and macroeconomic shocks. We focus on the time series variation in the data and eschew the extensive use of interactions.

Are we successful in our main aim? We feel that we probably deserve a B grade. The story that emerges is reasonably consistent, but not totally decisive. Experts on individual countries would probably feel that we had not produced wholly persuasive

Table 1

## Unemployment (Standardised Rate) %

Country	1960–64	1965–72	1973–79	1980–87	1988–95	1996–99	2000	2001
Australia	2.5	1.9	4.6	7.7	8.7	8.7	6.6	6.9
Austria	1.6	1.4	1.4	3.1	3.6	4.3	3.4	3.7
Belgium	2.3	2.3	5.8	11.2	8.4	9.4	7.0	6.9
Canada	5.5	4.7	6.9	9.7	9.5	8.7	6.8	7.0
Denmark	2.2	1.7	4.1	7.0	8.1	5.5	4.7	4.6
Finland	1.4	2.4	4.1	5.1	9.9	12.2	9.8	8.9
France	1.5	2.3	4.3	8.9	10.5	11.9	9.5	8.6
Germany (W)	0.8	0.8	2.9	6.1	5.6	7.1	6.4	6.0
Ireland	5.1	5.3	7.3	13.8	14.7	8.9	4.2	3.8
Italy	3.5	4.2	4.5	6.7	8.1	10.0	9.0	8.4
Japan	1.4	1.3	1.8	2.5	2.5	3.9	4.7	5.0
Netherlands	0.9	1.7	4.7	10.0	7.2	4.7	2.8	2.3
Norway	2.2	1.7	1.8	2.4	5.2	3.9	3.5	–
New Zealand	0.0	0.3	0.7	4.7	8.1	6.8	6.0	–
Portugal	2.3	2.5	5.5	7.8	5.4	5.9	4.2	3.9
Spain	2.4	2.7	4.9	17.6	19.6	19.4	14.1	12.9
Sweden	1.2	1.6	1.6	2.3	5.1	8.7	5.9	5.0
Switzerland	0.2	0.0	0.8	1.8	2.8	3.7	2.6	–
United Kingdom	2.6	3.1	4.8	10.5	8.8	6.9	5.4	5.0
United States	5.5	4.3	6.4	7.6	6.1	4.8	4.0	4.4

Notes: As far as possible, these numbers correspond to the OECD standardised rates and conform to the ILO definition. The exception here is Italy, where we use the US Bureau of Labor Statistics “unemployment rates on US concepts”. With the exception of Italy, these rates are similar to the OECD standardised rates. For earlier years we use the data reported in Layard et al. (1991), Table A3. For later years we use OECD Employment Outlook (2000) and UK Employment Trends, published by the UK Department of Education and Employment.

explanations of the unemployment shifts in each country and we make no attempt to provide a country-by-country story.

### Theories of long-term unemployment

There are innumerable detailed theories of unemployment in the long run. These may be divided into two broad groups: those based on flow models and those based on stock models. Fundamentally, all the models have the same broad implications. First, unemployment in the short and in the long run is determined by real demand. Second, over the long term, real demand and unemployment generally tend towards the level consistent with stable inflation. This we term the equilibrium level. Third, the equilibrium level of unemployment is affected both by any variable which influences the ease with which unemployed individuals can be matched to available job vacancies and also by any variable which tends to raise wages in a direct fashion despite excess supply in the labour market. There may be variables common to both sets. Finally, both groups of variables will tend to impact on real wages in the same direction as they influence equilibrium unemployment, because equilibrium labour demand, which is negatively related to wages, has to move in the opposite direction to equilibrium unemployment.

It is worth noting that the first group of variables mentioned above will tend to impact on the position of the Beveridge Curve, whereas the second will not do so in any direct fashion. However, this division is not quite as clear-cut as it might appear at first sight. What we can say, nevertheless, is that any variable that shifts the Beveridge Curve to the right will increase equilibrium unemployment. So a shift of the Beveridge Curve is a sufficient but not necessary sign that equilibrium unemployment has changed.

#### *The unemployment benefit system*

We turn now to consider a series of variables that we might expect to influence equilibrium unemployment, either because of their impact on the effectiveness with which the unemployed are matched to available jobs or because of their direct effect on wages. The unemployment benefit system directly affects the readiness of the unemployed to fill vacancies. Important aspects of the system are clearly the level of benefits, their coverage, the length of time for which they are available and the strictness with which the system is operated. Related to unemployment benefits is the availability of other resources to those without jobs. Employment protection laws may tend to make firms more cautious about filling vacancies, which would slow the speed at which the unemployed

move into work. This obviously reduces the efficiency of job matching.

However, the mechanism here is not clear-cut. For example, the introduction of employment laws often leads to an increased professionalisation of the personnel function within firms, as was the case in Britain in the 1970s. This can increase the efficiency of job matching. So, in terms of outflows from unemployment, the impact of employment protection laws can go either way. By contrast, it seems clear that such laws will tend to reduce involuntary separations and hence lower the flows into unemployment. So the overall impact on the Beveridge Curve is an empirical question. Furthermore, employment law may also have a direct impact on pay, since it raises the job security of existing employees, encouraging them to demand higher pay increases.

Anything that makes it easier to match the unemployed to the available vacancies will shift the Beveridge Curve to the left and reduce equilibrium unemployment. Factors which operate in this way include the reduction of barriers to mobility, which may be geographical or occupational. Furthermore, numerous government policies are concerned to increase the ability and willingness of the unemployed to take jobs. These are grouped under the heading of active labour market policies (ALMP).

#### *Wage setting institutions*

The obvious place to start is the institutional structure of wage determination. Within every country there is a variety of structures. In some sectors wages are determined more or less competitively, but in others wages are bargained between employers and trade unions at the level of the establishment, firm or even industry. The overall outcome depends on union power in wage bargains, union coverage and the degree of co-ordination of wage bargains. Generally, greater union power and coverage can be expected to exert upward pressure on wages, hence raising equilibrium unemployment, but this can be offset if union wage setting across the economy is co-ordinated.

Superficially, it may be argued that wage setting institutions impact directly on wages without influencing the efficiency of job matching or the separation rate into unemployment: i.e. without influenc-

ing the position of the Beveridge Curve. However, if we use a model of the Beveridge Curve that endogenises the rate of separation into unemployment or the rate of job destruction, this no longer applies. For example, if union power raises the share of the matching surplus going to wages, this will tend to raise the rate of job destruction and shift the Beveridge Curve to the right. The same thing will also happen, if factors such as the coordination of wage bargaining reduce the extent to which wages can fluctuate to offset idiosyncratic shocks and stabilise employment at the firm level. So, while co-ordination can reduce overall wage pressure, which tends to lower equilibrium unemployment, it may raise the rate of idiosyncratic job shifts, which will tend to shift the Beveridge Curve to the right and have an offsetting effect.

#### *Real wage resistance*

The final group of variables that directly impacts on wages falls under the heading of real wage resistance. The idea here is that workers attempt to sustain recent rates of real wage growth when the rate consistent with stable employment shifts unexpectedly. For example, if there is an adverse shift in the terms of trade, real consumption wages must fall if employment is not to decline. If workers persist in attempting to bargain for rates of real wage growth, which take no account of the movement in the terms of trade, this will tend to raise unemployment. Exactly the same argument applies if there is an unexpected fall in trend productivity growth (TPG), or an increase in labour taxes. For example, if labour taxes (payroll tax rates plus income tax rates plus consumption tax rates) go up, the real post-tax consumption wage must fall if real labour costs per employee are not to rise. Any resistance to this fall will lead to a rise in unemployment. This argument suggests that increases in real import prices, falls in trend productivity growth, or rises in the labour tax rate may lead to a temporary increase in unemployment.

However, some argue that these effects can be permanent. For example, Mortensen and Pissarides (1999) use their standard flow model of equilibrium unemployment to analyse various economic policies, including changes in payroll taxes. And they find enormous effects. For example, in one simulation, with a benefit replacement ratio of 0.4, a rise in the payroll tax rate from 15 to 25% is enough to raise equilibrium unemployment permanently by

over 6 percentage points. The reason why labour taxes have a big impact in this case is because Mortensen and Pissarides introduce into their model a value of leisure, which is independent of the consumption wage. This fixing of an important element of the individual reservation wage implies that labour supply and willingness to work will increase permanently if the real consumption wage goes up. This will induce permanent reductions in equilibrium unemployment if labour taxes fall or productivity rises. Ultimately this is an empirical question; but it may be argued that, in a satisfactory model, the value of leisure and the individual reservation wage more generally should, in the long run, move proportionally to the consumption wage and the general level of productivity. If this adjustment is made in the Mortensen and Pissarides model, the impact of payroll taxes on equilibrium unemployment disappears.

### The data

Our purpose is to investigate the effect of changes in labour market “institutions” on the Beveridge

**Table 3**

#### Unemployment Benefit Duration Index 1960–95

Country	1960–64	1965–72	1973–79	1980–87	1988–95
Australia	1.02	1.02	1.02	1.02	1.02
Austria	0	0	0.69	0.75	0.74
Belgium	1.0	0.96	0.78	0.79	0.77
Canada	0.33	0.31	0.20	0.25	0.22
Denmark	0.63	0.66	0.66	0.62	0.84
Finland	0	0.14	0.72	0.61	0.53
France	0.28	0.23	0.19	0.37	0.49
Germany	0.57	0.57	0.61	0.61	0.61
Ireland	0.68	0.78	0.39	0.40	0.39
Italy	0	0	0	0	0.13
Japan	0	0	0	0	0
Netherlands	0.12	0.35	0.53	0.66	0.57
Norway	0	0.07	0.45	0.49	0.50
New Zealand	1.02	1.02	1.02	1.04	1.04
Portugal	–	–	0	0.11	0.35
Spain	0	0	0.01	0.21	0.27
Sweden	0	0	0.04	0.05	0.04
Switzerland	0	0	0	0	0.18
United Kingdom	0.87	0.59	0.54	0.71	0.70
United States	0.12	0.17	0.19	0.17	0.18

Source: OECD. Based on  $[0.06$  (replacement ratio in 2nd and 3rd year of a spell)  $+ 0.04$  (replacement ratio in 4th and 5th year of a spell)]  $\div$  (replacement ratio in 1st year of a spell).

Curve, real wages and equilibrium unemployment in the OECD from the 1960s to the 1990s. In order to undertake this task, we require long time series for the appropriate countries. What information do we possess and what are the gaps?

There are four aspects of the unemployment benefit system for which there are good theoretical and empirical reasons to believe that they will influence equilibrium unemployment. These are, in turn: the level of benefits, the duration of entitlement, the coverage of the system and the strictness

with which the system is operated. Of these, only the first two are available as time series for the OECD countries. The OECD has collected systematic data on the unemployment benefit replacement ratio for three different family types (single, with dependent spouse, with spouse at work) in three different duration categories (1st year, 2nd and 3rd years, 4th and 5th years) from 1961 to 1995 (every other year). A summary of these data is presented in Tables 2 and 3.

It is unfortunate that we have no comprehensive time series data on the coverage of the system or on the strictness with

**Table 2**

#### Unemployment Benefit Replacement Ratios 1960–95

Country	1960–64	1965–72	1973–79	1980–87	1988–95
Australia	0.18	0.15	0.23	0.23	0.26
Austria	0.15	0.17	0.30	0.34	0.34
Belgium	0.37	0.40	0.55	0.50	0.48
Canada	0.39	0.43	0.59	0.57	0.58
Denmark	0.25	0.35	0.55	0.67	0.64
Finland	0.13	0.18	0.29	0.38	0.53
France	0.48	0.51	0.56	0.61	0.58
Germany (W)	0.43	0.41	0.39	0.38	0.37
Ireland	0.21	0.24	0.44	0.50	0.40
Italy	0.09	0.06	0.04	0.02	0.26
Japan	0.36	0.38	0.31	0.29	0.30
Netherlands	0.39	0.64	0.65	0.67	0.70
Norway	0.12	0.13	0.28	0.56	0.62
New Zealand	0.37	0.30	0.27	0.30	0.29
Portugal	–	–	0.17	0.44	0.65
Spain	0.35	0.48	0.62	0.75	0.68
Sweden	0.11	0.16	0.57	0.70	0.72
Switzerland	0.04	0.02	0.21	0.48	0.61
United Kingdom	0.27	0.36	0.34	0.26	0.22
United States	0.22	0.23	0.28	0.30	0.26

Source: OECD. Based on the replacement ratio in the first year of an unemployment spell averaged over three family types. See OECD (1994), Table 8.1 for an example.

Table 4

## Collective Bargaining Coverage (%)

Country	1960	1965	1970	1975	1980	1985	1990	1994	1997	1999
Austria	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	99	99	–	–
Belgium	80	80	80	85	90	90	90	90	–	–
Denmark	67	68	68	70	72	74	69	69	–	–
Finland	95	95	95	95	95	95	95	95	–	–
France	n.a.	n.a.	n.a.	n.a.	85	n.a.	92	95	97	–
Germany	90	90	90	90	91	90	90	92	–	–
Ireland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	–	–
Italy	91	90	88	85	85	85	83	82	–	–
Netherlands	100	n.a.	n.a.	n.a.	76	80	n.a.	85	–	–
Norway	65	65	65	65	70	70	70	70	–	–
Portugal	n.a.	n.a.	n.a.	n.a.	70	n.a.	79	71	–	–
Spain	n.a.	n.a.	n.a.	n.a.	68	70	76	78	–	–
Sweden	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	86	89	–	–
Switzerland	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	53	53	–	–
United Kingdom	67	67	68	72	70	64	54	40	36	–
Canada	35	33	36	39	40	39	38	36	–	–
United States	29	27	27	24	21	21	18	17	–	15
Japan	n.a.	n.a.	n.a.	n.a.	28	n.a.	23	21	–	–
Australia	85	85	85	85	85	85	80	80	–	–
New Zealand	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	67	31	–	–

These data were collected by W. Ochel from specific country experts. We are grateful for all their assistance. Further details may be found in Ochel (2001).

which it is administered. This is particularly true for “strictness”, because the evidence we possess appears to indicate that this is of crucial importance in determining the extent to which a generous level of benefit will actually influence unemployment. For example, Denmark, which has very generous unemployment benefits, totally reformed the operation of its benefit system through the 1990s with a view to tightening the criteria for benefit receipt and the enforcement of these criteria via a comprehensive system of sanctions. The Danish Ministry of Labour is convinced that this process has played a major role in allowing Danish unemployment to fall dramatically since the early 1990s without generating inflationary pressure.

A further aspect of the structure of the benefit system for which we do not have detailed data back to the 1960s is those policies grouped under the heading of active labour market policies (ALMP). The purpose of these is to provide active assistance to the unemployed to improve their chances of obtaining work. Multi-country studies indicate that ALMPs do reduce unemployment. This broad-brush evidence is backed up by numbers of micro-econometric studies, also showing that, under some circumstances, active labour market policies are effective. In particular, job search assistance tends to have consistently positive outcomes, but other types of measure such as employment subsidies and labour market training must be well designed if they are to have a significant impact.

In most OECD countries, the majority of workers have their wages set by collective bargaining between employers and trade unions at the plant, firm, industry or aggregate level. This is important for our purposes because there is some evidence that trade union power in wage setting has a significant impact on unemployment. Unfortunately, we do not have complete data on collective bargaining coverage (the proportion of employees covered by collective agreements), but the data presented in Table 4 give a reasonable picture. Across most of Continental Europe, including Scandinavia but excluding Switzerland, coverage is both high and stable. This is either because most people belong to trade unions, or because union agreements are extended by law to cover non-members in the same sector. In Switzerland and in the OECD countries outside Continental Europe and Scandinavia, coverage is generally much lower, with the exception of Australia. In the UK, the US and New Zealand coverage has declined with the fall in union density, there being no extension laws in place to compensate.

In Table 5, we present the percentage of employees who are union members. Across most of Scandinavia, membership tends to be high. By contrast, in much of Continental Europe and in Australia, union density tends to be less than 50% and is gradually declining. In these countries there is, consequently, a wide and widening gap between density and coverage, which it is the job of the extension



**Table 5****Union Density (%)**

Country	1960-64	1965-72	1973-79	1980-87	1988-95	Extension laws in place <sup>a)</sup>
Australia	48	45	49	49	43	✓
Austria	59	57	52	51	45	✓
Belgium	40	42	52	52	52	✓
Canada	27	29	35	37	36	✗
Denmark	60	61	71	79	76	✗
Finland	35	47	66	69	76	✓
France	20	21	21	16	10	✓
Germany (W)	34	32	35	34	31	✓
Ireland	47	51	56	56	51	✗
Italy	25	32	48	45	40	✓
Japan	33	33	30	27	24	✗
Netherlands	41	38	37	30	24	✓
Norway	52	51	52	55	56	✗
New Zealand	36	35	38	37	35	✗
Portugal	61	61	61	57	34	✓
Spain	9	9	9	11	16	✓
Sweden	64	66	76	83	84	✗
Switzerland	35	32	32	29	25	✓ <sup>b)</sup>
United Kingdom	44	47	55	53	42	✗
United States	27	26	25	20	16	✗

Notes: (i) Union density = union members as a percentage of employees. In both Spain and Portugal, union membership in the 1960s and 1970s does not have the same implications as elsewhere because there was pervasive government intervention in wage determination during most of this period.

(ii) <sup>a)</sup> Effectively, bargained wages extended to non-union firms typically at the behest of one party to the bargain.

<sup>b)</sup> Extension only at the behest of both parties to a bargain. See OECD. For details, see OECD (1994), Table 5.11.

laws to fill. This situation is at its most stark in France, which has the lowest union density in the OECD at around 10%, but one of the highest levels of coverage (around 95%). Outside these regions, both density and coverage tend to be relatively low and both are declining at greater or less-

er rates. The absence of complete coverage data means that we have to rely on the density variable to capture the impact of unionisation on unemployment. As should be clear, this is only half the story, so we must treat any results we find in this area with some caution.

The other aspect of wage bargaining which appears to have a significant impact on wages and unemployment is the extent to which bargaining is co-ordinated. Roughly speaking, the evidence suggests that, if bargaining is highly co-ordinated, this will completely offset the adverse effects of unionism on employment. Co-ordination refers to mechanisms whereby the aggregate employment implications of wage determination are taken into account when wage bargains are struck. This may be achieved if wage bargaining is highly centralised, as in Austria, or if there are institutions, such as employers' federations, which can assist bargainers to act in concert, even when bargaining itself ostensibly occurs at the level of the firm or industry, as in Germany or Japan.

**Table 6****Co-ordination Indices (Range 1-3)**

Country	1960-64		1965-72		1973-79		1980-87		1988-95	
	1	2	1	2	1	2	1	2	1	2
Australia	2.25	2	2.25	2	2.25	2.36	2.25	2.31	1.92	1.63
Austria	3	2.5	3	2.5	3	2.5	3	2.5	3	2.42
Belgium	2	2	2	2	2	2.1	2	2.55	2	2
Canada	1	1	1	1	1	1.63	1	1.08	1	1
Denmark	2.5	3	2.5	3	2.5	2.96	2.4	2.54	2.26	2.42
Finland	2.25	1.5	2.25	1.69	2.25	2	2.25	2	2.25	2.38
France	1.75	2	1.75	2	1.75	2	1.84	2	1.98	1.92
Germany (W)	3	2.5	3	2.5	3	2.5	3	2.5	3	2.5
Ireland	2	2	2	2.38	2	2.91	2	2.08	3	2.75
Italy	1.5	1.94	1.5	1.73	1.5	2	1.5	1.81	1.4	1.95
Japan	3	2.5	3	2.5	3	2.5	3	2.5	3	2.5
Netherlands	2	3	2	2.56	2	2	2	2.38	2	3
Norway	2.5	3	2.5	3	2.5	2.96	2.5	2.72	2.5	2.84
New Zealand	1.5	2.5	1.5	2.5	1.5	2.5	1.32	2.32	1	1.25
Portugal	1.75	3	1.75	3	1.75	2.56	1.84	1.58	2	1.88
Spain	2	3	2	3	2	2.64	2	2.3	2	2
Sweden	2.5	3	2.5	3	2.5	3	2.41	2.53	2.15	1.94
Switzerland	2.25	2	2.25	2	2.25	2	2.25	2	2.25	1.63
United Kingdom	1.5	1.56	1.5	1.77	1.5	1.77	1.41	1.08	1.15	1
United States	1	1	1	1	1	1	1	1	1	1

Notes: The first series (1) only moves in response to major changes; the second series (2) attempts to capture all the nuances. Co-ordination 1 was provided by Michèle Belot to whom much thanks (see Belot and van Ours, 2000, for details). Co-ordination 2 is the work of W. Ochel. Co-ordination 1 appears in all the subsequent regressions.

**Table 7**  
**Employment Protection (Index, 0–2)**

Country	1960–64	1965–72	1973–79	1980–87	1988–95
Australia	0.50	0.50	0.50	0.50	0.50
Austria	0.65	0.65	0.84	1.27	1.30
Belgium	0.72	1.24	1.55	1.55	1.35
Canada	0.30	0.30	0.30	0.30	0.30
Denmark	0.90	0.98	1.10	1.10	0.90
Finland	1.20	1.20	1.20	1.20	1.13
France	0.37	0.68	1.21	1.30	1.41
Germany (W)	0.45	1.05	1.65	1.65	1.52
Ireland	0.02	0.19	0.45	0.50	0.52
Italy	1.92	1.99	2.00	2.00	1.89
Japan	1.40	1.40	1.40	1.40	1.40
Netherlands	1.35	1.35	1.35	1.35	1.28
Norway	1.55	1.55	1.55	1.55	1.46
New Zealand	0.80	0.80	0.80	0.80	0.80
Portugal	0.00	0.43	1.59	1.94	1.93
Spain	2.00	2.00	1.99	1.91	1.74
Sweden	0.00	0.23	1.46	1.80	1.53
Switzerland	0.55	0.55	0.55	0.55	0.55
United Kingdom	0.16	0.21	0.33	0.35	0.35
United States	0.10	0.10	0.10	0.10	0.10

Note: These data are based on an interpolation of the variable used by Blanchard and Wolfers (2000), to whom we are most grateful. This variable is based on the series used by Lazear (1990) and that provided by the OECD for the late 1980s and 1990s. Since the Lazear index and the OECD index are not strictly comparable, the overall series is not completely reliable.

It is worth noting that co-ordination is not, therefore, the same as centralisation, which refers simply to the level at which bargaining takes place (plant, firm, industry or economy-wide). In Table 6, we present co-ordination indices for the OECD from the 1960s. The first index (co-ord 1) basically ignores transient changes, whereas the second (co-ord 2) tries to capture the various detailed nuances of the variations in the institutional structure. Notable changes are the increases in co-ordination in Ireland and the Netherlands towards the end of the period and the declines in co-ordination in Australia, New Zealand and Sweden. Co-ordination also declines in the UK over the same period, but this simply reflects the sharp decline of unionism overall.

Employment protection laws are thought by many to be a key factor in generating labour market inflexibility. Despite this, evidence that they have a decisive impact on overall rates of unemployment is mixed, at best. In Table 7, we present details of an employment protection index for the OECD countries. Features to note are the wide variation in the index across countries and the

fact that, in some countries, the basic legislation was not introduced until the 1970s.

In looking for the impact of taxes on employment, the important ones are those that form part of the wedge between the real product wage (labour costs per employee normalised on the output price) and the real consumption wage (after-tax pay normalised on the consumer price index). These are payroll taxes, income taxes and consumption taxes. Their combined impact on unemployment remains a subject of some debate, despite the large number of empirical investigations. Indeed some studies indicate that employment taxes have no long-run impact whatever on

unemployment, whereas others present results which imply that they can explain more or less all the rise in unemployment in most countries during the 1960–1985 period. In Table 8 we present the total tax rate on labour for the OECD countries. All countries exhibit a substantial increase over the period from the 1960s to the 1990s, although there are wide vari-

**Table 8**  
**Total Taxes on Labour**  
**Payroll Tax Rate plus Income Tax Rate plus Consumption Tax Rate**  
**Total Tax Rate (%)**

Country	1960–64	1965–72	1973–79	1980–87	1988–95
Australia	28	31	36	39	–
Austria	47	52	55	58	59
Belgium	38	43	44	46	50
Canada	31	39	41	42	50
Denmark	32	46	53	59	60
Finland	38	46	55	58	64
France	55	57	60	64	67
Germany (W)	42	44	48	50	52
Ireland	23	30	30	37	41
Italy	57	56	54	56	67
Japan	25	25	26	32	33
Netherlands	45	54	57	55	47
Norway	–	52	61	65	61
New Zealand	–	–	29	30	–
Portugal	20	25	26	33	40
Spain	19	23	29	40	46
Sweden	41	54	68	77	78
Switzerland	30	31	35	36	35
United Kingdom	34	43	45	51	47
United States	34	37	42	44	45

Note: These data are based on the Centre for Economic Performance/OECD dataset.

**Table 9****Mobility: Owner Occupation (%)**

Country	1960–64	1965–72	1973–79	1980–87	1988–95
Australia	64	66	69	71	70
Austria	39	41	45	50	55
Belgium	51	54	57	60	62
Canada	65	61	61	62	61
Denmark	44	48	51	52	51
Finland	57	59	60	63	67
France	42	44	49	52	54
Germany (W)	30	35	38	39	38
Ireland	62	69	74	77	78
Italy	46	49	55	62	67
Japan	69	61	61	62	61
Netherlands	30	34	39	43	44
Norway	53	53	57	59	59
New Zealand	69	68	69	70	71
Portugal	–	–	–	–	–
Spain	54	62	69	75	78
Sweden	36	35	39	41	42
Switzerland	33	29	29	30	30
United Kingdom	43	48	53	60	68
United States	64	65	67	67	64

Note: These numbers are based on data supplied by Andrew Oswald to whom we are most grateful. For most countries, the original data are generated by the Population Census, which takes place relatively infrequently. They are then linearly interpolated.

ations across countries. These mainly reflect the extent to which health, higher education and pensions are publicly provided, along with the all-round generosity of the social security system.

Oswald (1997) proposes that barriers to geographical mobility, as reflected in the rate of owner occupation of the housing stock, also play a key role in determining unemployment. He finds that changes in unemployment are positively correlated with changes in owner occupation rates across countries, US states and UK regions. He also presents UK evidence that owner occupation represents a significant mobility barrier relative to private renting. However, Gregg et al. (2000) find that, while unemployment is significantly negatively related to owner occupation rates both across UK regions and across time, in a regional fixed effects model this relationship becomes significantly positive once other relevant regional characteristics are included. We include owner occupation as a variable in our investigation and the data are shown in Table 9. It must, however, be borne in mind that these data are heavily interpolated, so the results should be treated with caution.

### A simple empirical model

In seeking to explain the different patterns of unemployment exhibited across the OECD in the

period from the 1960s to the 1990s, our approach is to see how far we can get with a very simple empirical model. We have already discussed those factors that can be expected to influence equilibrium unemployment in the long run. Since we are, in practice, going to explain actual unemployment, we must also include in our model those factors that might explain the short-run deviations of unemployment from its equilibrium level. These factors include aggregate demand shocks, productivity shocks and wage shocks.

Some further specific points are worth noting. The first of these is the role of productivity shocks and real import shocks

in capturing real wage resistance. As we have noted, increases in real import prices or falls in trend productivity growth will lead to temporary increases in unemployment (and in real product wages relative to productivity) if real consumption wages do not adjust appropriately. Second, we include the real interest rate because some have accorded it a significant role in the determination of unemployment even in the long run. Third, we are not simply going to look at unemployment, but shall also try to explain real product wages (real labour costs) and shifts in the Beveridge Curve in order to see if we can obtain a consistent picture.

For those who are interested, the details of the equations we have used can be found in Nickell et al. (2001). Here we shall confine ourselves to a summary of our findings.

### The findings

Two points stand out. First, for every country except Norway and Sweden, the Beveridge Curve shifted to the right from the 1960s to the mid-1980s. Of course, the distance moved varied from country to country, but the movement is clear in all cases. Second, after the mid-1980s, the countries fall into two groups: those for which the Beveridge Curve carries on moving to the right with no serious hint of a turnaround and those for which it



starts moving back to the left. The first group definitely includes Belgium, Finland, France, Germany, Japan, Norway, Spain, Sweden and Switzerland. (The movement in Belgium, France and Germany is particularly clear in the sense that both vacancies and unemployment were higher in the late 1990s' boom than in the late 1980s' boom and were higher in the late 1980s' boom than in the late 1970s' boom.) The second group definitely includes Canada, Denmark, Netherlands, the UK and the US. Australia, Austria, New Zealand and Portugal are harder to place, although all are probably showing some recent improvement (leftward move).

These reasonably clear-cut movements in the Beveridge Curve provide evidence that some factors of the type discussed have raised equilibrium unemployment in most countries over the period from the 1960s to the mid-1980s and that, from then on, they have caused a fall back in some of these countries and a continuing rise in others.

As an explanation of the inflow rate into unemployment, it is notable that the impact of the owner occupation rate (i.e. mobility barriers) is only weakly positive, whereas that of employment protection is, as expected, negative. Of the variables that directly impact on wage determination, union density turns out to be strongly positive. This is consistent with the role of union power in the Mortensen and Pissarides (1994) model, where unions raise the destruction rate by increasing the share of the matching surplus going to wages.

Combining the Beveridge Curve and inflow rate equation, we found that, once we include the impact of these variables on the inflow rate the duration of benefits, union density and owner occupation all tend to shift the Beveridge Curve to the right, whereas stricter employment protection shifted it to the left. These should translate directly into effects on equilibrium unemployment. However, we should bear in mind that variables such as union density, co-ordination and employment protection may also have a direct effect on wages and hence further effects on equilibrium unemployment. Indeed, we might expect employment protection to impact on unemployment via its direct wage effect in the opposite direction to the Beveridge Curve effects. So our next step is to go directly to the impact of our variables on unemployment and wages.

The idea here is to add to the overall picture by seeing if the impact of the institutions on real wages is consistent with their impact on unemployment. Broadly speaking, the institution variables can influence wages directly by raising the bargaining power of workers, or they can operate by modifying the effect of unemployment on wages. For example, trade unions may reduce the impact of unemployment on wages by insulating the existing work force from the rigours of the external labour market. Either raising wages directly or reducing the (absolute) value of the unemployment coefficient will lead to an increase in equilibrium unemployment. Furthermore, it is worth noting that, in most standard models, institutions which shift the Beveridge Curve will also tend to impact on wages as well as on equilibrium unemployment.

We find co-ordination in wage bargaining increases the absolute impact of unemployment and that both union density and the benefit replacement ratio reduce it. The overall impact of both employment protection and employment taxes is to raise real wages, but these effects are modified in economies where wage bargaining is co-ordinated. Both the benefit replacement ratio and the benefit duration have a direct impact on wages. We also investigated the interaction between the two on the basis that higher benefits will have a bigger effect if duration is longer. This interaction effect was positive, but insignificant. Looking at real wage resistance effects, we find that a TFP shock has a negative effect on real wages (given trend productivity) and an import price shock has a positive effect. Both these are consistent with the real wage resistance story. Finally, we find that the impact of owner occupation on wages is positive and close to significance.

So how well does our model fit the data? Overall, it appears to do quite well, particularly for those countries with big changes in unemployment. However, for countries with minimal changes such as Austria, Japan and Switzerland, it is not great.

How do the institution effects compare with those in the wage equation? First, just as in the wage equation, both employment protection and employment taxes have a positive effect, with the latter being modified in economies with co-ordinated wage bargaining. Our tax effects are not nearly as large as those of Daveri and Tabellini (2000), with a 10 percentage point increase in the

total employment tax rate leading to around a 1 percentage point rise in unemployment in the long run at average levels of co-ordination.

As might have been expected, benefit levels have an important impact on unemployment, as does benefit duration and their interaction, something that did not show up in the wage equation. Furthermore, despite the fact that union density reduces the unemployment effect in the wage equation, we can find no significant effect on unemployment, although we do find a positive rate of change effect. We do find a positive role for owner occupation but, as in the wage equation, it is not very significant. Finally, the impact of the import price and TFP shocks seem sensible and consistent with those in the wage equation. However, while money supply shocks do not have any effect, the real interest rate does have some positive impact.

So it appears that, overall, changing labour market institutions provide a reasonably satisfactory explanation of the broad pattern of unemployment shifts in the OECD countries, and their impact on unemployment is broadly consistent with their impact on real wages. With better data, e.g. on union coverage or the administration of the benefit system, we could probably generate a more complete explanation, in particular one that did not rely on such a high level of endogenous persistence to fit.

In the following countries, changing institutions explain a significant part of the overall change in unemployment since the 1960s: Belgium, Canada, Denmark, Finland, France, Italy, Netherlands, Norway, Spain, UK, and the US. They explain far too much in Austria, Portugal and Sweden. They explain very little in Australia, Germany, Japan, New Zealand and Switzerland, although in Japan and Switzerland there is very little to explain. Again, the outcome is “not bad”, given the weaknesses of the data.

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