Unemployment policies
Richard Jackman, Christopher Pissarides and Savvas Savouri

Summary

The massive increase in unemployment throughout the OECD since the early 1970s has led governments in many countries to introduce, or to expand, labour market policies such as training schemes, employment subsidies, public works or schemes of counselling or assistance in job search. Such programmes have the objective of reducing unemployment by improving the workings of the labour market. After a description of these programmes, this article proposes a framework, based on the relationship between unemployment and vacancies (or Beveridge curve), within which the rise in unemployment can be analysed and the effects of policies and of institutions examined. This framework helps to identify the main factors which have affected the unemployment and vacancy rates in 14 of the main OECD countries over the period 1970–88. The main results are that while corporatism remains the institutional feature with the biggest single impact in sustaining low unemployment rates, labour market policies also have had a significant and well-defined effect on unemployment, which appears large relative to the budgetary costs of the programmes.
Labour market policies and unemployment in the OECD

Richard Jackman, Christopher Pissarides and Savvas Savouri
Centre for Economic Performance, London School of Economics

1. Introduction

The appalling unemployment record of the 1970s and 1980s can largely be attributed to supply-side shocks to the world economy. The effects of these shocks were then intensified and prolonged in a number of countries by social policies and institutional arrangements predicated on the assumption of continuous full employment. Recent papers in Economic Policy have documented the role of wage-bargaining arrangements (Calmfors and Driffill, 1988) and of unemployment benefits (Burda, 1988) in accounting for differences in unemployment rates across countries.

As unemployment rates have risen, and governments have come to realize the changed nature of the problem, new policies have been enacted to tackle unemployment. These policies are based on the perception that the causes of the high unemployment rates are from the supply side rather than the demand side, and that policies of indiscriminate demand expansion will quickly lead to a resurgence of inflation. Supply-side policies cover a wide range. In this paper, we focus on policies specifically aimed at the functioning of the labour market. These policies are referred to as special employment measures or as labour market policies; we use the latter term throughout.

Because these policies vary more across countries than over time in any particular country, the most useful comparisons can be made across boundaries. Fortunately, comparable data from several countries have...
recently become available, thanks largely to the efforts of the OECD and the Statistical Office of the European Communities. Following the OECD classification of labour market policies, we focus on three major components of labour market policy: (i) employment services, such as the provision of information, guidance or financial support to assist the unemployed in finding jobs; (ii) labour market training; (iii) direct job creation and employment subsidies.

Public expenditure on policies of this type has risen rapidly in recent years, in parallel with unemployment rates. For the 14 countries on which we have data, the average expenditure per unemployed person on these policies (as a percentage of per capita GDP) is plotted against the average unemployment rate. While such data is a bit rough (see below), Figure 1 shows a clear tendency for a sustained rise in unemployment to be followed after a period of a few years by a significant expansion in expenditure on labour market policies. In 1988 spending on labour market policies amounted to as much as 0.7% of GDP in six industrialized countries (Belgium, Finland, West Germany, Ireland, New Zealand and Sweden). Even in the US, such policies of active intervention in the labour market cost one-fifth of 1% of GDP (see Table 1 below).

![Graph showing world unemployment rate and world labour market policies](image)

**Figure 1. World unemployment rate and world labour market policies**

*Sources:* Appendix B. Labour market policies calculated as unweighted mean of spending per unemployed person as a percent of output per head in 1986, adjusted by reference to the policy changes described in Appendix A.
Notwithstanding the substantial outlays on these programmes, economic analysis and evaluation of their effects has been sparse. In the 1970s, the rapid rise in unemployment was accompanied in many countries by accelerating inflation. Restrictive fiscal and monetary policies were seen as essential for the control of inflation and severe financial constraints were imposed on labour market policies. Governments were searching for policies which could reduce unemployment without costing much money or adding to inflationary pressures. In operational terms, labour market policies thus had the objective of maximizing employment gains per unit of expenditure (the 'bang for the buck'). The underlying economic logic of these policies was never entirely clear. By the late 1970s, however, attempts were being made to analyse labour market policies as methods of reducing the natural or equilibrium rate of unemployment (Baily and Tobin, 1977; and see also e.g. Jackman and Layard, 1980; Johnson 1980). These approaches suffered from the problem that there was no generally accepted theory of the natural rate of unemployment, nor therefore of what types of labour market intervention might be effective in reducing it. The labour market was then analysed in the conventional economic supply and demand framework, with unemployment explained by particular assumptions about supply behaviour or by the arbitrary imposition of wage or price rigidities.

More recent work has tried to allow for the fact that the labour market is unique among markets for its diversity of services traded and for the human dimension in both supply and demand decisions. While many of the problems that befall this market can usefully be analysed with the conventional supply and demand framework, many others cannot. The problems and policies that we wish to analyse here are very much of the latter kind. We therefore use an approach which is based on the simultaneous existence of unemployment ($u$) and vacant jobs ($v$), and on the equilibrium relation that holds between them, known as the $UV$ or Beveridge curve. The microeconomic theory underlying this curve is consistent with the diversity of workers and of jobs which characterizes the labour market and which accounts for the existence of unemployment. We will show that, in many countries, in recent years the Beveridge curve has shifted in a way which suggests that the labour market is operating less efficiently in matching unemployed people to the available vacancies. This loss of efficiency in the labour market has led to higher unemployment. Labour market policies can then be seen in terms of improving market efficiency and hence of reducing the equilibrium unemployment rate.

After a short description of the types of policies currently in operation, we first provide a framework for identifying and analysing the shocks
that affect labour markets, and then show how labour market institutions and policies affect the market's response to shocks. This prepares the way for an evaluation of the experiences of the major OECD countries. We conclude that well-targeted policies can ease the burdens of structural adjustment on employment. Our estimates suggest that the effects of such policies on employment can be large relative to their budgetary costs.

2. Labour market policies

The genesis of labour market policies was essentially pragmatic, an ad hoc response to a clearly perceived social problem of high unemployment rates for which conventional economic analysis could offer no immediate solution. These policies are defined as those which work upon the malfunctioning—in one respect or another—of the labour market itself, rather than on wider economic policies (macroeconomic, industrial or fiscal) which can have an impact on unemployment. Systematic analysis of labour market policies at an international level has only recently been made possible as a result of the OECD initiative to gather data on a comparable basis from its member nations. These data, and the classification procedures adopted, were set out in the OECD Employment Outlook for September 1988 (Chapter 3). Data for public expenditure on the main categories of labour market policies for 23 countries are given in Table 1.

2.1. Employment services and administration

The first category, employment services and administration (ESA), covers all public expenditure on employment exchanges aimed at finding work for the unemployed. In most countries the government provides a network of employment exchanges to which employers are encouraged (in some countries required) to notify vacancies. There is, therefore, relatively little variation in this item across countries. Where there is variation, it concerns the extent of assistance provided to unemployed people in terms both of the amount of guidance (the length and frequency of interviews and so on) and of practical help with making job applications. In a number of countries a major element of labour market policy has involved a much more intensive role for the employment services in providing information, guidance and assistance to long-term unemployed people (an example is the 'Restart' programme in Britain). The rationale for employment exchanges is clearly to collect information about job opportunities and thus enable the unemployed to search more efficiently. But it has never been clear how important empirically is lack of information in hindering job search, and it certainly
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<th>% of GDP</th>
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seems unlikely that there has been a significant deterioration in information flows in recent years.

Policies aimed at the long-term unemployed, and involving intensive counselling and assistance in applying for jobs, derive from the concern that long-term unemployed people have special difficulties in getting back into work. Because of an erosion of skills, a loss of self-confidence, or employer prejudice, they need additional advice and assistance if they are to have a good chance of finding a job.

The countries spending most on employment services as a percentage of GDP are West Germany, Canada and Sweden. A better measure of the quality of service provided is expenditure per unemployed person as a percentage of per capita output, which is given in column (8) of Table 1. (In the case of Sweden our measure of unemployment takes into account both 'open' and 'hidden' unemployment, i.e. the number of people employed on various labour market policy schemes, which are discussed below.) The highest expenditure on employment services is in Sweden. Other countries with a high level of expenditures include Norway and Switzerland. While the corporatist and social democratic economic policies of Sweden and the other Scandinavian countries may not appear to have much in common with the highly decentralized and non-interventionist approach to economic policy in Switzerland, the Scandinavians and the Swiss have actually much in common when it comes to employment services. In particular, employment services are organized around the 'employment principle' – where the key objective is to find work for the unemployed – rather than the 'benefit principle' – where the objective is to provide financial support for people while unemployed and looking for work. In both the Swiss and the Swedish systems there is pressure on the unemployed, including possible denial of benefit, to both look for work and accept suitable job offers. In Sweden there is also extensive provision of training schemes and the like, to which we return below. (For further discussion of employment services in Switzerland see Danthine and Lambelet, 1987, or the OECD Annual Report on Switzerland, 1985–86.)

2.2. Labour market training

The second heading, labour market training (LMT), refers to training for people who have left school or other formal education, have in general had experience of employment, have become unemployed, and whose prospects of finding work are poor because of a decline in demand for the type of skill that they offer. Such people face the classic property rights problem of underprovision of training. Employers will be reluctant to train workers knowing that they can subsequently move
off and work elsewhere since they cannot recoup the return on the investment in training. In many countries, employers' organizations within industries or sectors organize industry-wide training to which member firms are obliged to contribute. In others, government may already provide financial support towards the cost of courses. While training organized by employers' organizations is not specifically directed towards the unemployed, clearly employers are more likely to take on unemployed people who require some training if the costs of such training is to be borne by others. Even so, there might not be a sufficient incentive for employers to take on an unemployed, untrained person, and there is a place for government support for training. Such government support can take the form of paying unemployed people to attend courses (this payment would normally be at about the same rate as unemployment benefit plus some out-of-pocket expenses as in Sweden), or of paying employers to provide training to unemployed people they take on.

The variation in policy across countries in the provision of training for the adult unemployed is enormous. Measured in terms of expenditure as a proportion of GDP (column (2) of Table 1) Ireland, Denmark and Sweden do most in this respect, but measured in relation to the numbers of unemployed people (column (6)) Sweden is again far ahead. The Swedish policy of providing support for training for the adult unemployed was instituted at the end of the 1930s, and has not really been much changed since. It has perhaps shown its worth is helping the Swedish labour market to adjust to the shocks of the 1970s and 1980s, without the sharp rise in unemployment experienced elsewhere. In Switzerland it will be noted that government spending on such activities is minimal, but on the other hand employers' organizations are regarded as effective and very active in this area.

2.3. Direct job creation and employment subsidies

The third type of policy is direct job creation and employment subsidies (DJC/ES). This covers public works organized by local authorities or other agencies – the cost of which are borne by government, provided unemployed people are taken on – and subsidies to employers in the private sector for hiring unemployed people. It also covers assistance to unemployed people to become self-employed or set up their own businesses. Examples of direct job creation schemes include the relief work scheme in Sweden, the Community Programme in the UK and the Community Employment Programme in Australia. Subsidies to employers taking on, in particular, long-term unemployed people have been used in Australia, Austria, Denmark, Finland, West Germany,
Ireland, the Netherlands and Sweden. Exceptionally in the UK, the government has given subsidies to long-term unemployed people themselves, for taking low-paid jobs, rather than subsidizing employers.

The rationale for job creation has always been less straightforward than the justification for employment services or support for training. One cannot, for example, invoke the partial equilibrium argument that subsidies can reduce relative labour costs (unless one holds that aggregate unemployment is the consequence of some arbitrary real wage rigidity). A general equilibrium evaluation is called for. For a given level of aggregate demand in the economy, we must ask whether job creation measures or employment subsidies can increase the total number of jobs. If the total number of jobs does not increase, the justification for shifting the work available from one line of activity to another, or from one individual to another, seems unclear. If the number of jobs does increase, it might be expected to affect pressure of demand in the labour market and thus jeopardize the objective of controlling inflation.

There have, however, been some supply-side arguments for job creation policies, particularly those linked to the long-term unemployed. For example, if employers are reluctant to take on long-term unemployed people because they are thought to have lost work habits, skills or self-confidence as a result of being unemployed, work experience is the only way of restoring their productive potential. Similarly, if long-term unemployed workers have lost contact with the information network concerning new job vacancies, additional assistance in the form of recruitment subsidies may be justified. In that sense, it is equivalent to training, even if no element of formal education is involved. Given the rigidity of pay structures it is very difficult for the long-term unemployed themselves to pay for such 'training', even if they had any money. It is also argued that increasing the number of jobs, if it means employing more long-term unemployed people, will be less inflationary because the long-term unemployed have become to a large extent isolated from the active labour market and hence have a smaller effect on the balance of demand in that market.

2.4. Other programmes

The OECD refers to two other categories which we exclude from our analysis. One is youth measures, which we exclude because it is so difficult to distinguish from the regular and general support provided by governments for education and training of young people. In some countries, most notably West Germany, the school system develops into a system of vocational training and thus there is no need for separate remedial systems. Arguably differences between countries in labour market
spending on youth training are primarily a reflection of differences in the staying-on rates in full-time education. Thus spending is highest in Ireland, Italy and the UK, and much lower in West Germany (OECD Employment Outlook, September 1988, Chapter 3, Table 3). Because many training schemes involve some element of participation in work, and most jobs for young people involve some element of training, it is natural to include the two together. But from a labour market point of view there is an important difference: however adequate the education and training system, it can still be difficult to place young persons in their first job, particularly given the emphasis many employers place on work experience. In Sweden, local authorities act as employers of last resort for young people and employ them working alongside existing staff for periods of up to six months in order to provide them with some work experience. Expenditure on such activities clearly forms part of labour market policy rather than education. Because we cannot separate out these components, we exclude youth programmes from our measure of labour market policy.

The second category is measures for the disabled. This again suffers from severe definitional problems. Programmes which in one country will be part of health services in another fall into the labour market policy category. Our preferred measure of the intensity of labour market policies across countries, therefore, is restricted to spending on the three headings we have described, measured in relation to the number of people unemployed. This figure for 1988 is given in the final column of Table 1.

3. The analytical framework

The conventional labour supply and demand framework is hard-pressed to account for the coexistence of unemployment and job vacancies. Our aim is to understand how the equilibrium unemployment rate and stock of job vacancies are affected by economic shocks and policy measures. Two curves aptly summarize the framework. The first curve, the Beveridge or $UV$ curve, characterizes equilibrium in the labour market. The second curve, the vacancy supply curve, traces out combinations of unemployment and vacancies corresponding to the (optimal) behaviour of firms and workers as they set wages and the employment level.

3.1. The Beveridge ($UV$) curve

The Beveridge curve traces combinations of the job vacancy rate (the number of job vacancies divided by the labour force) and the rate of unemployment where the flow into unemployment is equal to the flow
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Figure 2. Equilibrium unemployment and vacancies

out of it. A higher rate of job vacancies must be associated with a lower rate of unemployment. With more vacant jobs in the market, the unemployed workers engaged in search will find it easier to locate productive job matches. The Beveridge curve will thus have a negative slope (Figure 2). Above the curve there are more jobs for given unemployment, so unemployment is falling, and below it jobs are fewer, so unemployment is rising. The Beveridge curve, which emphasizes the flows in and out of unemployment is meaningful for two reasons. First, frequent job changing and movement in and out of the labour force by workers, the birth and death of new firms, and job turnover in existing firms induced by structural change and other reasons, bring about a continuous and sizeable flow of workers and jobs into unemployment. Second, the many different requirements imposed by jobs on potential workers and the many different attributes of the available workers, some of which may not be observable, imply that even if the number of jobs and workers match each other exactly, it is unlikely that those flowing into unemployment will instantly find a good job match. Thus vacant jobs and unemployed workers co-exist at all times and are engaged in a process of search that eventually leads to exit from unemployment.

3.2. The vacancy supply (VS) curve

The basic idea is that it is profitable for firms to take on more workers, and thus to post vacancies, when the marginal (revenue) product of labour is high relative to the wage and to the costs of recruiting additional workers. At the same time, a high unemployment rate tends to depress
wages, and to make it much easier to recruit workers, so that other things being equal, it encourages firms to expand employment by creating job vacancies.

The first component of this approach is then the relationship between wages and job vacancies. The total number of existing jobs (i.e. employment plus unfilled vacancies) depends on the relation between labour productivity and the real cost of labour, as in conventional labour-demand analysis. When the allocation of workers to jobs takes place in a decentralized manner, after search, job application and job screening, the cost of hiring and the quality and quantity of the unemployed labour force also matter. Thus if we plot the number of jobs against the real wage rate, we should get a downward-sloping curve that shifts to the right when labour productivity increases and when there are more or better qualified unemployed workers; it shifts to the left when the cost of hiring or the non-wage costs of jobs increase. There are some differences between this curve and the conventional demand for labour curve, which we shall utilize in our empirical work. The curve that we have described determines the number of jobs, i.e. employment and job vacancies. When there is turnover, jobs stay vacant for a non-trivial length of time, and the relation between employment and the number of jobs is not given by a simple mechanical rule. In Figure 3 we plot this curve in a diagram with job vacancies on one axis and real wages on the other: thus along the curve, employment (which is, for the moment undetermined) is set at a given level. We refer to this curve as the vacancies curve (VC).

Higher employment means a lower marginal productivity of labour (because of diminishing returns in production), and so, at a given wage rate, profit from creating an additional job is reduced. Therefore, at higher employment, firms open fewer vacancies at any given wage rate and the vacancies curve in Figure 3 is further to the left. With a given labour force, higher employment implies lower unemployment, so the vacancies curve also shifts left because of the reduced availability of labour. Indeed, with lower unemployment and holding the quality of the labour force constant, there are fewer workers knocking on firms' gates for jobs. Firms are likely to find it more difficult to recruit and may close up some vacancies at given wages. This effect has attracted a lot of attention in the search literature but is not as important for the applications that we shall discuss in this paper.\footnote{See for example Diamond (1982), Mortensen (1982) and Pissarides (1984). The reason for the importance of this effect in search models is that it is an 'externality' that implies that the equilibrium rate of unemployment is inefficient. Our discussion in this paper does not touch on efficiency issues. Some of these issues are discussed in an empirical context in Pissarides (1986).} In any case, we should...
expect higher employment (lower unemployment) to be associated with a vacancies curve further to the left.

The next stage is to determine wages. We think of wages as the outcome of an explicit or implicit bargain between firms and workers. If there are more vacancies in the market, other things being equal, workers are in a stronger position to bargain for higher wages. The firm concedes because with more competition from other firms for workers, it is running the risk of losing its workforce. The upward sloping wage curve (WC in Figure 3) will shift to the right whenever there is an exogenous increase in wage 'pressure' caused for example by an increase in union militancy, higher unemployment benefits (which reduce the cost of unemployment to workers), or any policy that reduces purchasing power for given gross wages, such as income and expenditure taxes. It shifts to the left whenever exogenous factors increase the bargaining power of firms relative to that of unions. Legislation designed to control the power of unions is a pertinent example. The wage curve differs quite fundamentally from the conventional supply of labour because it depends as much on the workers' bargaining position as on the firms'. It is, therefore, influenced by both 'supply' and 'demand' conditions. Finally, the rate of unemployment exerts an important influence on wages: when unemployment is lower given the number of job vacancies, wages are higher because workers are in a stronger bargaining position vis-a-vis firms. Thus higher employment (lower unemployment) shifts the wage curve in Figure 3 to the right (again assuming a given labour force). The intersection of the vacancies
3.3. Labour market equilibrium

Equilibrium vacancies and unemployment are given by a combination of the curves in Figures 2 and 3. We have already noted that different levels of unemployment are associated with different sets of curves in Figure 3. More unemployment brings into the market a bigger number of jobs for two reasons: because wages are reduced and because more jobs open up for given wages. The effect of higher unemployment on wages is ambiguous in the diagrammatic analysis of Figure 3. The direct effect through the loss of workers' bargaining strength, however, is likely to dominate the indirect effect through the number of jobs.\(^2\) The broken lines in Figure 3 are drawn in this light.

Thus if we follow the intersection points in Figure 3, as unemployment increases, we trace out the upward-sloping supply of vacancies curve (VS) in Figure 2. The intersection of the Beveridge curve (UV) with the VS curve gives the equilibrium rates of unemployment and job vacancies. Knowing the size of the labour force, we then also know the level of employment and the number of jobs.\(^3\)

4. Three types of change

We consider three types of change, namely aggregate activity shocks, structural shocks and hysteresis.

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\(^2\) Formal models always confirm this, giving a positive relation between wages and the rate of unemployment. See Pissarides (1990, Chapter 1) for a formal demonstration in a framework similar to the one described here and Blanchflower and Oswald (1990) for a variety of arguments and empirical evidence in the context of union models.

\(^3\) Jackman, Layard and Pissarides (1989), Pissarides (1986) and Blanchard and Diamond (1989) present analyses in a similar framework. Earlier uses of this apparatus—needless to say not in its present-day refined state—concerned Phillips curve studies, as in the classic papers by Dow and Dicks-Mireaux (1958) and Lipsey (1960), as well as the classification of unemployment into various types, as in Thirlwall (1969). Our work is more closely related to the latter type of analysis, though rather than use the apparatus to classify unemployment into various types, which we do not believe to be either meaningful or useful, we use it to classify the causes of change of unemployment into different types. The short papers by Gujarati (1972) and Taylor (1972) also used Beveridge curves to study some of the causes of change in unemployment in the 1960s.
4.1. Aggregate activity shocks

Aggregate economic disturbances are typically represented in this framework by (temporary or permanent) shifts of the vacancy supply (VS) curve in Figure 2. Three types of changes can be distinguished. First, aggregate demand shocks, including fiscal and monetary policy, change the demand for labour at given real wages. A fall in demand shifts the vacancies curve in Figure 3 to the left, and if the fall is severe enough to cause a rise in job separations, it also shifts the $UV$ curve of Figure 2 to the right. But the increase in job separations is unlikely to last for more than a short period after the impact of the shock and the drop in voluntary separations that accompany recessions is likely to counteract it to some extent. So the main change behind the fall in demand is the downward shift of the $VS$ curve.

Second, a change in wage pressure, e.g. a rise in union militancy, or an increase in taxation, mainly impacts the wage curve in Figure 3, and therefore the $VS$ curve in Figure 2.

Third, changes in unemployment benefits affect both the $WC$ and hence $VS$ curves, through their effect on wage bargaining, and the Beveridge curve through their effect on search intensity.

Overall, the main impact of aggregate activity shocks is on the $VS$ curve. From point $A$ in Figure 4, equilibrium moves down to point $B$. The path of the economy from $A$ to $B$ is likely to be a half loop below the $UV$ curve, as vacancies fall on impact and unemployment begins rising in response to a reduced rate of job matchings. If demand recovers without any other changes in the economy, equilibrium returns to $A$ through a leftward shift of the $VS$ curve: vacancies and unemployment trace the second half of an anticlockwise loop above the $UV$ curve. These loops were noted in the early literature on the Beveridge curve and discussed as one of the 'stylized facts' of business cycles (see for example, Phelps, 1968 and Hansen, 1970). A permanent shock, say due to an increase in union power, will lead to a sustained higher unemployment rate coupled with a permanent reduction in vacancy rate.

4.2. Structural or mismatch shocks

Two types of structural shocks can be distinguished. First, structural demand changes, sectoral shifts in the demand for final output, lead to shifts in the $UV$ curve. Such shifts lead to more job separations, as the sectors that experience the drop in demand shed more labour.

Second, rightward shifts in the $UV$ curve are also caused by changes that reduce the effectiveness or intensity of job matching activities. The
cases which come under this category are: (i) mismatch: an increase in
the geographical dispersion of vacancies and unemployment, or in the
compatibility of the skills of workers with the skill requirements of jobs;
(ii) a fall in the search intensity of workers or by an increase in the
choosiness of either workers or firms. In such instances, the matching
rate at given vacancies and unemployment falls and the $UV$ curve shifts
rightwards.

Overall, a rightward shift in the $UV$ curve causes an increase in the
equilibrium rate of both vacancies and unemployment. Equilibrium in
Figure 4 moves from point $A$ to a point such as $C$, along the unchanged
$VS$ curve. Thus our framework provides a way of distinguishing aggre-
gate demand shocks from structural (or mismatch or search effective-
ness) shocks: demand shocks trace negatively-sloped anticlockwise
loops, structural shocks give rise to positively-sloped (probably flat)
paths. (This distinction also appears in Abraham and Katz, 1986 and
Blanchard and Diamond, 1989.)

4.3. Hysteresis

Hysteresis occurs when a fall in demand is accompanied – or followed –
by adverse changes in mismatch, search effectiveness and other struc-
tural effects which persist longer than the initial demand shock. It is
believed that large changes in unemployment, such as those observed
in the 1970s and early 1980s in Europe, have produced hysteresis effects.
An important and much discussed mechanism is long-term unemploy-
ment: large increases in unemployment lead to proportionally even
larger increases in the duration of unemployment. If the long-term
unemployed lose skills and the will to search for new job openings or
relocate, the degree of mismatch between vacancies and unemployed
workers increases and workers' search effectiveness falls. (Layard and
Nickell, 1987, present this view in the British context, and Jackman
and Layard, 1990, offer evidence that long-term unemployment reduces
the search effectiveness of workers.)

Another factor that causes similar problems is internal adjustments
in firms' production practices, which may become more frequent at
times of depressed demand. If demand is buoyant firms are busy
producing for sale. High demand yields sufficient profit so that the
incentive to engage in time and resource-consuming reorganization of
internal practices is reduced. But if demand is slack and profits suffer,
the incentive to reduce costs by internal reorganization increases. Often
such adjustments involve redundancies of workers who are not easily
employable elsewhere. (Evidence on this and related issues is presented
in Davis, 1987). Harold Wilson's July 1966 measures provide a classic
example: aggregate demand was reduced in order to give British industry the incentive to ‘shake-out’ unproductive labour.

Hysteresis shifts the $UV$ curve to the right. But the shift now comes after a downward shift of the $VS$ curve, because the hysteresis is a consequence of reduced demand. Thus the dynamic path in Figure 4, starting from $A$, now moves towards $B$, but then turns outwards towards point $D$. If the demand fall that caused the shift in the $VS$ curve in the first instance is temporary, the dynamic path then turns up but not towards its initial equilibrium point $A$. Hysteresis usually lasts longer than the demand shock. The path from $B$ moves towards point $C$, on a $UV$ curve that is further away from the origin than the original curve. If the shock is permanent and if the rise in unemployment is accompanied by hysteresis, the path that the economy follows in Figure 4 again starts at $A$ and moves down towards point $B$, but before it settles at $B$ turns towards point $D$.

4.4. Summary

Different kinds of shocks produce identifiably different paths in our diagram. Inspection of real-data diagrams may, therefore, give some idea of the type of shock that has caused a change in unemployment. More precise analysis will require better techniques. Given, however, the sharp differences between some of the paths in Figure 4, we reasonably expect to be able to differentiate between at least three types of

![Figure 4. Three types of shocks in Beveridge space](image)
change: the closed anticlockwise loops of temporary aggregate changes $A-B-A$; the positively-sloped paths of exogenous structural or mismatch shocks, $A-C$; and the open loops of aggregate activity shocks with hysteresis, $A-B-C$ or $A-B-D$. The distinction between a temporary demand shock and a longer-lasting one due, e.g. to changes in wages pressure, is more difficult to draw from a diagram, because of the similarity of the paths $A-B-C$ and $A-B-D$.\footnote{This distinction is also more difficult to analyse within our econometric framework than within a framework that estimates the wage equation as one of the structural equations, as for example in the work of Layard and Nickell (1987). In our work we concentrate primarily on policy measures that affect the process that matches workers to job vacancies.}

5. A first look at the Beveridge curves

Figure 5 shows the unemployment and vacancy rates for the ‘world’ (the weighted average of the 14 countries in our sample for which we have data). Over time (first panel) vacancies and unemployment follow a similar cyclical pattern, along some trend. The trend is much stronger in unemployment than in vacancies. Much of the cyclicality in vacancies and unemployment, however, is due to the US, which makes up about 40% of the sample. If the US is excluded (Figure 6), the cyclicality in both vacancies and unemployment is reduced while the upward trend in unemployment increases.

Our framework leads us to distinguish three features in the observed data: (i) the cyclical pattern of vacancies and unemployment, which we explain as the result of temporary shifts of the VS (supply of vacancies) curve in Figure 3, these shifts being the consequence of changes in the demand for labour at given wages, as shown by shifts of the vacancy curve in Figure 3; (ii) the trend fall in vacancies, which is related to longer-term rightward shifts of the VS curve; (iii) the trend rise in unemployment, which we interpret as the result of longer-term shifts of both the VS and UV (Beveridge) curve. The longer-term shifts in the VS curve, in turn, are explained by changes in wage pressure at given unemployment rates, as manifested by shifts in the wage curve in Figure 3.

A look at the Beveridge curves, for the world in Figure 5, and with the US excluded in Figure 6, suggests that all three types of shifts described in the preceding paragraph have taken place. There are three discernible cycles in these diagrams. The first one started in 1970 or earlier and terminated in 1973; the second cycle started in 1973 and terminated in 1979; and the last one started with the downturn of 1979 (1980 when the US is excluded) and continued to the end of the sample.
Table 2. Three types of change in the 1980s

<table>
<thead>
<tr>
<th>Demand-side shock (A-B-A)</th>
<th>Supply-side change (A-C)</th>
<th>Demand-side shock Supply-side persistence (A-B-C) or (A-B-D)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria 80–86</td>
<td>Austria 86–8</td>
<td>Australia</td>
</tr>
<tr>
<td>Denmark</td>
<td>Norway 85–88</td>
<td>Belgium</td>
</tr>
<tr>
<td>Finland</td>
<td></td>
<td>Canada</td>
</tr>
<tr>
<td>France</td>
<td></td>
<td>Germany</td>
</tr>
<tr>
<td>Netherlands</td>
<td></td>
<td>Japan</td>
</tr>
<tr>
<td>Norway 80–85</td>
<td></td>
<td>UK</td>
</tr>
<tr>
<td>Sweden</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each cycle is characterized by a reversible downward shift of the VS curve, though when the US is excluded, the reversal in 1978 had hardly taken hold when the 1980 downturn occurred. In each cycle, the range of the fluctuation in vacancies occurs further down relatively to the range in the previous cycle, indicating a longer-lasting downward shift of the VS curve alongside the cyclical fluctuation.

Another notable feature is that none of the three loops around the downward sloping Beveridge curve returns to its starting point: 1979 is to the right of 1973 and 1989 is to the right of 1979. Thus the Beveridge curve must have shifted to the right each time, suggesting a worsening in structural problems or in mismatch. In each case, however, the shift of the Beverdige curve occurs after a recession. Thus on average the rise in world unemployment appears to be closest to the case of hysteresis following recession.

A look at the individual country diagrams reveals some interesting contrasts. Figure 7 presents the Beveridge diagrams for all 14 countries in the sample (plus Switzerland and New Zealand). In Table 2 we classify countries according to the three cases discussed in the preceding section, with reference to the cycle that began in 1979–80 or later. The letters under each column refer to the paths in Figure 4. The US in the 1980s offers the best example of a country that has been subject to aggregate shocks but not to structural change or search-related shocks. Its behaviour contrasts with that of the world average and with that of Germany and the UK, which appear to be typical cases of aggregate shocks followed by persistence. France appears to fit best a description of negative and irreversible aggregate shocks. Pure outward shifts of the Beveridge curve, unaccompanied by demand shocks, are rare and appear to have affected only two of the smaller countries in two short periods.
Figure 5. World unemployment and vacancy rates, 1968–89

Source: Appendix B.
Unemployment policies

Unemployment rate

Vacancy rate

Year


Vacancy rate (%)

Unemployment rate (%)

Figure 6. World unemployment and vacancies excluding the US, 1968–89

Source: Appendix B.
Figure 7. An international comparison of unemployment-vacancy relationships, 1968-89

Source: Appendix B.
Figure 7—continued
6. The role of labour market policies and other institutional factors

6.1. Labour market policies

The policies included under the general heading of labour market policies are mainly meant to improve the employability of particular groups of workers. Labour market policies can affect all three relationships considered in our framework. Employment subsidies can increase the supply of jobs at given wages, while employment services and training programmes can affect the rate at which unemployed workers find jobs at given number of vacancies. The policies considered here
Unemployment policies

affect mainly the job-finding rate at a given vacancy rate: these are policies that either inadvertently affect the Beveridge curve or explicitly make it more favourable. We consider in turn the channels through which they operate.

6.1.1. Shifting the Beveridge curve. The target groups are usually the long-term unemployed, though other 'hard-to-place' groups (such as youths who left school early) are often also identified. The net effect of such policies (if successful) is to increase the rate at which unemployed workers find suitable jobs out of a given stock of available vacancies. Thus in our framework, by increasing the job-matching rate for given vacancy-unemployment stocks, they shift the Beveridge curve towards the origin. Their equilibrium effects are likely to be a reduction of both unemployment and vacancies.

6.1.2. Flattening the Beveridge curve. Labour market policies of the kind considered under this heading are likely, however, to have some other influences on the vacancy-unemployment relation. If they improve the marginal rate of job matching, in addition to the average rate discussed above, they make the Beveridge curve flatter. A flatter Beveridge curve implies that a given improvement in job availability (an increase in the number of job vacancies) decreases unemployment by more; so, in this case, labour market policies increase the employment effects of a given programme of job creation.

6.1.3. Speeding up adjustment. Labour market policies may also speed up the recovery from a given shock to employment. We argued that adjustments to the equilibrium vacancy-unemployment relation take time and trace anti-clockwise loops around the Beveridge curve. An effective labour market policy makes it easier for displaced workers to find suitable jobs and removing other inertia in the operation of the jobs market.

6.2. Unemployment insurance

6.2.1. Cost of search. The effects of unemployment insurance on unemployment is a much debated issue, see Atkinson and Micklewright (1990) for a survey. In the job-search literature the mechanism that has attracted most attention is the effect of unemployment insurance on the choosiness of unemployed workers. The alleged effect is that unemployment benefits reduce the cost of unemployment and so enable the unemployed worker to increase his reservation wage or reduce his search intensity. The effect is to reduce the rate at which unemployed
workers meet suitable job vacancies. The result is an outward shift of the Beveridge curve.

6.2.2. Bargaining strength. However, another important channel through which unemployment insurance affects unemployment is wage determination. Higher unemployment benefits increase the bargaining strength of workers or of their representatives, and so increase the wage rate at given labour market tightness. This mechanism shifts up the wage curve of Figure 2 and moves to the right the VS curve of Figure 3.

Both mechanisms increase equilibrium unemployment, though one increases, and the other decreases, equilibrium vacancies. Since the mechanism that works through the wage rate increases unemployment by reducing the number of job vacancies, we may be unable to detect statistically a change in the relationship between unemployment and vacancies. The choosiness effect, however, because it operates at given vacancies and unemployment, may be identified.

6.2.3. Exclusion from the labour market. Another effect of unemployment insurance, which is often neglected because it involves a relatively subtle market failure, might actually lead to a reduction of equilibrium unemployment at given vacancies. Unemployed workers, constrained by the lack of savings, cut off from labour market contacts, and generally feeling excluded from the networks that bring together jobs and workers, may be re-enfranchised when a comprehensive unemployment insurance system caters for them. In other words, the unemployment insurance system becomes part of the formal labour market network, and those who are part of it feel more attachment to the labour market. If this is true, countries with elaborate insurance systems may experience a higher rate of job matching than countries with less complete coverage. Although not much discussed in the academic literature, policy changes in the administration of unemployment benefit systems have been made in a number of countries including the UK with the objective of sustaining the labour market attachment of the unemployed.

Thus unemployment benefits may or may not influence the Beveridge curve adversely. Even ignoring the last favourable mechanism, the evidence from job-search studies is far from conclusive.

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5 Mortensen (1977) provided a theory of the perverse effect of unemployment insurance on the job finding rate. The mechanism that he emphasizes, however, is related to entitlement of benefit and not to market failure. Evidence that those receiving benefit are closer to job-matching networks was presented by Wadsworth (1990) using the British Labour Force Survey.
6.2.4. Benefits duration. Another aspect of the unemployment insurance system, the length of time that unemployed workers can claim benefit, is likely to influence the curve adversely. The choosiness argument applies for as long as benefits are available. The longer an unemployed worker expects to qualify for benefit the more choosy he is likely to be. When benefits are expected to run out, reservation wages decline progressively during search, increasing the probability of finding a job (see for example, Shavell and Weiss, 1979). The attachment argument also leads to the conclusion that, when benefits are expected to run out, the worker is likely to move into employment more quickly as he intensifies his job-search activity to avoid the risk of losing labour market links. Thus given the level of benefit, longer qualification implies a Beveridge curve out further away from the origin.

6.3. Corporatism

Corporatism has been debated widely in terms of its influence on wage determination, for example by Calmfors and Drifill (1988) and the originators of the economic debate, Bruno and Sachs (1985). The argument is that, facing a rise in unemployment or adverse external shocks that are expected to cause a rise in unemployment, real wages decline faster in corporatist than in non-corporatist economies. As a result, unemployment should increase less, and last for a shorter period of time. In terms of Figure 2 this argument implies that corporatist economies have a flatter wage curve, so the VS curve in Figure 3 does not shift much in response to negative shocks. But other features of corporatism are also likely to imply a Beveridge curve closer to the origin in corporatist economies.

First, regardless of its source, a rise in unemployment may cause hysteresis through long-term unemployment or other reasons. If corporatist economies respond faster, the factors that are likely to cause hysteresis can be better contained. Thus non-corporatist economies are more likely to experience the shifting $UV$ curve that brings about the open loops $A-B-C$ of Figure 4. Corporatist economies are more likely to experience the closed loops $A-B-A$. The grouping of countries in Table 2 confirms this. The Beveridge curve of a corporatist economy is consequently likely to be on average closer to the origin than the Beveridge curve of a non-corporatist one.

Second, a corporatist economy is likely to be more egalitarian. Wage rates in different industries or in different locations are, therefore, likely to be closer to each other in corporatist economies. Since the returns to search are less when wages are more uniform, unemployed workers in corporatist economies are not as likely to hold out for a
good wage offer as in non-corporatist economies. With less search taking place, the Beveridge curve in corporatist economies is again likely to be closer to the origin.

Finally, corporatism is as much a state of mind and an implicit commitment to help each other in the labour market as an explicit institutional arrangement for wage determination. Labour market policies are likely to be more frequently reviewed, better targeted and command more support from unions and employer groups than in non-corporatist economies. Thus they are also likely to be more successful. The scarcity of good data and inherent difficulties in quantifying the intensity and success of policies make it difficult to construct a policy variable that will fully capture the many different aspects of labour market policies. Corporatism may capture some of these unobserved features. Corporatist economies are likely to have Beveridge curves closer to the origin because the unobserved aspects of their labour market policies are more successful in reducing unemployment at given vacancy rates.

In summary, both labour market policies targeted to the long-term unemployed and corporatism are likely to shift the Beveridge curve inwards. The duration of unemployment benefits is expected to shift it outwards. The level and coverage of unemployment benefit should have small and ambiguous effects, though on balance it is expected to shift the Beveridge curve outwards.

7. Results of the empirical analysis

7.1. Methodology

We now test the effects of the various labour market policies by estimating Beveridge curves for the 14 countries in our sample. The unemployment-vacancy relationship in each country can be seen as subject to two types of shocks, common world shocks and country-specific shocks. World shocks may include some policy changes that are common to all countries, but generally we do not believe that these are important or that they can easily be quantified. In order to avoid fully specifying the common world shocks, we adopt a two-step procedure. In the first step, we regress all countries’ unemployment and vacancies (both in logarithm form) on 19 zero-one dummy variables, for the 19 years in our sample. As each dummy takes a value one in one year only and zero elsewhere, the estimated coefficients can be interpreted as estimates of the corresponding year’s world shocks affecting unemployment and vacancies (the graph of these coefficients looks very similar to the first panel of Figure 5). The residuals, on the other hand, are interpreted
as reflecting country-specific influences. In step two, we regress the unemployment residual on the vacancy residual and on a set of four other variables: policy variables, country fixed effects (that is, a different intercept for each country), one-year lag of the residual (to account for delayed responses), and country-specific time trends.

7.2. Individual country estimates of the Beveridge curve

Table 3 gives the (unconstrained) estimates of the vacancy-unemployment relation for each country when the policy variables are excluded. The fixed effects identify the position of the Beveridge curve for each country. The pattern is plausible. We refer to the coefficient on vacancies as the slope, and to the coefficient on lagged unemployment as a measure of persistence. The vacancy-unemployment relation slopes down in all countries except Austria and the Netherlands (where the coefficients are poorly determined). It exhibits persistence in virtually all countries. The country-specific time trends are significant in some countries and generally are correlated with the fixed effects. We include them in all regressions that follow but do not report them or discuss them further.

7.3. Effects of labour market policies

In Table 4 we investigate whether policy differences between countries can explain the differences in the location of the Beveridge curve. To that effect, we replace (column 1) the country fixed effects by a variety of policy variables\(^6\). In addition to benefit duration, the replacement ratio and a corporatism index, we use two different sets of labour market policy variables. The first one, ‘labour market policy’ captures the effects of broad differences in the extent of labour market intervention in different countries. It is the 1985 level of expenditure per unemployed worker (as a country dummy it takes a constant value for each country). The second set of variables consists of two dummies used to account for within-country policy changes. Policy dummy 1 switches from zero to one when a new labour market policy is introduced. Policy dummy 2 changes from zero to one when a second labour market policy is introduced in a country, where appropriate (see Main Labour Market Programmes 1970–88).

As expected, labour market policies and a higher degree of corporatism shift the Beveridge curve inwards, while a longer duration of

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\(^6\) The Gallant–Jorgenson test for the replacement of the country constants by a common constant and policy variables is below its critical 5\% value, indicating that policy variables explain the differences in the country intercepts.
Table 3. Beveridge curves (sample period: 1971-88) Dependent variable: unemployment rate (a)

<table>
<thead>
<tr>
<th>Country</th>
<th>Fixed effect</th>
<th>Vacancy rate</th>
<th>Lagged unemployment</th>
<th>Trend</th>
<th>Sargan (b)</th>
<th>Gallant-Jorgenson (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.18 (2.3)</td>
<td>-0.12 (0.8)</td>
<td>0.43 (2.2)</td>
<td>0.000</td>
<td>2.6</td>
<td>1.3</td>
</tr>
<tr>
<td>Austria</td>
<td>-0.32 (1.2)</td>
<td>0.42 (0.5)</td>
<td>0.64 (4.0)</td>
<td>0.023</td>
<td>3.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Belgium</td>
<td>0.35 (3.3)</td>
<td>-0.24 (3.9)</td>
<td>0.21 (1.0)</td>
<td>0.040</td>
<td>1.4</td>
<td>0.1</td>
</tr>
<tr>
<td>Canada</td>
<td>0.54 (5.6)</td>
<td>-0.31 (4.5)</td>
<td>-0.07 (0.4)</td>
<td>-0.035</td>
<td>3.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Denmark</td>
<td>-0.31 (0.9)</td>
<td>-0.19 (1.5)</td>
<td>0.53 (2.7)</td>
<td>-0.001</td>
<td>9.4</td>
<td>11.6</td>
</tr>
<tr>
<td>Finland</td>
<td>-0.09 (2.3)</td>
<td>-0.43 (4.0)</td>
<td>0.35 (2.7)</td>
<td>-0.005</td>
<td>4.5</td>
<td>0.7</td>
</tr>
<tr>
<td>France</td>
<td>0.13 (2.4)</td>
<td>-0.23 (3.5)</td>
<td>0.40 (2.9)</td>
<td>0.003</td>
<td>0.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Germany</td>
<td>0.32 (1.6)</td>
<td>-0.29 (1.5)</td>
<td>0.59 (3.5)</td>
<td>0.020</td>
<td>4.8</td>
<td>6.9</td>
</tr>
<tr>
<td>Japan</td>
<td>-0.48 (1.8)</td>
<td>-0.35 (1.3)</td>
<td>0.30 (0.7)</td>
<td>-0.010</td>
<td>6.7</td>
<td>0.3</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.17 (2.1)</td>
<td>0.01 (0.1)</td>
<td>0.68 (5.2)</td>
<td>0.004</td>
<td>3.1</td>
<td>0.0</td>
</tr>
<tr>
<td>Norway</td>
<td>-0.78 (2.0)</td>
<td>-0.74 (1.5)</td>
<td>0.41 (1.4)</td>
<td>-0.006</td>
<td>6.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Sweden</td>
<td>-1.06 (4.7)</td>
<td>-1.30 (3.8)</td>
<td>-0.00 (0.0)</td>
<td>-0.022</td>
<td>1.0</td>
<td>0.7</td>
</tr>
<tr>
<td>UK</td>
<td>0.68 (2.8)</td>
<td>-0.51 (1.9)</td>
<td>0.65 (5.1)</td>
<td>0.018</td>
<td>9.2</td>
<td>2.5</td>
</tr>
<tr>
<td>US</td>
<td>0.43 (2.4)</td>
<td>-0.20 (2.0)</td>
<td>0.30 (1.5)</td>
<td>-0.035</td>
<td>5.5</td>
<td>1.5</td>
</tr>
</tbody>
</table>

Sources: See Appendix B.
Notes: (a): To eliminate world 'shocks' we use residuals from regressions of national unemployment and vacancy rates (in logarithmic form) on national dummy variables (see text). (b): Sargan specification test statistic. Critical value for mis-specification at 5% level 6.0 [x^2_2] two overidentifying restrictions. (c): Gallant-Jorgenson test for first order serial correlation. Critical value at 5% level 3.8 [x^2_1]. Estimation by 2SLS. Instruments used were: lagged vacancies, lagged real GDP and lagged real imports. Asymptotic t-statistics in parenthesis. Critical value at 5% level 1.8 and at 10% level 1.3.

unemployment benefits shifts it outwards, as does a larger replacement ratio but this last effect is not clearly established, often changing magnitude and significance with small changes in the specification of the equations.7

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7 Because of data limitations the replacement ratios that we use in the regressions have no time variation, so the coefficient estimated is for country differences only.
Table 4. Policy influences on the UV Curve (1971–88). Dependent variable: unemployment rate (a)

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.12</td>
<td>-0.04</td>
<td>-0.36</td>
<td>-0.28</td>
</tr>
<tr>
<td></td>
<td>(0.5)</td>
<td>(0.2)</td>
<td>(2.5)</td>
<td>(2.6)</td>
</tr>
<tr>
<td>Labour market policy (LMP)</td>
<td>-0.03</td>
<td>-0.03</td>
<td>-0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>(2.7)</td>
<td>(4.2)</td>
<td>(2.2)</td>
<td>(4.1)</td>
</tr>
<tr>
<td>Policy dummy 1</td>
<td>-0.08</td>
<td>-0.04</td>
<td>-0.04</td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td>(2.2)</td>
<td>(1.3)</td>
<td>(1.2)</td>
<td>(1.2)</td>
</tr>
<tr>
<td>Policy dummy 2</td>
<td>-0.15</td>
<td>-0.10</td>
<td>-0.11</td>
<td>-0.07</td>
</tr>
<tr>
<td></td>
<td>(2.9)</td>
<td>(2.2)</td>
<td>(2.1)</td>
<td>(1.9)</td>
</tr>
<tr>
<td>Benefit duration</td>
<td>0.16</td>
<td>0.14</td>
<td>0.22</td>
<td>0.14</td>
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<tr>
<td></td>
<td>(3.5)</td>
<td>(4.4)</td>
<td>(5.8)</td>
<td>(6.0)</td>
</tr>
<tr>
<td>Replacement ratio</td>
<td>0.28</td>
<td>0.31</td>
<td>0.67</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>(0.7)</td>
<td>(1.1)</td>
<td>(3.0)</td>
<td>(2.8)</td>
</tr>
<tr>
<td>Corporatismo</td>
<td>-0.06</td>
<td>-0.04</td>
<td>-0.08</td>
<td>-0.04</td>
</tr>
<tr>
<td></td>
<td>(2.4)</td>
<td>(3.0)</td>
<td>(4.8)</td>
<td>(5.1)</td>
</tr>
<tr>
<td>Vacancy rate (a)</td>
<td>*</td>
<td>0.09</td>
<td>*</td>
<td>0.10</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.3)</td>
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<td>(2.3)</td>
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<tr>
<td>Vacancy rate interacted with LMP</td>
<td></td>
<td>-0.03</td>
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<td>-0.03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.3)</td>
<td></td>
<td>(4.3)</td>
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<tr>
<td>Lagged unemployment rate</td>
<td>*</td>
<td>0.77</td>
<td>0.81</td>
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<td></td>
<td></td>
<td>(12.5)</td>
<td>(20.4)</td>
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<td>Lagged unemployment rate</td>
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<td></td>
<td></td>
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<tr>
<td>interacted with LMP</td>
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<td>-0.02</td>
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<td></td>
<td></td>
<td>(4.2)</td>
<td>(4.1)</td>
</tr>
<tr>
<td>Time trends</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>Gallant–Jorgenson</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Test of restrictions</td>
<td>10.2</td>
<td>14.8</td>
<td>16.8</td>
<td>43.3</td>
</tr>
<tr>
<td>(Critical at 5% level value)</td>
<td>(14.1)</td>
<td>(21.1)</td>
<td>(21.1)</td>
<td>(36.4)</td>
</tr>
</tbody>
</table>

Sources: See Appendix B.

Notes: (a): See note (a) to Table 3. Estimation by 2SLS on pooled country equation. Instruments used were \((v - d)_{t-1}, GDP_{t-1}\) and \(M_{t-1}\). Results largely robust to (i) quadratic trends (ii) extension of estimation to period 1968–89 and (iii) use of original OECD vacancy data.

7.3.1. Labour market policy. The variable ‘labour market policy’ takes values ranging from 2.7 (for the US) to 25 (for Sweden), with a mean value of 8.8 Thus based on the estimate in column (1) of Table 4, the US’ Beveridge curve is to the right of the ‘world’ curve by about 13.8% of world unemployment, whereas Sweden’s curve is to the left of the world curve by about 44%.

The first dummy for policy change takes value 1 for 10 countries (Australia, Austria, Belgium, Denmark, Finland, France, Germany, the Netherlands, Sweden, UK) and the second policy dummy takes value 1

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8 The regressions are based on 1985 data, as we only have data for this year for benefit durations, corporatism and the replacement rate. More recent data for expenditure on labour market policies for 1988 is given in Table 1.
Table 5. Beveridge curves with expenditures on labour market policies (sample period: 1971–88). Dependent variable: unemployment rate (a)

<table>
<thead>
<tr>
<th>Country</th>
<th>Fixed effect</th>
<th>Vacancy rate</th>
<th>Lagged Unemployment</th>
<th>Trend</th>
<th>Expenditure on labour market policies</th>
<th>Sargan (b)</th>
<th>Gallant-Jorgenson (c)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>1.10</td>
<td>-0.39</td>
<td>0.06</td>
<td>0.09</td>
<td>-0.12</td>
<td>0.9</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>(1.6)</td>
<td>(2.3)</td>
<td>(0.2)</td>
<td>(2.2)</td>
<td>(2.4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Finland</td>
<td>0.59</td>
<td>-0.46</td>
<td>0.37</td>
<td>-0.05</td>
<td>-0.02</td>
<td>1.3</td>
<td>1.0</td>
</tr>
<tr>
<td></td>
<td>(1.6)</td>
<td>(3.8)</td>
<td>(2.3)</td>
<td>(2.0)</td>
<td>(1.9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td>-0.27</td>
<td>-0.49</td>
<td>0.61</td>
<td>-0.01</td>
<td>-0.01</td>
<td>8.2</td>
<td>9.9</td>
</tr>
<tr>
<td></td>
<td>(0.5)</td>
<td>(1.3)</td>
<td>(2.0)</td>
<td>(0.5)</td>
<td>(0.7)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweden</td>
<td>-0.32</td>
<td>-0.87</td>
<td>0.00</td>
<td>-0.04</td>
<td>-0.02</td>
<td>3.5</td>
<td>0.5</td>
</tr>
<tr>
<td></td>
<td>(1.0)</td>
<td>(4.0)</td>
<td>(0.01)</td>
<td>(3.6)</td>
<td>(2.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UK</td>
<td>0.77</td>
<td>-0.49</td>
<td>0.82</td>
<td>0.032</td>
<td>-4.10</td>
<td>5.3</td>
<td>0.8</td>
</tr>
<tr>
<td></td>
<td>(5.1)</td>
<td>(3.7)</td>
<td>(5.9)</td>
<td>(3.9)</td>
<td>(2.3)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Sources: Expenditure on labour market policies: For Nordic countries based on figures from Calmfors and Nymoen (1990). ‘Ratio (in %) between the work force in programmes and the sum of the work force in programmes and in open unemployment.’ For UK figures based on equivalent ratio for the Community Programme.

Notes: (a): See note (a) to Table 3. (b): Sargan specification test statistic. Critical value for mis-specification at 5% 6.0. (c): Gallant–Jorgenson Test for first-order serial correlation. Critical value at 5% level 3.8. Estimation by 2SLS. Instruments used were lagged vacancies, lag$^2$ of GDP, M and LMP. Asymptotic t-statistics in parenthesis. Critical value at 5% level 1.8 and at 10% level 1.3.

for four of these countries (Australia, Denmark, France, UK). The second policy change appears to have been more effective on average than the first, whenever both occurred. The countries with one policy change have, after the change, a Beveridge curve 7.8% to the left of where it was before, whereas the four countries with two new policies have a curve that is about 23% to the left of the original position.

These dummy variables are a little crude, but for most countries they are the only data available. However, for five countries (the Nordic countries and the UK) we are able to construct time series data on expenditure on labour market policies. The re-estimated regressions are shown in Table 5. In four of these five countries there is a clear and statistically significant effect of labour market policies on unemployment at given vacancies. The experience of labour market policies may explain in part the difference between the world vacancy-unemployment relation in 1979 and the same relation in 1989. Both years were peaks of cycles, but the 1989 point is proportionally closer to the 1979 point than the 1979 point is to 1974. New labour market policies in the 1980s pushed the 1989 point to the left, thus avoiding the open loops around the $UV$ curve that characterized the 1970s.

In the remaining columns of Table 4 we test whether labour market policy has any other effect on the vacancy-unemployment relationship, beside its influence on the location of the curve. The results reported
in column 2 examine the role of labour market policies in the determination of the response of unemployment to vacancies. Labour market policies make the vacancy-unemployment relationship flatter: a small increase in vacancies is more effective in reducing unemployment than otherwise. The interactive effect is very strong, so slopes across countries appear to differ substantially. (The restriction that, when controlling for labour market policies, slopes are statistically similar is accepted, so the specification in column 2 is a more parsimonious version of the unrestricted specification in column 1.)

The results reported in column 3 show that countries with labour market policies recover more quickly from recessions: persistence is negatively related to labour market policies. The negative effect of labour market policies on persistence appears robust (the restrictions on the persistence coefficients needed to test for this effect are not satisfied, see the Gallant-Jorgenson test at the bottom row of the table). Column 4 imposes restrictions on both the slope and the persistence coefficients of the Beveridge curves. Although the results are similar to those of the previous two columns, the combined restrictions are not accepted at the 5% level (but on the margin of acceptance at the 1% level).

7.3.2. Unemployment benefits. The duration of benefits ranges from 0.5 years (in Canada, Japan and the US) to indefinite, which we specify as four years for the purposes of the regressions (in Australia, Austria, Belgium, Finland, Germany, the Netherlands and the UK). The Beveridge curve of the latter group of countries is a full 56% of unemployment to the right of the Beveridge curve of the former group of countries. The replacement ratio has a smaller effect, as expected. The smallest value it takes is for the UK, at 0.36, and the highest for Denmark, at 0.9. The observation for Denmark, however, is an outlier: most countries are concentrated around 0.6. Yet even the big difference between the ratios for the UK and Denmark can explain a difference in the location of the Beveridge curve of about 15% of unemployment.

7.3.3. Corporatism. Finally, corporatism, as measured by the (narrowly defined but well-regarded) Calmfors-Drifflil index of centralization of wage bargaining, ranges from 0 (for Canada) to 15 (for Austria), with a mean value of 8.1. Given the similar magnitude of variation of this variable and our measure of labour market policies, it is clear from the estimated coefficients that corporatism is quantitatively more important than differences in labour market policies. But as we argued in the preceding section, corporatism in this context is perhaps best thought of as a proxy for unobserved features of labour market policies. With a corporatist value of 15, the Austrian Beveridge curve is about 41% to the left of the average and the Canadian curve about 49% to its right.
Table 6. Cost-effectiveness of labour market policies

<table>
<thead>
<tr>
<th></th>
<th>Budgetary cost</th>
<th>Unemployment effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>0.35</td>
<td>3.20</td>
</tr>
<tr>
<td>Austria</td>
<td>0.23</td>
<td>0.97</td>
</tr>
<tr>
<td>Belgium</td>
<td>1.13</td>
<td>4.10</td>
</tr>
<tr>
<td>Canada</td>
<td>0.49</td>
<td>1.20</td>
</tr>
<tr>
<td>Denmark</td>
<td>0.60</td>
<td>4.60</td>
</tr>
<tr>
<td>Finland</td>
<td>0.76</td>
<td>2.86</td>
</tr>
<tr>
<td>France</td>
<td>0.44</td>
<td>3.98</td>
</tr>
<tr>
<td>Germany</td>
<td>0.58</td>
<td>2.26</td>
</tr>
<tr>
<td>Japan</td>
<td>0.16</td>
<td>0.41</td>
</tr>
<tr>
<td>Netherlands</td>
<td>0.35</td>
<td>1.79</td>
</tr>
<tr>
<td>Norway</td>
<td>0.44</td>
<td>1.39</td>
</tr>
<tr>
<td>Sweden</td>
<td>1.17</td>
<td>2.44</td>
</tr>
<tr>
<td>UK</td>
<td>0.45</td>
<td>2.15</td>
</tr>
<tr>
<td>US</td>
<td>0.20</td>
<td>0.50</td>
</tr>
</tbody>
</table>

Source: Budgetary cost, OECD Employment Outlook, July 1989. Unemployment effect calculated as set out below.

Notes: The budgetary cost is expenditure on labour market policies in 1985, expressed as a percentage of GDP. The unemployment effect is calculated using estimated coefficients as in Table 4, column (1), as $100u_{85}\exp\{0.026LMP+0.078PD1+0.115PD2\} - 1$ where $u_{85}$ is each country’s unemployment rate in 1985.

8. Conclusions

One the whole the following conclusions emerge. Both in the 1970s and 1980s, the increases in unemployment originated in falls in the demand for labour. In most countries the initial rise in unemployment persisted because of changes on the supply side that reduced the job effectiveness of the unemployed. Labour market policies intensified in the 1980s. This substantially reduced unemployment, on average, from what it could have been, had the 1970s experience been repeated. Labour market policies, such as training programmes, help to the unemployed in their job search, explicit placement programmes for hard-to-place groups etc., help to shift the vacancy-unemployment relation towards the origin and they also make it flatter. Thus at given vacancies, countries which pursue these policies have less unemployment, and when they experience an increase in vacancies unemployment falls by more (in proportional terms) than in other countries. Labour market policies also speed up the adjustment to equilibrium, by reducing the influence that past unemployment has on future unemployment.

Our estimates permit a rough assessment of the cost-effectiveness of labour market policies. Using 1985 levels of expenditure as a measure of labour market policy we find that, at given vacancies, the unemployment rate in Sweden is for example, reduced by about 2 percentage
points relative to that of the US. To achieve this, Sweden spends about 1\% of GDP more than the US on labour market policies (see Table 1). Table 6 presents the same comparison for other countries. Next, we find that unemployment benefits increase unemployment at given level of vacancies. But the effect of the level of benefits is small when compared with the effect of the maximum duration of benefits. Countries where benefits run out after say six or twelve months experience a more favourable vacancy-unemployment relation than countries which pay benefits indefinitely. Finally, we find that corporatism shifts the vacancy-unemployment relationship inwards, giving rise to less unemployment at given vacancies. Corporatist countries are more likely to reach consensus on the appropriate labour market policies and to work for the success of these policies.

**Discussion**

Arie Kapteyn
Tilburg University

The purpose of this paper is to assess the effect of labour market policies on the level and evolution of unemployment in the major OECD countries. This is an ambitious undertaking in view of the complex dynamics of unemployment and the shortcomings of the data at hand. Taking those for granted, the analysis presented in this paper is convincing; the analytical framework is well designed for the purpose at hand and the conclusions accord with intuition.

One can, however, question the reliability and even the robustness of some the results. In this regard, I hope to be forgiven for exploiting my knowledge of the Dutch situation. For instance, according to Figure 7 and Table 2, it appears that adverse shocks have not deteriorated the job matching technology in the Netherlands (which is classified as an A-B-A country). This is an important conclusion, which conflicts with the received wisdom that there is some hysteresis in Dutch unemployment. Still, one cannot help feeling uncomfortable about the quality of the data used to reach that conclusion. Unemployment is indeed particularly badly measured in the Netherlands. First, there is a disability programme in which some 10\% of the Dutch workforce is enrolled. This programme provides more generous benefits than the standard unemployment schemes and in periods of massive lay-offs, one observes particularly high inflows into the programme. It has been estimated that some 50\% of the workers registered as disabled would actually be capable of taking up a job. This suggests that official statistics misrepresent the size and possibly the evolution of unemployment. A second problem arises from the definition of unemployment used in the
Netherlands; a person is counted as unemployed when he (she) is recorded at the labour exchange as looking for work. Yet, recent work has revealed that some 30% of the individuals registered at the labour exchange would not be in position to accept a job, if they were offered one, for instance because they already have a job. In addition, unemployed workers over 57 no longer have the obligation to register. All in all, it seems that the shortcomings of the Dutch unemployment data are thus particularly significant, if not fatal. In the Dutch situation, the authors’ assumption that the labour force is constant is also somewhat worrying. On the whole, my best guess is that with proper unemployment statistics and proper account of the growth in labour supply, evidence for the Netherlands would confirm existing evidence and suggest that job matching has deteriorated.

It seems that particular caution should be exercised in interpreting the authors’ evaluation of the cost effectiveness of labour market policies (see Table 6). This evaluation is based on their econometric analysis and the robustness of their parameter estimates can be questioned. As is well known, such estimates are very sensitive to omitted variables. In the present context, all the labour market policies which do not have a budgetary counterpart have indeed been left out and these policies could have a significant impact on the estimated relationship. In particular, policies like the reduction of the minimum real wage or the reduction of the replacement ratio should be controlled for. By leaving them out, one is bound to overestimate the effect of (costly) labour market policies on employment.

These comments remind us that the lessons which can be drawn from an aggregate cross country analysis are necessarily limited, although the authors make as much of the data as possible. Their results are, however, intriguing and provocative. They call for further evidence from detailed microeconomic studies of labour market policies in a few OECD countries.

Jean-Paul Lambert
Facultes Universitaires Saint Louis, Brussels and CORE, Louvain-la-Neuve

This paper evaluates the efficiency of labour market policies designed to improve the matching between unemployed workers and idle vacancies. This analysis contributes to our understanding of the diversity of performance among OECD countries with respect to unemployment and job creation. As such, it is a useful complement to the more traditional approach of comparative analysis of labour market institutions.

The Beveridge curve, which provides an equilibrium relationship between unemployment and vacancies, is also a natural framework to
study the effectiveness of job matching. This analysis relies on the identification of the flows between employment, unemployment and the inactive population and on shocks and policies which affect these flows. There is, however, an alternative framework (initiated by Muehlbauer, 1978) in which an equilibrium relationship between unemployment and vacancies can be derived. This alternative framework starts from the identification of the total labour supply, the total number of productive jobs and the effective labour demand. The labour market is then viewed, because of the heterogeneity of jobs and workers, as a collection of non-clearing micro markets. In this context, aggregation across the micro markets yields total employment and hence, an explicit relationship between vacancies and unemployment. This alternative approach has recently been adopted in the European Unemployment Programme.

I am somewhat concerned about the discrepancy in the results obtained by these alternative approaches. According to the present paper, only Belgium, Germany and the UK have experienced a deterioration of job matching. By contrast, the evidence gathered by the European Unemployment Programme (see Dreze and Bean, 1990) suggests that, in addition to these three countries, Austria, Denmark, France, the Netherlands and the US have also experienced a deterioration in job matching.

One possible explanation behind this discrepancy is that the tightness of the labour market is not properly estimated by the vacancy data used in this paper. Indeed, vacancy figures are highly dependent on the institutional rules governing their collection and there is no standardized data across countries (let alone over time). The authors are of course aware of this problem and they have adopted corrected figures whenever available, namely for the UK, Germany, Canada and the US. For the remaining countries, a common scaling factor (constant over time) has been applied to correct the data. I feel that some more caution should be exercised in dealing with this issue. Alternative indicators of labour market tightness should also be introduced to assess the robustness of the conclusions. For example, one could use the proportion of firms which experience difficulties in recruitment. This information is actually available from regular business surveys, but the appropriate ways of dealing with it in the framework of the Beveridge curve have yet to be elaborated.

Let me now offer some comments on the empirical analysis performed in this paper. My first worry relates to the scope of the labour market policies considered by the authors. In practice, all policies which do not have a direct budgetary impact have been left out. Yet legislation regarding working hours, retirement age, minimum wages or
employment protection, which do not directly impact on the budget, will have an effect on the flexibility of labour markets and presumably on the Beveridge curve. Moreover, the distinction between policies according to their budgetary impact depends on the institutional set up and can vary across countries. To illustrate, direct employment subsidies will be taken into account whereas equivalent measures like rebates in social security contributions will be excluded. On the whole, I would thus think that the scope of policies should be more carefully defined.

In principle, it seems that a large number of factors should determine the position of the Beveridge curve, besides the extent of labour market policies. Among others, one could mention factors like the extent of sectoral shocks, the demographic composition of the labour force, relative wage dispersion or the turnover rate of the work force. In estimating the Beveridge curve, these factors should be controlled for and will presumably be included in future work.

The very strong effect of benefit duration is somewhat of a puzzle. I concur with the underlying argument that shorter benefits will increase search intensity. Yet, I wonder whether the empirical estimates of the effect of duration is not somewhat spurious; indeed, it is considered in OECD standardized statistics that registration with the unemployment offices is by itself an active search. As a result, in those countries where duration is limited, the period of registration is shorter and accordingly unemployment is lower. Some people registered as unemployed in countries with long-lasting benefits would thus simply be counted as out of the force in countries with shorter benefits. I wonder whether the effect of benefit duration estimated by the authors is not at least partly induced by this problem of heterogeneity in the data.

The main conclusion which I personally draw from this very interesting paper is that corporatism, which is thought to capture all the labour market policies left out from the analysis, has a much stronger effect on the Beveridge curve than the policies under review, which have a budgetary impact. It is an urgent task to find out more about the relative efficiency of the policies which have been left out of the present analysis.

General discussion

John Martin expressed some concern about the quality of the data used in the paper. In particular, he thought that adjusting national vacancy rates to obtain a comparable sample across countries was a hopeless exercise. In his opinion, it is preferable to simply use the unadjusted (OECD) series. He also warned that the indicators of policy changes based on the data reported in the OECD Employment Outlook (1987) were somewhat crude; these data concern policies aimed at the long-term
unemployed and could, therefore, misrepresent the general direction of policy, Michael Burda also indicated that the duration of benefits had changed in some countries during the period under review; these variations are potentially revealing and should be accounted for. Richard Jackman acknowledged these problems but insisted that any choice of particular data series was likely to have some shortcomings.

A number of panel members wondered about the identification of the Beveridge curve. John Black was concerned about the assumption that the labour force is constant and John Muellbauer worried about demographic changes within the labour force. Changes in the size and composition of the labour force could indeed modify the position of the curve. In particular, a rise in the proportion of young people could make the matching process more difficult and accordingly could shift the curve out. To the extent that the countries under review have experienced different demographic shifts, these changes should be controlled for. According to Guido Tabellini, some control should also be exercised for country differences in hiring and firing legislation, which can affect the rate of creation of new vacancies and hence the position and slope of the Beveridge curve. Another variable to account for, according to Muellbauer, is the mobility of workers in between regions; it varies a great deal across countries and affects the Beveridge curve; Savvas Savouri acknowledged this and indicated that his current research focused on the estimation of regional Beveridge curves.

According to Lars Calmfors, an alternative methodology to assess the efficiency of labour market policies would be to undertake a detailed analysis of the re-employment possibilities offered to workers who have been subject to such policies. He indicated that the data necessary to perform such an analysis had recently become available in Sweden. Jackman recognized the benefits of this alternative methodology but suggested that it would be difficult to disentangle the quality of a particular policy from the quality of the unemployed subject to the policy. He insisted that great care would have to be exercised in controlling for the characteristics of the workers under review.

Appendix A. Main labour market programmes 1970–88

Australia
1983 Community Employment Programme ‘to provide the disadvantaged unemployed with temporary work in special schemes’
1985 Jobstart ‘to enhance the employment prospects of LTU’

Austria
1985 Training contracts ('Action 8000' Programme) to provide training for LTU by training subsidies.

Belgium
1982: Troisieme circuit de travail (Third Sector Employment) funding of special employment initiatives for those unemployed for over two years.

Denmark
1979 EIFL Programme ‘to restore motivation and self-confidence’ and special training courses.
1983 Job Offer Scheme.

Finland
1984 Wage subsidies to aid LTU.

Germany
1983 Integration Assistance Subsidy, wage subsidies to LTU.

France
1975 Contraa Emploi-formation. Special training contracts with employers.
1983 Operation ‘long-term unemployed’ involving ‘appraisal’ interviews.

Netherlands
1984 ‘Plough back scheme’ and voluntary work by LTU.

Sweden
1984 Wage subsidy for LTU.

UK
1983 Community Programme and Enterprise Allowance Scheme.
1987 Restart Programme.

Appendix B. Data

Unemployment. OECD Economic Outlook, No. 45, June 1989, Table R17. Standardized, Unemployment Notes, except in Denmark and Austria, for which we use R18, ‘National definitions’ and for the UK for which we use Department of Employment ‘X11’ Unemployment Series, which is adjusted for the various changes in the definition of unemployment in the UK.

Adjustment for breaks in standardized series:
For Belgium, 1970–82 adjusted by $11.7 \times 12.1/12.9 \times 12.6$.
For Sweden, 1970–86 adjusted by $2.2/2.7$.
For Switzerland, scaled by a factor of three to conform to Labour Force Survey figures.
For Italy, scaled by $10.6/11.8$ (1987 ratio of LFS to standardized figures).
Vacancies. OECD Main Economic Indicators: Historical Statistics and Main Economic Indicators, May 1989.
We scale the remaining countries by a factor of 1.7 except Sweden for which reporting of vacancies is compulsory.
Labour force. OECD Main Economic Indicators: Historical Statistics and Economic Outlook, No. 45, June 1989, Tables 37 and 38.
In constructing Labour Market Programmes per unemployed person for Sweden we measure unemployment to include those on labour market programmes in addition to those in 'open' unemployment. This reduces the figure for Sweden for expenditure on labour market policy by a half.

References