Industriens Utredningsinstitut
THE INDUSTRIAL INSTITUTE FOR ECONOMIC AND SOCIAL RESEARCH

A list of Working Papers on the last pages

Revised version published in *Oxford Review of Economic Policy,* Vol. 11, No. 1, 1995.

No. 429, 1995

DOES ACTIVE LABOUR MARKET POLICY INCREASE EMPLOYMENT? – THEORETICAL CONSIDERATIONS AND SOME EMPIRICAL EVIDENCE FROM SWEDEN

by

Lars Calmfors and Per Skedinger

April 1995

Postadress
Box 5501
114 85 Stockholm

Gatuadress
Industrihuset
Storgatan 19

Telefon
08-783 80 00
Telefax
08-661 79 69

Bankgiro
446-9995

Postgiro
19 15 92-5

2.92 10.000

DOES ACTIVE LABOUR MARKET POLICY INCREASE EMPLOYMENT? - THEORETICAL CONSIDERATIONS AND SOME EMPIRICAL EVIDENCE FROM SWEDEN

by

Lars Calmfors, Institute for International Economic Studies, Stockholm University

and

Per Skedinger, Industrial Institute for Economic and Social Research, Stockholm

JEL classification: J23, J68

Abstract:

Active labour market policy affects employment through several mechanisms that work in different directions. This paper develops a theoretical framework for structuring the various employment effects of different types of programmes and the effects of targeting specific groups. The empirical analysis is based on data for Swedish regions. It addresses the identification problem that arises because the size of the labour market programmes is likely to be endogenously determined and affected by unemployment. Most regressions indicate substantial crowding out of regular employment from job-creation measures, whereas the results with respect to labour market training and targeting are mixed. Training appears though to have more favourable effects on regular employment than job-creation schemes. The results are sensitive to the exact specification and the methods of estimation. On the whole the evidence for large favourable employment effects of active labour market programmes appears weak. This warns against putting too much faith in them as a solution to the European unemployment problem.

I. INTRODUCTION

In the search for remedies for the persistently high unemployment in Western Europe there has been a growing interest in so called active labour market programmes (henceforth denoted ALMPs). These are usually defined to include a wide set of measures to improve the functioning of the labour market that are directed mainly at the unemployed: (i) *job broking* and *placement services* performed by employment offices with the purpose of making the matching process between vacancies and job seekers more efficient; (ii) *labour market training* in order to upgrade and adapt the skills of the labour force; and (iii) *direct job creation* that may take the form of either public-sector employment or subsidisation of private-sector work (OECD, 1993).

It has been noted that most EU countries spend relative little on ALMPs as compared to "passive" unemployment benefits and early retirement pensions (see Table 1). This has been advanced as an important explanation of unemployment persistence in these countries (e.g. Layard et al., 1991). As a consequence several policy documents have endorsed a shift of expenditures in favour of active measures, often viewing Sweden with its traditional emphasis on active labour market policy as an example to follow (OECD, 1990; European Parliament, 1993; *Employment in Europe*, 1993; OECD, 1994; Presidency Conclusions, 1994). These reports also recommend that active expenditures should be directed to labour market training rather than to job creation measures and that programmes should primarily target outsiders, such as the long-term unemployed, young entrants and other difficult-to-place, in the labour market.

As can be seen from Table 1, the emerging consensus on a shift towards more of active measures has so far produced only very modest results. For the twelve earlier member countries of the EU, the share of labour market expenditures allocated to ALMPs (measured as an unweighted average) increased merely from 29.8 to 32.8 between 1985-89 and 1990-93. For "the model country"

Sweden the share of active expenditures even fell substantially, from 70.6 to 55.6 percent, between 1985-89 and 1990-93, reflecting that active measures did not keep up with the dramatic rise of unemployment. As concerns various types of ALMPs, the share of active expenditures devoted to training has according to Table 2 increased slightly for the earlier EU countries (unweighted average), although the development of this measure hides large differences between countries (e.g. large rises in Belgium as well as Britain and a large fall in Denmark).

Notwithstanding the ongoing policy discussion, our knowledge of the employment effects of ALMPs is very limited. They have usually not been incorporated in a consistent way in *theoretical* models of the labour market. On the *empirical* side there exists a substantial body of *micro* research trying to evaluate the impact on individual participants in various programmes. One problem with this literature is the diversity of results (OECD, 1993). Another is that it does not incorporate the behavioural effects on non-participants, which is necessary in order to evaluate the general-equilibrium consequences. This can only be done through *macro* studies examining the relationships between various aggregate variables, such as unemployment or real wage levels on the one hand, and ALMPs on the other hand.

So far only a small number of such macro studies have been performed. A few ones exploiting mainly *cross-section* variations between the OECD countries, originating with Layard et al. (1991), have come up with favourable effects of ALMPs (see OECD, 1993; Calmfors, 1994, or Katz, 1994). In contrast, *time-series* studies of wage formation in Sweden have often found ALMPs to increase aggregate wage pressure, which suggests that regular employment (excluding participation in programmes) may be adversely affected (Calmfors, 1993a; Skedinger, 1994). Both these sets of studies, however, suffer from the drawback of a very limited number of observations. A vivid illustration of this has been

provided by Forslund & Krueger (1994): when rerunning the cross-country unemployment equation that Layard et al. (1991) estimated for 1983-88, for 1993 instead, the ALMP variable both lost its significance and changed sign. The explanation is that a few earlier low-unemployment countries with heavy emphasis on active labour market policy have changed to high-unemployment ones (mainly Sweden but also Finland and Norway).

The present paper focuses on the employment effects of training and job creation programmes. There are two main aims. The first is to structure theoretically the various employment effects that such ALMPs may have. The second aim is to add to the empirical macroeconomic evidence by exploiting pooled time-series and cross-section data from Swedish regions. Since there have been considerable inter-regional variations in both unemployment rates and active labour market policies in Sweden, a study based on this data set may be very relevant for judging the effects of large-scale ALMPs also in the European context of high unemployment. We shall devote particular interest to the questions of whether training and job creation programmes have different effects and of how the macroeconomic outcomes are affected by the extent of targeting. These important issues have so far hardly been addressed in the empirical macro studies, although there does exist some evidence that training programmes may be more favourable from the point of view of regular employment than job creation schemes (Forslund, 1992; Edin et al., 1993; Heylen, 1993).

II. A THEORETICAL FRAMEWORK FOR THE ANALYSIS OF ALMPS

ALMPs can fulfil two basic functions (Calmfors, 1995). The first is "to keep the unemployed going" in general during recessions and to help them maintain or even increase their skills. The basic idea is to exert a positive effect on the *effective aggregate supply* of labour. This is perhaps the aspect that has been stressed the most in recent years when the unemployment problem has been

seen mainly as one of general excess supply of labour (see e.g. Layard et al., 1991, or Wyplosz, 1994). The second - and perhaps more traditional - way of regarding ALMPs is as a means of overcoming *structural imbalances* in the labour market by adjusting the structure of labour supply to demand. This is the way that active labour market policies where originally seen in Sweden and the US in the 1950s and 1960s (*Fackföreningsrörelsen och den fulla sysselsättningen*, 1951; OECD, 1990). This aspect of ALMPs seems now to be receiving increasing attention again in connection with the discussion about an ongoing shift in labour demand from unskilled to skilled labour (e.g. Jackman, 1994; OECD, 1994).

(i) An aggregate analysis of ALMPs

The natural aggregate set-up for analysing ALMPs is a modified version of the Layard-Nickell-Jackman (1991) labour-market framework distinguishing between a wage-setting and a labour-demand relationship. The main modification is that we shall distinguish between *regular employment* and *participation in programmes*. Based on Calmfors & Lang (1993, 1995) and Calmfors (1994) we can write the relationships for wage setting and regular labour demand (excluding programme participation) as:

$$w = f(n, \gamma, A) \tag{1}$$

$$n = g(w, \gamma, B), \tag{2}$$

where w is the real (product) wage, n is the rate of *regular* employment as a proportion of the labour force, $\gamma = p/(p+u) = p/(1-n)$ is the proportion of the job seekers without a regular job that are participating in ALMPs - which we shall denote the *accommodation ratio* of labour market policy - p is participation in

ALMPs as a proportion of the labour force, u is open unemployment as a proportion of the labour force, and A and B are vectors of other variables.[1]

The labour-demand relationship is as usual assumed to follow from profit-maximising behaviour of firms. The wage-setting relationship can be thought of as being derived either from a bargaining (monopoly-union) model or from an efficiency-wage framework. In both cases it is possible to derive the result that the real wage depends on the expected welfare of a laid-off worker (see also Shapiro & Stiglitz, 1984, or Layard et al., 1991). This is the reason why it is natural to include the accommodation ratio variable - which can be seen as an indicator of the conditional probability for an unemployed to end up in a labour market programme - as an argument in the wage equation (Calmfors & Forslund, 1991; Calmfors & Lang, 1995).

According to our formulation ALMPs work both via the wage-setting and the labour-demand relationships. One can identify at least three different effects of an expansion of programmes that tend to shift the *wage-setting schedule.*

(A1) *Increased competition.* To the extent that the programmes raise the competitiveness in the labour market of participants, for instance because "discouraged-worker effects" are counteracted, a newly laid-off worker will at each point of time face more competition for the available jobs. This will lower his/her re-employment probability and thus provide an incentive for wage restraint in order to avoid being laid off. In Figure 1 the wage-setting schedule tends to be shifted downwards. This is the mechanism stressed by especially Layard et al. (1991).

(A2) *Reduced welfare loss for the unemployed.* The increased-competition effect of more ALMPs must by logical necessity be accompanied by a wage-increasing effect (tending to shift the wage-setting schedule upwards) because the prospect of being taken care of in a labour market programme at some point of time should make forward-looking wage earners realise that they suffer less risk

of dropping out of the effective labour force in the case of unemployment. The welfare loss from being laid off is reduced further to the extent that programme participation is associated with a higher level of psychological well-being than open unemployment, as is indicated by some empirical evidence (e.g. Korpi, 1994). This may be due either to the fact that compensation in ALMPs is usually higher than the unemployment benefit or to the fact that programme participation provides other values, such as a social environment helping to structure life in general (Arnell-Gustafsson, 1994).

(A3) *Effects on the matching process*. If more active search behaviour on the part of job seekers is promoted by ALMPs or if they can substitute for regular work experience in reducing employer uncertainty about the employability of job applicants, the matching process is made more efficient. To the extent that posting vacancies and offering high relative wages are substitutes for each other in the hiring process of the individual firm, an increased matching effectiveness weakens the incentives for employers to attract labour by pushing up wages, i.e. tends to shift the wage-setting schedule downwards. It is not clear, however, that training and job creation programmes necessarily have this effect. Although some of the evidence from micro studies suggests that there is a positive *treatment effect* once programme participation is completed (OECD, 1993), there is also evidence suggesting that this may be counteracted by negative *locking-in effects* during actual programme participation because the intensity of job search is then reduced (Edin & Holmlund, 1991; Johannesson & Zetterberg, 1993).

One can also identify at least three mechanisms that work *via labour demand*.

(B1) *Productivity effects*. One can view ALMPs (especially training programmes but also job creation measures providing on-the-job training) as measures contributing to general technical progress in society. If the marginal productivity of labour is increased, the labour-demand schedule tends to be

shifted to the right. This effect is not self-evident, however, since it is well-known that all forms of technological progress need not give rise to such positive labour-demand effects. For instance, if technological development is labour-augmenting, i.e. if output depends on the amount of labour in efficiency units and labour becomes more efficient, the net employment effect is uncertain. On the one hand, there is a scale effect tending to increase employment because of the incentive to expand output by using more efficiency units of labour when the unit cost falls. On the other hand, there is a substitution effect tending to reduce labour demand because a given output can be produced by fewer and more efficient workers. The scale effect dominates the substitution effect only if labour demand is elastic (Calmfors, 1994).

(B2) *Effects on the matching process*. A change in matching effectiveness influences labour demand as well. The reason is that vacancies become less costly to firms if they are filled more quickly with the consequence that more vacancies are opened (Pissarides, 1990; Holmlund & Lindén, 1993; Calmfors & Lang, 1995). This is equivalent to an increase of labour demand. But as emphasised above (compare A3), it is not unambiguously clear that increased participation in training and job creation programmes results in such a net increase of matching effectiveness.

(B3) *Deadweight and substitution effects*. These apply mainly to job creation schemes. The deadweight loss of an ALMP is the hirings from the target group that would have occurred also in the absence of a programme. The substitution effect is the extent to which jobs created for a certain category of workers replace jobs for other categories, because relative wage costs are changed. Such effects mean that regular labour demand is reduced. A number of studies made in different countries with different methods suggest that these off-sets to labour demand may be very substantial both in the case of subsidisation of

private-sector work and in the case of public-sector job creation (OECD, 1993; Forslund & Krueger, 1994; Anxo, 1994).[2]

Our discussion makes it clear that ALMPs give rise to a number of distinct effects working both via wage-setting and labour-demand incentives. Obviously, the theoretical considerations are not enough for signing the likely net effect on regular employment. The direction of individual effects are not always clear, and even when they are, different effects will work in different directions. Our classification of effects can, however, be used to discuss how various design features are likely to influence the effectiveness of programmes.

(i) *The compensation level.* A higher compensation in ALMPs tends to counteract positive employment effects for very much the same reasons as generous unemployment benefits. First, a higher compensation level tends *ceteris paribus* to reduce the welfare loss in the case of lay-offs and thus directly to weaken the incentives for wage restraint. Second, the risk of negative locking-in effects that will have an adverse influence on matching effectiveness becomes greater.

(ii) *Targeting.* Focusing ALMPs on outsiders in the labour market should maximise the wage-restraining competition effects for insiders at the same time as adverse side-effects on wage-setting incentives are minimised. When entrants, not previously in the labour market, are targeted, there is by definition no effect on the expected welfare of a laid-off worker. And when long-term unemployed are targeted, the effects are reduced because they are more heavily discounted the later programme placements occur (Calmfors & Lang, 1995). Also, the scope for increasing matching effectiveness should be larger for outsiders than for insiders. A counterargument is, however, that it is likely to be more difficult to affect the prospects of the groups involved the weaker their affiliation to the labour market (Layard et al., 1991).

(iii) *Co-ordination with unemployment insurance.* In many countries participation in ALMPs qualifies the participants for new periods of unemployment benefits. This would seem to involve serious risks for the effectiveness of programmes. First, it means a *de facto* prolongation of the duration of unemployment benefits, which according to received wisdom has adverse employment effects (e.g. Layard et al., 1991; Heylen, 1993; Zetterberg, 1993). Second, if programmes come to be regarded mainly as a means of renewing unemployment benefit eligibility, there is likely to be a serious weakening - among placement officers, among organisers and among participants - of the incentives to strive for maximum efficiency in terms of enhanced re-employment probabilities (the marginal utility from re-employment should fall to the extent that programme participation is expected to generate a future stream of unemployment benefits). There is some evidence from micro studies that such a use of ALMPs may have reduced their effectiveness in both Denmark and Sweden (e.g. Langager, 1992; Regnér, 1993).

(iv) *Type of programme.* As to the relative effectiveness of training and job creation schemes, theoretical considerations give only limited guidance. On the one hand, one could argue that training programmes ought to be more efficient than job creation schemes in providing participants with human capital, since this is their very purpose. On the other hand, labour market training is sometimes criticised for not been geared sufficiently to the needs of employers. It may indeed be difficult to identify training needs and motivate participants in training programmes when labour demand is low, at the same time as on-the-job-training may more or less "automatically" provide the skills in demand (Dolton, 1993; OECD, 1993). A job creation scheme may also signal the employability of, for example, participating long-term unemployed more efficiently than a training programme. Training does, however, have one clear advantage as compared to

job creation: it does not involve the losses of regular employment due to deadweight and substitution effects discussed above (B3).

(ii) A disaggregate analysis

The aggregate framework used above does hide one important aspect of active labour market policy, namely to help re-allocate labour between sectors. This is a role that can be played by re-training but not, except in very special circumstances, by job creation schemes.

The re-allocation argument in favour of labour market policy usually rests on some assumption of asymmetries in wage setting. One example is provided by the old Phillips-curve framework. By shifting labour from high-unemployment to low-unemployment sectors, and thus exploiting the convexity of the Phillips curve for different sectors, re-training programmes were believed to reduce inflationary pressure in the economy at each level of aggregate unemployment (Lindbeck, 1975). This was supposed to make it possible for governments to pursue demand policies leading to lower unemployment.

The re-allocation argument can easily be recast in terms of the Layard-Nickell-Jackman framework if we accept the "empirical law" of an non-linear *wage curve* put forward by Blanchflower & Oswald (1994a), according to which real wages for a group of wage earners increases progressively more as unemployment falls. This empirical generalisation conforms to intuition in the sense that small reductions in unemployment will reflect large increases in labour demand in the neighbourhood of full employment, at the same time as the provision of unemployment benefits are likely to put a floor to wages at high rates of unemployment. Such a convex wage-setting schedule follows from, for example, the efficiency-wage model of Shapiro & Stiglitz (1984), as discussed in e.g. Blanchflower & Oswald (1994b).

Consider as an illustration an economy made up by one sector (H) with high wages and high employment, and one sector (L) with low wages and low employment. The two sectors produce tradables, the prices of which are exogenously given from the world market. Mobility of labour between sectors occurs only through government provision of ALMPs: L-workers can be retrained to become H-workers. An appropriate model to illustrate the re-allocation role of re-training (but neglecting the other aspects discussed above) is

$$\ln L_H = \ln n_H + \ln M_H = \alpha_H - \beta \ln w_H \tag{3}$$

$$\ln L_L = \ln n_L + \ln M_L = \alpha_L - \beta \ln w_L \tag{4}$$

$$\ln w_H = \eta - \varepsilon \ln(1 - n_H) \tag{5}$$

$$\ln w_L = \eta - \varepsilon \ln(1 - n_L) \tag{6}$$

$$M_H = M(1+p) \tag{7}$$

$$M_L = M(1-p) \tag{8}$$

$$n = (L_H + L_L)/2M, \tag{9}$$

where the subscript $i = H, L$ indicates the sector, L_i the sectoral employment (the number of employed persons), n_i the sectoral employment *rate* as a proportion of sectoral labour supply M_i, w_i the sectoral real (product) wage, $2M$ the total labour force, p programme participation as a proportion of *half* the total labour force, and n the aggregate employment rate as a proportion of the total labour force.

(3) and (4) are constant-elastic labour-demand equations where $\alpha_H > \alpha_L$, which will ensure that $n_H > n_L$ initially (for $p = 0$). (5) and (6) are wage-setting relationships, where we use the Blanchflower-Oswald empirical formulation of the wage curve. According to (7) and (8) the labour force is distributed

symmetrically in the absence of ALMPs, but retraining programmes for L-workers increases the relative supply to the H-sector. (9) gives the aggregate employment rate.

The model is illustrated in *Figure 2* with $\ln w_i$ and L_i on the axes. It is clear that an expansion of re-training (an increase in p) shifts the wage-setting schedule downwards in the H-sector (since an increase in the labour force M_H means a decrease in the employment rate n_H at given employment L_H) and upwards in the L-sector (where the labour force M_L decreases). The wage increases in the L-sector and decreases in the H-sector. The employment rates in the two sectors must move in the same direction as the wage rates.

It is also straightforward to show that the *aggregate* employment rate increases (Calmfors, 1995). As the model has been set-up, there are three reasons for this: (i) a given change of sectoral labour supply M_i gives a larger change of the sectoral employment rate $n_i = L_i / M_i$ the larger is L_i (and hence also n_i) initially; (ii) because of the convexity of the wage curve a given change of the sectoral employment rate gives a larger shift of the wage-setting schedule (a larger percentage change of the wage) the higher initial employment; and (iii) by way of constant-elastic labour demand a given percentage change of the wage has a greater leverage on employment the higher it is initially (the labour-demand schedules in the diagram are flatter the higher is employment). Back-of-the envelope calculations using reasonable parameter values indicate that these re-allocation effects on aggregate employment may be substantial (see Table 3). This provides a strong argument for a high effectiveness of re-training programmes as compared to job creation schemes as a means of raising aggregate employment in situations of large structural imbalances in the labour market.

III. EMPIRICAL ANALYSIS

In the empirical analysis we shall exploit a pooled time-series cross-section data set containing information on 24 Swedish regions (län) in order to study the covariation between employment and participation in ALMPs. We make the estimations for the period 1966-1990 because these years were characterised by fairly homogeneous labour market programmes. Especially job creation schemes exhibit very large variations in terms of both design and compensation levels in the years after 1990, which makes it less appropriate to include these observations in our sample.

(i) Empirical specification

The basic equation we seek to estimate is

$$(u+r+l)_{i,t} = \alpha_0 + \alpha_1 (u+r+l)_{i,t-1} + \alpha_2 \gamma^{r}_{i,t} + \alpha_3 \gamma^{l}_{i,t} + \alpha_4 C_{i,t} + \varepsilon_{i,t}, \qquad (10)$$

where u is the rate of open unemployment (relative to the labour force), r is the rate of participation in job creation programmes (relative to the labour force), l is the rate of participation in labour market training (relative to the labour force), $\gamma^{r} = r/(u+r+l)$ is the accommodation ratio of job creation programmes (the proportion of job seekers without regular employment entering such programmes), $\gamma^{l} = l/(u+r+l)$ is the accommodation ratio of training programmes, C is a (column) vector of other explanatory variables (and α_4 a row vector of coefficients), $\varepsilon_{i,t}$ is an error term and the subscripts i and t denote region and time respectively.

Equation (10) can be regarded as a reduced form derived from the underlying wage-setting and labour-demand equations. The dependent variable

we try to explain is thus the total jobless rate $u + r + l$ including participants in ALMPs as well as the openly unemployed. The total jobless rate so defined equals $1-n$, where n is the rate of (regular) employment excluding programme participation (relative to the labour force).

As explanatory labour-market-policy variables we distinguish between job creation and labour-market training. As to other possible influences on employment we capture region-specific factors by regional dummies and aggregate (cyclical) factors by either time dummies or the national jobless rate. In addition we account for possible persistence effects by including the lagged jobless rate in the region as an explanatory variable. Finally, equation (10) is amended in some formulations in order to account for the extent of targeting on outsiders.

One could argue that a number of regional variables that ought to be important are omitted from our regression equation, such as government production subsidies, public-sector employment, tax rates, the capital stock, the relative price between the output of the region and the consumption basket (which is likely to depend upon e.g. government purchases of goods from the region and public-sector investment in the region) etc.[3] However, this argument carries less weight the longer the periods of observation. The reason is that the actual rate of unemployment is then likely to be closer to the equilibrium rate, the main determinants of which are usually taken to be only a number of structural labour-market parameters (Layard et al., 1991; Elmeskov, 1994; Wyplosz, 1994).[4] For this reason we shall perform some regressions on averages over several years instead of on yearly observations.

(ii) Problems of simultaneity and identification

A serious problem plaguing all macroeconomic studies of labour market policy is that of reverse causality: in country comparisons it seems as though more is spent on ALMPs the higher the rate of unemployment (Grubb, 1994; OECD, 1994). If this is taken to reflect a government policy response function, estimates of the impact of ALMPs on unemployment (and perhaps also on wages) may be subject to simultaneity bias. This is clearly the case if participation in programmes is measured as a proportion of the *labour force* as has been done in several studies. One can hope that the problem is less severe when programme participation is measured relative to *unemployment* (as accommodation ratios) as we do, since it is not à priori clear whether increases in unemployment should be expected to lead to more or less than proportional increases of programmes participation. Across countries it seems as if higher unemployment is associated with a less than proportional increases of expenditures on active measures (Grubb, 1994; OECD, 1993), and the time-series development of ALMPs in general in Sweden from the beginning of the 1980s appears also to be consistent with such a pattern (see Table 1). But on the other hand the Swedish National Labour Market Board (AMS) seems to follow internal budgeting procedures according to which a rise in unemployment in a region in relation to the national average leads to a more than proportional increase of available funds (Arbetsmarknadsstyrelsen, 1990, 1992).

If the accommodation ratios of ALMPs (the proportions of the jobless in programmes) depend only on the jobless rate, the employment equation (10) cannot be identified. Identification requires the existence of additional variables in the policy response functions for job creation and training programmes that can be used as instruments for the labour-market-policy variables. Unfortunately it is very difficult to come up with such instruments, and this problem of identification

has so far not received any satisfactory solution in the literature (Calmfors, 1994; Jackman, 1994; OECD, 1994; Blanchflower et al., 1995).

We suggest two possible assumptions on the policy response functions that may achieve identification. The first is that accommodation ratios are influenced by *political* factors. A plausible hypothesis is that parties of the political left are most favourable to ALMPs and hence also more likely to lobby for them. This assumption is motivated by the fact that Swedish active labour market policy in its modern form was introduced by social democratic governments in the late fifties (Lindbeck, 1975) and has since then formed a central ingredient in social democratic economic policy (Rothstein, 1995). Hence we hypothesise that the larger the share of a region's seats in Parliament that is assigned to parties of the political left, the larger the accommodation ratio of ALMPs in that region. This assumption has received empirical support in Blanchflower et al. (1995). We also hypothesise that the parties in power nationally are more willing (and able) to channel resources for ALMPs to the regions where they are strong. This motivates the inclusion of the share of a region's seats in Parliament that is allocated to the parties in government as another argument in the policy response function.

A second possibility is to assume that the regional accommodation ratio for each programme depends on a nationally determined accommodation ratio (for the same type of programme) and the national jobless rate in addition to the regional jobless rate. The argument would be that the regional accommodation ratios are determined in a two-step procedure. In a first step, accommodation ratios - which can be regarded as exogenous to the individual region - are determined at the national level. In a second step, funds are allocated to the regions in such a way that the difference between the regional and national jobless rates will determine how much the regional accommodation ratio deviates from the national one (see the discussion above).

The inclusion of the political variables and/or the national accommodation ratios in the policy response function makes identification of the unemployment equation possible. This presupposes that these variables should not (all) be included in the latter equation. In the case of the national accommodation ratios, we see no arguments for this. But one could perhaps argue that the political variables should enter the unemployment equation as proxies for other regional variables that we have not included (see above). But this argument, too, carries less weight the longer the periods of observation. This is an additional reason for using averages over several years as observations.

Apart from the problem of simultaneity instrumentation can also be motivated by the presence of measurement errors. Regional unemployment may be measured with error, since the figures are based on survey data. This would imply mis-measurement also in the accommodation ratios. The presence of a lagged dependent variable in our estimations is a third reason for instrumentation. It is well known that dynamic models with fixed effects yield biased estimates of order 1/T (Nickell, 1981). At least in the regressions with shorter time periods, where the effects of targeting are tested, this is likely to cause a bias of non-negligible magnitude. A method to deal with this problem suggested by Anderson & Hsiao (1981), and to be used in our estimations, is to first-difference the data and then instrument the lagged dependent variable with its second lag. To perform these regressions we will use the DPD program developed by Arellano and Bond.[5]

(iii) Labour-market policy variables

Our measure of job creation programmes includes mainly public-sector relief works (*beredskapsarbeten)* that have a long history in Sweden of being used as a countercyclical device to cushion unfavourable employment effects of temporary economic downturns. In addition we have taken account of

participation in "youth teams", which were in operation during the latter half of the 1980s and then offered subsidised public employment to teenagers. Since the jobs were half-time, we have added half the number of the youth team participants to our measure of job creation programmes, whereas the other half has been added to open unemployment. The compensation levels in Swedish job creation programmes have been very generous: participants in both relief work and youth teams have received market wages (as determined in collective agreements).

The basic idea of *training programmes* has been to upgrade skills in order to improve future employment prospects. These programmes have mainly been directed towards unemployed workers, but it has also been possible for employed workers to participate in training schemes (in-plant training) aimed either at eliminating acute shortages of skilled labour or at providing training for workers who might otherwise have been laid off. Our measure of training programmes includes such in-plant training, but we have no separate information on its extent. However, with the exception of 1977-78 - a period of rapid structural change in certain sectors of manufacturing - the number of in-plant trainees has been relatively small. Unemployed workers participating in regular training programmes receive the equivalent of unemployment compensation.

As to targeting on outsiders, we do not have information on the extent to which programmes have been focused on the long-term unemployed. For the period 1981-88, we do, however, have data on the shares of young people (age 18-24 years), who form another group of outsiders in the labour market, in both job creation and training programmes. These shares are therefore included in some of the regressions. In alternative estimations we also experiment with accommodation ratios for young people (the proportion of job seekers 18-24 years without regular employment in programmes), but the data for these variables are available only for the period 1981-86 and for eight regions.

Some summary statistics of the variables are presented in Table 4. The advantages of using regionally disaggregated data should be evident: the range of the total unemployment variable $(u+r+\ell)_{i,t}$ is 1.2 - 15.9 percent, which can be compared to the much smaller variation (2.3 - 5.8 percent) for nationally aggregated data during the same period. The table also reveals that there are great variations in the accommodation ratios of the measures. Job creation programmes have in general engaged more participants than training, and the former have also been targeted more on young people.

(iv) Empirical results

In order to check the robustness of the results a large number of regressions were performed. Equations were estimated in both levels and first differences, and we tried both annual observations and averaging over longer time periods as discussed above. The basic regressions, with accommodation ratios for job creation and training as labour-market-policy variables, were complemented by estimations including targeting variables as well for the periods for which such data were available. In each run of regressions we tried capturing aggregate (cyclical) factors either with time dummies or with the national total unemployment rate. Both OLS and IV estimations were made and in the latter we experimented with various instruments.

Table 5 shows estimations in levels for the whole period 1966-90. As can be seen the coefficient of the job creation variable is positive in all seven regressions and significantly so in six of them. In contrast the effect of the training variable varies. It is significantly negative in the OLS regressions with current accommodation ratios, but significantly positive in the OLS estimations with lagged accommodation ratios as well as in the IV estimations. In all the equations we find a lower coefficient for the training than for the job creation

variable, and in six of the seven equations the estimated difference is significant or borderline significant.

In Table 6 the estimations are made in first-difference form instead, as suggested by Anderson & Hsiao (1981). In addition, we have used a procedure in the DPD program which allows estimations that are robust to heteroskedasticity. In order to do this we had to shorten the estimation period to 1973-90.[6] The test statistics indicate problems with serial correlation in the OLS estimations, so we focus on the IV estimations which look more satisfactory. They show a somewhat different picture than the regressions in Table 5. The job creation coefficient is now insignificant in all the estimations, whereas the results for training vary: its coefficient is in turn negatively significant, positively significant and insignificant. Also the evidence on the relative impact of the two labour-market-policy variables is inconclusive.

Table 7 displays the regressions using (non-overlapping) four-year periods as the unit of observation. Both the level and first-difference estimations here are rather similar to those of Table 5. The effect of the lagged dependent variable turned out be insignificant, however, so this variable was left out of the estimations. Job creation programmes usually obtain a significant positive effect on the total jobless rate in both the OLS and IV regressions, whereas training programmes are insignificant in all cases except in one OLS estimation. In most equations the hypothesis that the coefficients for the two labour-market-policy variables are equal can be rejected.

In Table 8, finally, we have added our measures of the extent of targeting on young people to the equations and rerun them in first-difference form for the periods for which we have this information. In about half the cases the effects of job creation now turns out to be significantly positive. A main difference to the earlier equations is that training programmes now almost always become significantly negative. As to the effects of targeting on young people the results

are very diverse. In some equations we find such targeting - given the overall size of programmes - to have a significant unemployment-reducing effect (for job creation in equations (1) and (6) and for training in equations (1) and (2), whereas the result is the opposite for training in equations (7) and (9)).

In addition we also experimented with a slope dummy for training in order to examine whether the impact of employment was affected by the change in rules in 1987 when it became possible to renew eligibility for unemployment benefits through participation in such programmes. We were not however, able to come up with any robust evidence on this.

Our findings can be summarised in the following way:

(i) There appears to be a fair amount of evidence that job creation programmes crowd out regular employment, that is increase the total jobless rate as here defined (including participation in programmes). Although there are some cases where we find insignificant effects, we never come up with negative effects that are significant. The crowding-out effects are larger in the regressions with four-year averages than in the regressions with yearly observations. The long-run effects on the total jobless rate of an increase in the participation rate in job creation programmes of one percentage point of the labour force (level estimations) is easily calculated. This effect turns out to be 1.1 as an average in Table 7 and the values range between 0.6 and 2.2. In Table 5 the average effect is 0.7, with a spread from 0.3 to 1.4. The majority of the estimates in these tables lie in the interval 0.6-0.9. This implies substantial crowding out: open unemployment would fall only by 0.1-0.4 percentage points when participation in job creation schemes increases by one percentage point.

(ii) The results with respect to training programmes are very unstable. The effects on the total jobless rate are sometimes positively significant, sometimes insignificant and sometimes negatively significant.

(iii) In the majority of estimations we find that training programmes have a significantly more favourable effect on the total jobless rate and thus on regular employment than job creation schemes.

(iv) The evidence that targeting on young people has favourable employment effects is weak, although we find such effects in a few formulations. But there are also examples of the opposite result.

Our findings should not come as a surprise. Some theoretical arguments why one could expect more favourable effects on regular employment from training than from job creation programmes were given in Section II. The results in this respect are also consistent with the findings by e.g. Forslund (1992), Edin et al. (1993) and Heylen (1993) that training programmes are more likely than job creation programmes to restrain wages. When interpreting our results it should, however, be kept in mind that the compensation level in training programmes has been lower than in job creation schemes, which should work in the direction of more wage restraint. If training has indeed had more favourable effects on regular employment than job creation measures in Sweden, it is thus unclear to which extent this really reflects intrinsic differences in the effectiveness of the programmes.

It might be considered more surprising that the evidence on the effects of targeting on young people is so inconclusive, since the theoretical arguments for a positive effect when programmes are focused on such a group of outsiders are strong (see Section II). But our results square well with some other empirical findings. A number of US studies suggest that training programmes for young people have been the most unsuccessful ones when it comes to improving the labour-market performance of the participants (Lalonde, 1992). According to Skedinger (1991) ALMPs appear to have had more wage-raising effects for young

people in Sweden than for other age groups, whereas Wadensjö (1987) found substantial crowding-out effects from job creation schemes directed at the young.

IV. CONCLUSIONS

Even though the evidence that training has more favourable employment effects than job creation programmes is important, the most striking conclusion from our analysis is perhaps the lack of robustness of the results. This applies especially to training programmes. The exact specification and the methods of estimation do obviously matter. This should not come unexpected as it is not evident how one should tackle the serious problems of simultaneity and identification that plague all studies of the macroeconomic effects of active labour market programmes.

We would expect that also many other studies of the macroeconomic effects of ALMPs suffer from a similar lack of robustness if one were to vary specifications and estimation methods in the way we have done. The results from such studies should thus probably be interpreted with even greater caution than empirical studies in other areas.[7] The proper conclusion to draw seems therefore to be that the evidence for large favourable employment effects of active labour market programmes is weak. This need not be an argument against such policies, but it is certainly an argument against putting too much faith in them as the *deus ex machina* that will solve the European unemployment problem.

References:

Anderson, T.W., and Hsiao, C. (1981), 'Estimation of Dynamic Models with Error Components'. *Journal of American Statistical Association*, 76.

Anxo, D., (1994), *Erfarenheter av lönesubventioner i Europa - en jämförelse mellan Frankrike, Storbritannien, Sverige och Tyskland*, EFA, Arbetsmarknadsstyrelsen.

Arellano, M., and Bond, S. (1991), 'Some Tests of Specification for Panel Data: Monte Carlo Evidence and an Application to Employment Equations', *Review of Economic Studies*, 58.

Arbetsmarknadsstyrelsen (1990), *En starkare arbetsförmedling: Modeller för fördelning av anslag till länen,* Bilaga 1.

Arbetsmarknadsstyrelsen (1992), *Resursfördelningsmodellen för budgetåret 1992/93*, Stockholm.

Arnell-Gustafsson, U. (1994), 'Från låg till hög arbetslöshet', Working Paper No. 15, Arbetslivscentrum.

Baltagi, B.H. (1995), *Econometric Analysis of Panel Data*, John Wiley, Chichester.

Bean, C. (1994), 'European Unemployment: A Survey', *Journal of Economic Literature*, 32.

Blanchflower, D.G., Jackman, R., and Saint-Paul, G. (1995), *Swedish Labour Market Policy: An Evaluation. Report of a Non-Nordic Group*, Ministry of Labour, Stockholm.

Blanchflower, D.G., and Oswald, A. (1994a), *The Wage Curve*, MIT Press, Cambridge, Massachusetts.

Blanchflower, D.G., and Oswald, A. (1994b), 'Estimating the Wage Curve for Britain 1973-90', *The Economic Journal*, 104.

Calmfors, L. (1993a), 'Lessons from the Macroeconomic Experience of Sweden', *European Journal of Political Economy*, 9.

Calmfors, L. (1993b), 'De institutionella systemen på arbetsmarknaden och arbetslösheten', bilaga 4, *Nya villkor för ekonomi och politik*, bilagadel 1, Ekonomikommissionens förslag, SOU 1993:16, Stockholm.

Calmfors, L. (1994), 'Active Labour Market Policy and Unemployment - A Framework for the Analysis of Crucial Design Features'. *OECD Economic Studies* , no. 22.

Calmfors, L. (1995), 'Labour Market Policy and Unemployment', forthcoming in *European Economic Review*.

Calmfors, L., and Forslund, A. (1991), 'Real-wage Adjustment and Labour Market Policies: the Swedish Experience', *The Economic Journal,* 101.

Calmfors, L., and Lang, H. (1993), 'Macroeconomic Effects of Active Labour Market Programmes - The Basic Theory'. Seminar Paper No. 541, Institute for International Economic Studies, Stockholm University.

Calmfors, L., and Lang, H. (1995), 'Macroeconomic Effects of Active Labour Market Programmes in a Union Wage-Setting Model', forthcoming in *The Economic Journal.*

Dolton, P.J. (1993), 'The Economics of Youth Training in Britain', *The Economic Journal*, 103.

Edin, P-A., and Holmlund, B. (1991), 'Unemployment, Vacancies and Labour Market Programmes: Swedish Evidence', in F. Padoa-Schioppa (ed.), *Mismatch and Labour Mobility*, Cambridge University Press, Cambridge.

Edin, P-A., Holmlund, B., and Östros, T. (1993), 'Wage Behaviour and Labour Market Programmes in Sweden: Evidence from Micro Data', Working Paper, Department of Economics, Uppsala University.

Elmeskov, J. (1994), 'Nordic Unemployment in a European Perspective', *Swedish Economic Policy Review,* no. 1.

Employment in Europe (1993), Commission of the European Community.

European Parliament (1993), Party of European Socialists, Declaration of the Party Leaders' Conference 'The European Employment Initiative', Brussels, December 9th.

Fackföreningsrörelsen och den fulla sysselsättningen (1951), LO, Stockholm.

Forslund, A. (1992), *Arbetslöshet och arbetsmarknadspolitik*, bilaga till Långtidsutredningen, SOU 1992:19.

Forslund, A., and Krueger, A.. (1994), 'An Evaluation of the Swedish Active Labour Market Policy: New and Received Wisdom, NBER Working Paper No. 4802.

Grubb, D. (1994), 'Direct and Indirect Effects of Active Labour Market Policies in OECD Countries', in R. Bauell (ed.), *The UK Labour Market, Comparative Aspects and Institutional Development*, Cambridge University Press.

Heylen, F. (1993), 'Labour Market Structures, Labour Market Policy and Wage Formation in the OECD', *Labour,* 7, 1993.

Holmlund, B., and Lindén, J. (1993), 'Job Matching, Temporary Public Employment, and Equilibrium Unemployment', *Journal of Public Economics*, 51.

Jackman, R. (1994), 'What Can Active Labour Market Policy Do?' *Swedish Economic Policy Review*, no. 1.

Johannesson, J., and Zetterberg, J. (1993), 'Effekter av arbetsmarknadspolitiska åtgärder - mikroutvärderingar', in *Politik mot arbetslöshet*, Betänkande av EFA, SOU 1993:42, Stockholm.

Katz, L. (1994), 'Active Labor Market Policies to Expand Employment and Opportunity', US. Department of Labor and Harvard University.

Korpi, T. (1994), *Escaping Unemployment*, Swedish Institute for Social Research, Stockholm University.

Kraft, K. (1994), 'An Evaluation of Active and Passive Labour Market Policy', Social Science Research Center Berlin, FS I 94-208.

LaLonde, R., (1992), 'The Earnings Impact of U.S. Employment and Training Programs', mimeo,University of Chicago.

Langager, K. (1992), 'Dagpengekarrusel eller jobgenerator? - En forløbsanalyse af deltagerne i arbejdstilbudsordningen', *Samfundsøkonomen*, no. 6, Copenhagen.

Layard, R., Jackman, R., and Nickell, S. (1991), *Unemployment*, Oxford University Press.

Lindbeck, A. (1975), *Swedish Economic Policy*, Macmillan Press, London.

McCormick, B., and Skedinger, P. (1991),'Why do Regional Unemployment Differentials Persist?', in P. Skedinger, *Essays on Wage Formation, Employment, and Unemployment*, Department of Economics, Uppsala University.

Nickell, S. (1981), 'Biases in Dynamic Models with Fixed Effects', *Econometrica*, 49.

OECD (1990), *Labour Market Policies for the 1990s*, Paris.

OECD (1993), *Employment Outlook*, Paris.

OECD (1994), *Jobs Study - Evidence and Explanations Part II: The Adjustment Potential of the Labour Market*, (1994), Paris.

Pissarides, C. (1990), *Equilibrium Unemployment Theory*, Basil Blackwell.

Presidency Conclusions, (1994), European Council Meeting, 9-10 December, Essen.

Regnér, H. (1993), 'Choosing Among Alternative Non-experimental Methods for Estimating the Impact of Training: New Swedish Evidence'; mimeo, SOFI, Stockholm University.

Rothstein, B., (1995), *The Social Democratic State: Bureaucracy and Social Reforms in Swedish Labour Market and School Policy*, Pittsburgh University Press, forthcoming.

Shapiro, C., & Stiglitz, J. (1984), 'Equilibrium Unemployment as a Worker Discipline Device', *American Economic Review*, 74.

Skedinger, P. (1994), Sweden's Labour Market Policy: A Remedy for Unemployment?', *European Vocational Training Journal*, no. 2.

Wadensjö, E., (1987), 'The Youth Labour Market in Sweden - Changes in the 1980s", *Economia & Lavoro*, No. 1, Marsilio Editori, Venezia.

Wyplosz, C. (1994), 'Demand and Structural Views of Europe's High Unemployment Trap', *Swedish Economic Policy Review*, no. 1.

Zetterberg, J. (1993), 'Arbetslöshet, arbetsmarknadspolitik och löneförhandlingssystem', in *Politik mot arbetslöshet*, Betänkande av EFA,

SOU 1993:43, Stockholm, 1993.

[1] A is likely to consist of variables such as unemployment compensation, compensation in programmes, total factor productivity, the capital stock and the wedge between the real product and consumption wages. The elements of B are likely to be total factor productivity, the capital stock and perhaps public-sector employment.

[2] Kraft (1994) is, however, an exception.

[3] Changes in the relative price between output and consumption affect the wedge between the real consumption wage (the money wage deflated by the consumer price index) that wage earners care about and the real product wage (the money wage cost to employers deflated by the output price index) that determines labour demand (see e.g. Calmfors & Forslund, 1991, or Bean, 1994).

[4] A common motivation is that since there seem to be no secular trends in unemployment, changes in the variables discussed must in equilibrium be fully shifted on to the real consumption wage (Layard et al., 1991; Bean 1994).

[5] The more efficient estimator proposed by Arellano & Bond (1991), where all available further lags of the endogenous variables are used as instruments cannot be used due to limitations in the size of the data set. Other instruments have also been suggested in the literature, which is surveyed in Baltagi (1995). Note also that one could motivate using the second lag of the jobless rate as an instrument, if efficient regional labour market authorities are rewarded with more funds for earlier success in reducing unemployment, as seems to some extent to have been the case (Arbetsmarknadsstyrelsen, 1990, 1992).

[6] In the DPD program the computation of heteroskedasticity-robust estimates requires that the number of instruments does not exceed the number of cross-section units. This we achieved by shortening the estimation period, thus reducing the number of time dummies among the instruments.

[7] In our case one should also be careful when drawing conclusions on the effects of ALMPs on national unemployment from the effects on regional unemployment. The reason is that ALMPs at the regional level may affect inter-regional migration. To the extent that ALMPs raise the expected utility of living in a region, one should expect a *ceteris paribus* increase of net immigration that tends to increase unemployment there (McCormick & Skedinger, 1991). But one could also argue that re-training of workers facilitates geographical mobility as well, which might work in the other direction. We have implicitly assumed such migration effects to be of second-order importance as compared to the effects discussed in the text.

Figure 1: **The modified Layard-Nickell model**

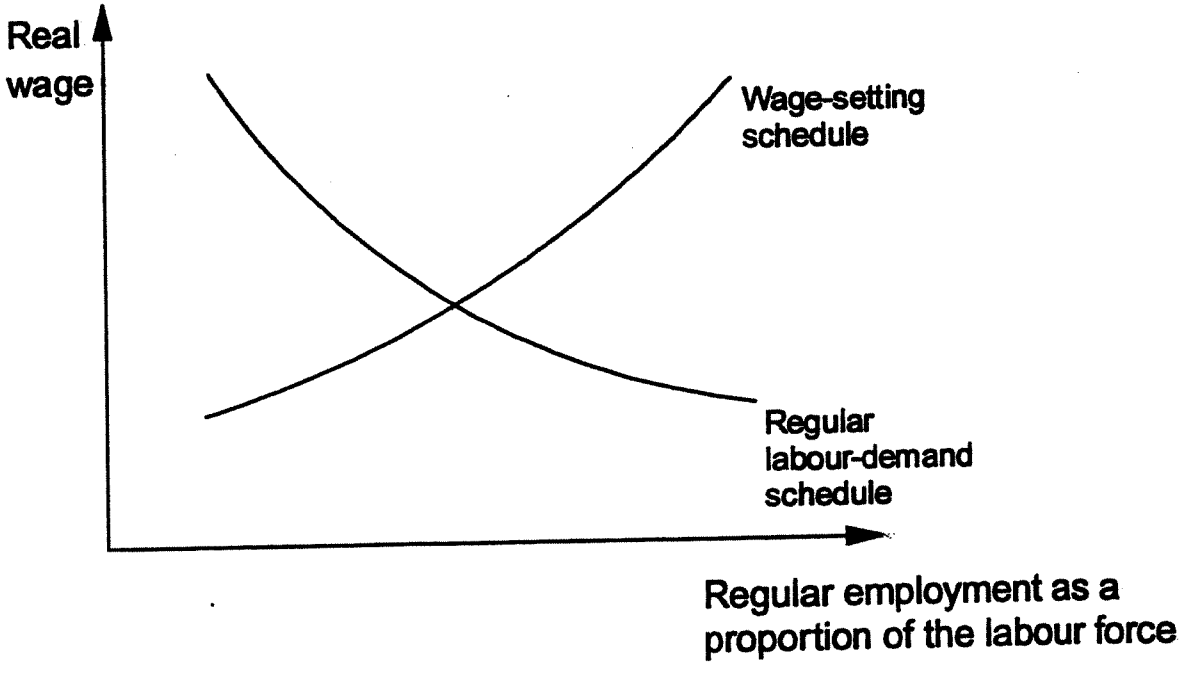

Figure 2: **Re-allocation of labour**

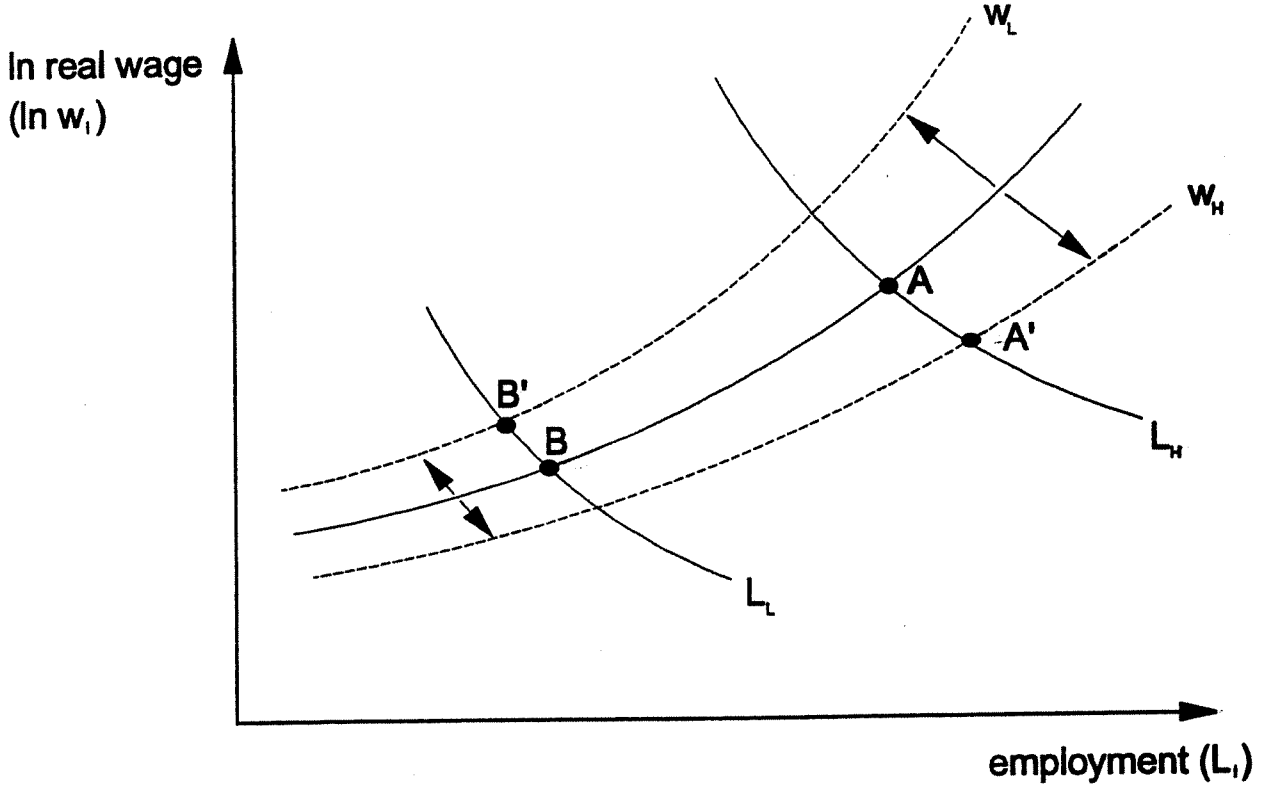

Table 1: The allocation of labour market expenditures in Western Europe

	Total expenditures in percent of GDP[a]		Active expenditures in percent of total[b]		Unemployment in percent of labour force	
	1985-89	1990-93	1985-89	1990-93	1985-89	1990-93
Belgium	4.3	3.9[c]	27.7	29.1[c]	10.3	9.9
Britain	2.3	1.7	33.5	32.8	9.6	8.5
Denmark	5.3[d]	6.3	22.1[d]	24.7	8.5	10.7
France	2.9	2.8	25.5	31.7	10.1	10.1
Germany[e]	2.3	3.2	41.8	43.6	6.3	6.7
Italy	1.5[f]	1.6[c]	44.1[f]	45.5[c]	10.6	11.1
the Netherlands	3.9	3.2	27.9	33.6	9.5	6.9
Pre-1995 EU[g]	2.8	2.8	29.8	32.8	11.1	9.7
Sweden	2.6	4.0	70.6	55.6	2.1	4.2

a) Total labour market expenditures include active measures, unemployment compensation and early retirement for labour market reasons.
b) The active measures are given in Table 2.
c) 1990-92.
d) 1986-89.
e) For 1985-90 Western Germany; for 1991-93 the whole of Germany.
f) 1985-88.
g) Only the twelve countries being members in 1994 are included.

Source: OECD Employment Outlook, various issues.

Table 2: The allocation of active labour market expenditures between different programmes in Western Europe (percent of total active expenditures)

	Public employment services and administration		Labour market training		Youth measures		Job creation		Disability programmes	
Country	1985-89	1990-93	1985-89	1990-93	1985-89	1990-93	1985-89	1990-93	1985-89	1990-93
Belgium	14.4	16.3[a]	10.4	19.5[a]	0.8	0.0[a]	61.1	50.0[a]	12.9	13.7[a]
Britain	19.2	28.3	17.9	32.5	32.1	29.6	27.2	4.1	3.8	5.2
Denmark	7.7[b]	6.4	44.9[b]	23.2	20.9[b]	18.9	1.7[b]	25.0	24.2[b]	26.1
France	16.6	14.7	38.0	40.2	31.1	24.9	6.9	12.8	6.7	7.6
Germany[c]	23.2	16.3	28.8	36.2	5.3	3.8	20.5	26.2	22.2	17.2
Italy	12.5[d]	10.9[a]	4.4[d]	2.2[a]	83.0[d]	86.8[a]	0.0[d]	0.0[a]	0.0[d]	0.0[a]
the Netherlands	7.1	11.8[a]	19.1	17.9[a]	4.9	6.0[a]	5.4	7.6[a]	63.3	56.8[a]
Pre-1995 EU[e]	13.7	12.8	25.0	26.5	21.4	22.3	22.0	21.3	17.5	16.7
Sweden	12.4	9.9	27.2	35.6	6.7	8.6	13.9	10.8	39.8	35.0

a) 1990-92.
b) 1986-89.
c) For 1985-90 Western Germany; for 1991-93 the whole of Germany.
d) 1985-88.
e) Only the twelve countries being members in 1994 are included.

Source: OECD Employment Outlook, various issues.

Table 3: The impact on the aggregate employment rate of increasing participation in re-training programmes by one percentage point of the labour force in the economy in the model given by equations (3) - (9).

	n_H=0.98 n_L=0.94	n_H=0.925 n_L=0.875	n_H=0.95 n_L=0.85	n_H=0.95 n_L=0.75
β=1	0.24	0.16	0.32	0.44
β=0.5	0.28	0.12	0.28	0.36

In all cases in the table we start out from a situation without training programmes, i.e. with $p = 0$, and set $\varepsilon = 0.1$ in equations (5) and (6) (the Blanchflower-Oswald estimate).

Table 4: Basic characteristics of the data.

Variable	Period	Mean	S.D.	Min.	Max.
Total regional jobless rate	1966-90	4.5	2.2	1.2	15.9
Accommodation ratio of job creation programmes	1966-90	26.9	9.0	9.6	62.3
Accommodation ratio of training programmes	1966-90	18.1	9.6	2.1	65.3
Proportion of young people in job creation programmes	1981-88	59.8	10.0	28.8	80.0
Proportion of young people in training programmes	1981-88	37.2	5.8	24.3	53.7
Accommodation ratio for young people in job creation programmes	1981-86	27.9	7.1	10.3	42.1
Accommodation ratio for young people in training programmes	1981-86	14.1	3.2	7.5	23.0

Notes:

See the appendix for variable definitions and sources.

Table 5. Estimated equations for the regional jobless rate, 1966-90. Levels.

Independent variables	OLS (1)	OLS (2)	OLS (3)	OLS (4)	IV (5)	IV (6)	IV (7)
Regional jobless rate lagged	0.524 (15.15)	0.540 (15.40)	0.560 (15.72)	0.547 (16.36)	0.392 (4.80)	0.417 (4.97)	0.603 (6.22)
Job creation accommodation ratio	0.012 (2.30)	0.020 (4.94)			0.074 (6.23)	0.037 (5.13)	0.015 (1.60)
Job creation accommodation ratio lagged			0.034 (6.99)	0.025 (6.41)			
Training accommodation ratio	-0.036 (6.56)	-0.007 (1.92)			0.038 (2.10)	0.012 (2.66)	0.012 (2.48)
Training accommodation ratio lagged			0.017 (3.25)	0.012 (3.71)			
National jobless rate		1.060 (24.04)		1.103 (26.31)		1.072 (22.64)	1.097 (22.89)
National jobless rate lagged		-0.711 (13.68)		-0.723 (14.44)		-0.590 (6.79)	-0.745 (7.79)
Regional dummies	yes	yes	yes	yes	yes	yes	yes
Time dummies	yes	no	yes	no	yes	no	no
Test for coefficient equality	6.79	5.07	2.45	2.47	1.93	2.85	0.30
s^2 (levels)	0.42	0.45	0.41	0.43	0.64	0.49	0.48
Sargan test for instrument validity					2.97 *df*=2	12.76 *df*=2	4.04 *df=2*
1st order test for serial correlation	1.54	0.06	-0.22	0.58	1.64	1.04	-0.54

Notes:

(i) There are 600 observations.

(ii) Absolute values of t-ratios in parentheses.

(iii) All equations include a constant term.

(iv) All independent variables are treated as endogenous in the IV regressions. The instruments in column 5 (instrument set I) include one-period lags of the independent variables, dummies, the number of seats from the region in the Swedish Parliament for the Social Democratic Party, the Left Party and the Centre Party divided by the total number of seats from the region, and the number of seats from the region for the parties in government divided by the total number of seats from the region. The instruments in column 6 (instrument set II) are the one-period lags of the independent variables included in set I, regional dummies, the national jobless rate, and national accommodation ratios for job creation programmes and training, respectively. The instruments in column 7 (instrument set III) are the same as in set II, but the lagged regional accommodation variables have been replaced with the political variables used in set I.

(v) The test for coefficient equality refers to the accommodation ratios for job creation and training. The critical value for the tests of coefficient equality and serial correlation is 1.96 at the 5 percent level of significance and the critical value for the Sargan test is 5.99.

Table 6. Estimated equations for the regional jobless rate, 1973-90. First differences.

Independent variables	OLS (1)	OLS (2)	IV (3)	IV (4)	IV (5)
Regional jobless rate lagged	-0.219 (4.25)	-0.193 (4.16)	0.379 (1.70)	0.401 (2.19)	0.652 (2.41)
Job creation accommodation ratio	-0.002 (0.14)	0.008 (0.73)	0.045 (0.98)	0.010 (0.88)	-0.006 (0.34)
Training accommodation ratio	-0.026 (2.64)	-0.005 (0.67)	-0.075 (2.30)	0.013 (1.81)	0.001 (0.10)
National jobless rate		1.181 (16.54)		1.072 (16.97)	1.103 (18.13)
National jobless rate lagged		0.028 (0.34)		-0.563 (3.37)	-0.821 (2.95)
Test for coefficient equality	2.18	1.47	3.45	-0.25	-0.45
Time dummies	yes	no	yes	no	no
s^2 (levels)	0.22	0.24	0.36	0.38	0.43
Sargan test for instrument validity			1.28 *df*=2	4.01 *df*=2	3.68 *df*=2
2nd order test for serial correlation	-2.62	-2.81	-1.68	-1.71	-1.68

Notes:

As for Table 5, (ii) and (v).

(i) There are 432 observations.

(ii) All t-ratios and test statistics are robust to heteroskedasticity.

(iii) Equations in columns 1 and 3 include a constant term.

(iv) The instruments are set I in column 3, set II in column 4 and set III in column 5. See Table 5 footnote (iv) for descriptions of the instrument sets.

Table 7: Estimated equations for the regional jobless rate, 1971-90. Four-year non-overlapping averages.

	Levels					First differences				
Independent variables	OLS (1)	OLS (2)	IV (3)	IV (4)	IV (5)	OLS (6)	OLS (7)	IV (8)	IV (9)	IV (10)
Job creation accommodation ratio	0.090 (5.20)	0.086 (7.84)	0.208 (3.73)	0.083 (4.00)	0.056 (2.51)	0.035 (1.54)	0.059 (3.54)	0.239 (1.83)	0.076 (4.74)	0.055 (1.92)
Training accommodation ratio	-0.024 (1.00)	-0.013 (0.94)	0.158 (1.15)	-0.000 (0.00)	0.020 (0.79)	-0.052 (3.66)	-0.011 (0.87)	0.054 (0.68)	0.008 (0.48)	0.014 (0.64)
National jobless rate		0.664 (5.04)		0.757 (3.15)	0.994 (3.96)		0.782 (6.11)		0.807 (4.72)	0.951 (4.26)
Regional dummies	yes	yes	yes	yes	yes	no	no	no	no	no
Time dummies	yes	no	yes	no	no	yes	no	yes	no	no
Test for coefficient equality	5.03	5.13	0.42	1.98	0.82	3.86	3.26	1.87	2.31	0.86
s^2 (levels)	0.35	0.35	0.65	0.36	0.39	0.29	0.30	0.76	0.31	0.32
Sargan test for instrument validity			0.16 *df*=2	10.40 *df*=2	0.23 *df*=2			2.91 *df*=2	6.03 *df*=2	0.10 *df*=2
Test for serial correlation	-0.48	-0.45	-0.07	-0.39	-0.07	-1.05	-1.26	-1.17	-1.15	-1.15

Notes:

As for Table 5, (ii) and (v).

(i) There are 120 observations.

(ii) In columns 6-10, all t-ratios and test statistics are robust to heteroskedasticity.

(iii) Equations in columns 1-6 and 8 include a constant term.

(iv) The instruments are set I (as four-year averages) in columns 3 and 8, set II in columns 4 and 9, and set III in columns 5 and 10. See Table 5 (iv) for descriptions of the instrument sets.

(v) The test for serial correlation is first order in columns 1-5 and second order in columns 6-10.

Table 8: Estimated equations for the regional jobless rate. First differences.

	1981-88					1981-86				
Independent variables	OLS (1)	OLS (2)	IV (3)	IV (4)	IV (5)	OLS (6)	OLS (7)	IV (8)	IV (9)	IV (10)
Regional jobless rate lagged	-0.118 (3.28)	-0.111 (2.65)	0.186 (0.76)	0.375 (0.61))	-0.137 (0.91)	-0.072 (1.39)	-0.037 (0.85)	0.207 (0.75)	-0.101 (1.37	-0.497 (2.41)
Job creation accommodation ratio	0.011 (1.31)	0.027 (3.02)	0.091 (2.61)	-0.068 (0.69)	0.020 (0.32)	0.027 (2.31)	0.019 (1.39)	0.129 (2.38)	0.015 (0.63)	0.086 (1.37)
Training accommodation ratio	-0.099 (17.03)	-0.067 (5.25)	-0.193 (2.88)	-0.106 (1.03)	0.098 (0.44)	-0.088 (7.31)	-0.087 (5.36)	-0.180 (2.33)	-0.050 (1.91)	0.052 (1.10)
Proportions of young people in job creation	-0.010 (1.77)	0.003 (0.79)	-0.051 (1.22)	0.086 (1.32)	0.019 (0.68)					
Proportion of young people in training	-0.037 (2.12)	-0.065 (4.11)	0.109 (1.10)	-0.629 (1.53)	-0.055 (0.27)					
Job creation accommodation ratio for young people						-0.049 (3.01)	-0.006 (0.73)	-0.051 (0.66)	0.002 (0.09)	-0.043 (1.06)
Training accommodation ratio for young people						-0.012 (0.28)	0.057 (2.72)	0.261 (1.32)	0.050 (2.27)	0.042 (0.25)
National jobless rate		0.798 (6.81)		0.253 (0.30)	1.156 (3.33)		0.993 (8.29)		1.075 (4.39)	1.701 (4.65)
Time dummies	yes	no	yes	no	no	yes	no	yes	no	no
s^2 (levels)	0.11	0.15	0.22	1.15	0.76	0.12	0.13	0.31	0.14	0.49
Test for coefficient equality	8.77	6.48	2.91	0.37	-0.38	5.80	4.57	2.56	1.63	0.48
Sargan test for instrument validity			6.56 *df*=2	0.66 *df*=2	2.66 *df*=2			0.21 *df*=2	7.37 *df*=2	4.64 *df*=2
2nd order test for serial correlation	-0.41	-2.17	0.58	-1.46	-1.33	-0.58	-1.47	-1.00	-1.79	-1.41

Notes:

As for Table 5, (ii) and (v).

(i) There are 192 observations in columns 1-5 and 144 observations in columns 6-10.

(ii) All t-ratios and test statistics are robust to heteroskedasticity.

(iii) Equations in columns 1,3,6 and 8 include a constant term.

(iv) The instruments are set I in columns 3 and 8, set II in columns 4 and 9, and set III in columns 5 and 10. All sets have been amended with lagged values of the targeting variables included in the regressions. See Table 5 (iv) for descriptions of the instrument sets.

Appendix: Variables and data sources.

The data used have been compiled by Marie Heiborn and Thomas Östros, Uppsala University. The original sources are *Statistics Sweden: Labour Force Surveys; The National Labour Market Board: Labour Market Statistics* and unpublished statistics from the National Labour Market Board.

The published labour force statistics have been adjusted so as to include the participants in training programmes. Half the number of participants in youth teams has been added to the number of openly unemployed and half the number added to the number of participants in job creation measures. Training programmes include in-plant training for 1966-88. Young people are defined as the age group 18-24 years. The data on young people in training schemes exclude in-plant training.