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TEMPORARY ACTIVE LABOUR MARKET PROGRAMMES – POTENTIAL EFFECTS ON UNEMPLOYMENT*

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This paper assesses the potential effects of temporary active labour market programmes on unemployment and regular employment. The effect of such programmes is analysed in the framework of a (partial) flow equilibrium model, which explicitly takes into account the potential changes in the programme participants' probability of gaining regular work and/or changes in the average length of future employment contracts of the programme participants (average separation rate). We will also discuss the potential wage setting effects of active labour market policies and indicate how the equilibrium unemployment may be affected. (JEL J63, J64, J68)

1. Introduction

In the theoretical literature very little attention has been paid to modelling explicitly the effects of active labour market policies on labour market outcomes, i.e. on the level of unemployment and regular sector employment. We will use a simple flow equilibrium model of the labour market in order to investigate this matter. Such models have been recently developed, for instance, by Blanchard and Summers (1989) and Pissarides (1990), based on early contributions, such as Holt (1970), Perry (1972) and Marston (1976). This paper adds to this literature by explicitly focusing on labour market programmes that involve the participants in training, relief work or other government financed activity temporarily, i.e. for a certain time period only.

The basic idea of the model is that programme participation (potentially) changes the personal characteristics (skills, attitude and motivation for work), search behaviour, and/or productivity of the participants (or employers' perception of the participants' productivity compared with the unemployed). Programme participation will therefore affect the participants' probability of gaining regular work. Additionally, there may be longer term effects of programme participation in form of changes in the average length of future employment contracts of the programme participants (average separation rate).

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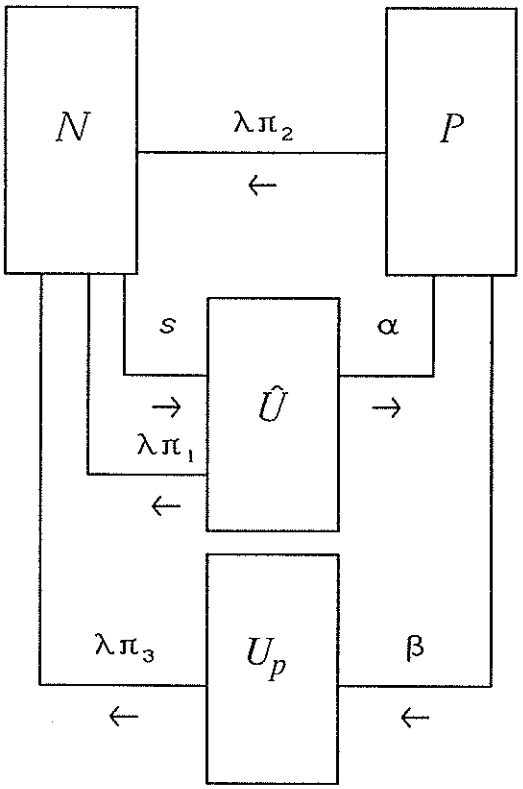

Figure 1. Flow diagram: Steady state in the labour market with an active labour market policy.

The government goal is defined explicitly as enhancing regular sector employment (regular jobs in private and public sector) rather than a concern for the general level of employment or open unemployment.[1] The very elementary aim of the model is to clarify the conditions under which an introduction of an active labour market policy will improve the steady state outcome in the labour market in terms of regular employment.

This partial flow equilibrium analysis results in a steady state relationship between widely defined unemployment, i.e. including open unemployment and programme participants, and vacancies, the Beveridge curve. This widely defined U-V-curve is affected by the chosen level of active labour market intervention. This enables us to derive useful propositions about the relationship between the movements of the Beveridge curve and the efficiency of the labour market policies.[2]

The partial nature of the analysis raises questions about the general equilibrium outcome in the labour market. Will the partial results sustain when the effects of the active labour market policies on wage setting as well as on labour market matching are taken into account? Although an analytical treatment is not provided, some of the relevant issues will be discussed in the latter part of the paper.

2. *Temporary labour market programmes in a flow equilibrium*

2.1 The basic model

Consider a labour market which is characterised by a flow equilibrium in accordance with figure 1. The total active labour force L can be assigned to different labour market states: persons in regular open market employment N, in participating labour market programmes P, or in open unemployment. Persons in open unemployment can be further characterised by whether they have previously participated in a labour market programme or not. The stock of persons in open unemployment thus consists of $\hat{U}$, those who have not participated in a government programme, and of U_p, post-programme participants, who continue to be unemployed.

In order to focus on the effects of active policy measures on regular employment, we will define unemployment in a wider sense, $U = \hat{U} + U_p + P$. We then explicitly define programme participation as hidden unemployment and the goal of the government as increasing regu-

[1] *There is another approach represented, for instance, by Calmfors & Horn (1986) where the active employment policy is given a totally different interpretation. Calmfors & Horn definition of active policy involves a government policy rule, where the government has a target level of total employment. If the actual employment deviates from this level, for instance because unions set the wages too high, a certain fraction of the deviation is eliminated by changing the government sector permanent employment. This fraction is then the degree of »activism» of policy. This definition clearly differs from what we have in mind.*

[2] *Naturally, the U-V-curve is also affected by other exogenous variables that affect average matching intensity and average separation rate, such as unemployment insurance and the structure of labour supply and demand in general. These factors can easily be incorporated in the model.*

lar employment in the open sector. We assume that active measures are primarily concerned with interrupting spells of unemployment, by offering certain groups of the unemployed training and/or work experience. It is, of course, possible that the government goal in introducing active policy measures is, in fact, the reduction of open unemployment (e.g. for political reasons). It is, however, questionable if the government can expand public sector employment and/or other activity only to reduce open unemployment in the long run due to the crowding out of private sector employment.

The flows between the different states in the labour market are governed by flow probabilities, about which the following assumptions are made. The inflow probability to unemployment, s, is an exogenously given rate at which regular jobs break up. These persons end up in the pool of unemployed, $\hat{U}$, from which they can escape either back to regular employment with probability $\lambda\pi_1$ or to a labour market programme with probability α. The outflow probability to regular jobs consists of two components of which λ captures the effect of the state of the labour market and π_1 is the component specific to persons in the pool $\hat{U}$.

Labour market programmes are assumed to be temporary so that the policy maker designs the duration of a completed spell in the programme.[3] The policy maker determines two parameters: α, the inflow probability to programmes and the maximum duration of a completed spell in the programme, D. The inflow probability back to open unemployment, β, is endogenously determined in the model.

Programme participants, in the pool P either complete the designed programme and return to open unemployment or they interrupt programme participation in order to take up regular jobs. The outflow probability to regular jobs for programme participants may differ from that of pre-participation, and is given by $\lambda\pi_2$. The reason is that during participation individual search behaviour is affected. Either search intensity is reduced (and therefore the probability of finding a job) or increased, depending on the nature of the programme.[4] The effect of the state of the labour market on the exit probability is assumed to be the same independent of the labour market status.

In addition, once the programme spell is completed, persons who enter open unemployment may have yet another exit probability to regular jobs, $\lambda\pi_3$, and hence they are assigned to another pool of unemployed, U_p. The idea here is that participating in a labour market programme should affect the individual probability of gaining regular employment. Specifically, if the programme participation enhances personal skills, search intensity and so on, the average exit probability of post-participants is higher than that of non-participants.[5] So, in an analogy to the well-known analysis of state-dependence in unemployment, we analyse the case where individual exit rates from unemployment may exhibit »programme-participation» -dependence.

We do not specifically model job acceptance decisions by the unemployed, but it is implicitly assumed that job offers are accepted because lifetime income from regular work is higher than from unemployment (and from participation in a labour market programme). To ensure that offers of programme placements are accepted by the unemployed, government can either make the eligibility for unemployment benefits conditional on acceptance or increase the compensation during participation above the level of normal unemployment benefits.

In the steady state, assuming $\Delta L = 0$, the change in the number of persons in different labour market states is equal zero. This enables us to write down the following flow equilibrium constraints:

$$(1) \quad sN = \lambda\pi_1\hat{U} + \lambda\pi_2 P + \lambda\pi_3 U_p$$

$$(2) \quad sN = \lambda\pi_1\hat{U} + \alpha\hat{U}$$

$$(3) \quad \alpha\hat{U} = \beta P + \lambda\pi_2 P$$

[3] *The model then does not aim to analyse policy measures which affect labour force participation, such as early retirement schemes. Such schemes usually involve permanent »participation» in the programme, and flows in and out of the labour force, which critically changes the nature of the problem.*

[4] *As an example, we can think of a training course, during which time spent on job search may be naturally reduced. On the other hand some active measures, like intensified counselling or job search assessment courses may improve search intensity.*

[5] *In the more unlikely case that programme participation has an adverse effect on post-programme search intensity, π_3 is smaller than π_1.*

$$(4) \quad \beta P = \lambda \pi_3 U_p$$

Define $\theta_2 = \frac{\pi_2}{\pi_1}$ and $\theta_3 = \frac{\pi_3}{\pi_1}$ and observe that $U = \hat{U} + U_p + P$ to rewrite (1) as:

$$(5) \quad sN = \lambda \pi_1 U \left(\frac{\hat{U}}{U} + \theta_2 \frac{P}{U} + \theta_3 \frac{U_p}{U} \right)$$

From (4) we have that:

$$(6) \quad \frac{U_p}{U} = \frac{\beta}{\lambda \pi_3} \frac{P}{U} = \kappa q$$

where $\kappa = \frac{\beta}{\lambda \pi_3} = \kappa(\beta, \lambda)$ and $q = \frac{P}{U}$. Noting that $\frac{\hat{U}}{U} = 1 - \frac{P}{U} - \frac{U_p}{U} = 1 - q - \kappa q$,

substitution into (5) gives:

$$(7) \quad sN = \lambda \pi_1 U \{ 1 + q [(\theta_2 - 1) + (\theta_3 - 1) \kappa] \}$$

From (3) we can derive following expression for $q = \frac{P}{U}$, the share of programme participants in total unemployment in the steady state:

$$q = \frac{P}{U} = \frac{\alpha}{\beta + \lambda \pi_2} \frac{\hat{U}}{U} = \rho (1 - q - \kappa q)$$

where

$$\rho = \frac{\alpha}{\beta + \lambda \pi_2} = \rho(\alpha, \beta, \lambda)$$

$$(8) \quad \Rightarrow q = \frac{\rho}{1 + \rho + \rho \kappa} = q(\rho, \kappa)$$

β, however, is endogenously determined in the model. It can be shown that using the knowledge that the maximum duration in a programme is D, allows us to write:

$$(9) \quad \beta = \frac{\lambda \pi_2 S_p(D)}{1 - S_p(D)} = \frac{\lambda \pi_2 \hat{e}}{1 - \hat{e}} = \beta(D, \lambda)$$

where $S_p(t)$ is the survival function in programme participation, and when evaluated at D it equals $S_p(D) = \exp(-\lambda \pi_2 D) = \hat{e}$.[6]

Define following functions:

$$(10) \quad m = m(\kappa) = (\theta_2 - 1) + (\theta_3 - 1)\kappa$$

$$(11) \quad h = h(\rho, \kappa) = 1 + qm$$

Now substitute (11) into (7) to give:

$$sN = \lambda \pi_1 U h(\rho, \kappa)$$

$$(12) \quad \lambda \frac{U}{N} h(\rho, \kappa) = \frac{s}{\pi_1}$$

Now assume that λ, an index of the state of economy, which affects the inflow rates to regular employment, is a function of job availability, measured by unemployment and vacancy rates, i.e. $\lambda = \lambda \left(\frac{U}{N}, \frac{V}{N} \right) = \lambda (u, v)$, which is assumed to be homogeneous of degree zero, and then define a function $\hat{\lambda}(u, v) = \lambda \left(\frac{U}{N}, \frac{V}{N} \right) \frac{U}{N} = \lambda(u, v) u$. $\hat{\lambda}(u, v)$ then exhibits constant returns to scale and is increasing in both arguments, i.e. $\hat{\lambda}_u > 0$, $\hat{\lambda}_v > 0$. Essentially, $\hat{\lambda}(u, v)$ is the endogenous part of a matching function.[7]

We can then conclude that the steady state is defined by:

$$(13) \quad \begin{cases} \hat{\lambda}(u, v) h(\rho, \kappa) = \frac{s}{\pi_1} = \text{constant} \\ \rho = \rho \left[\alpha, \beta, \hat{\lambda} \left(1, \frac{v}{u} \right) \right] \\ \kappa = \kappa \left[\beta, \hat{\lambda} \left(1, \frac{v}{u} \right) \right] \\ \beta = \beta \left[D, \hat{\lambda} \left(1, \frac{v}{u} \right) \right] \end{cases}$$

This is the Beveridge curve, i.e. the flow equilibrium in the labour market can be expressed as a relationship between unemployment and vacancy rates. The difference between traditional U-V-curve analysis and the proposed framework, however, is that the unemployment rate is defined widely, i.e. including those in different labour market programmes.[8]

[6] *Details are available from the author.*

[7] *C.f., for instance, Blanchard & Diamond (1989), Holmlund & Linden (1990), Pissarides (1990).*

[8] *In accordance with common empirical observation, we are interested in a negative relationship between unemployment and vacancy rates. The conditions under which the U-V-curve defined by (13) slopes downwards are fairly general and are available from the author.*

2.2 *Introducing a labour market programme: is it good policy?*

When does the introduction of an active labour market programme make sense? The answer to this problem is relatively easy in the framework presented above, since we have explicitly defined the policy goal of the government. In the long run, the labour market should produce higher open market employment in the presence of the programme than without such intervention, and lower unemployment, defined in the wide sense. If a policy can achieve this goal we call it efficient. Since the separation rate, s, is assumed to be constant in this basic model, the only source for different outcomes in the two cases is the average outflow rate from unemployment to regular employment, i.e. the average hiring rate. The necessary condition for an efficient active labour market policy is that the average hiring rate into regular employment is improved.

The average hiring rate to regular employment in the absence of any intervention is simply:

$$(14a)\quad \bar{\pi}_A = \left(\frac{H}{U}\right)_A = \lambda\pi_1$$

When the active policy measure is introduced, the average hiring rate becomes:

$$\bar{\pi}_{LMP} = \left(\frac{H}{U}\right)_{LMP} = \frac{\lambda\pi_1\hat{U} + \lambda\pi_2 P + \lambda\pi_3 U_p}{U}$$

$$(14b)\quad = \lambda\pi_1(n + \theta_2 q + \theta_3\kappa q)$$

where $n = \hat{U}/U$. The labour market outcome will improve from the introduction of a programme if:

$$\bar{\pi}_{LMP} > \bar{\pi}_A$$

$$\Leftrightarrow \lambda\pi_1(n + \theta_2 q + \theta_3\kappa q) > \lambda\pi_1$$

$$(15)\quad \Leftrightarrow (n + \theta_2 q + \theta_3\kappa q) > 1$$

Since $n + q + \kappa q = 1$, the condition (15) reduces to:

$$\Rightarrow q[(\theta_2 - 1) + (\theta_3 - 1)\kappa] > 0$$

$$(16)\quad \Leftrightarrow qm > 0$$

The above condition is determined by the sign of $m = (\theta_2 - 1) + (\theta_3 - 1)\kappa$, since the share of participants in the total unemployment is always positive, i.e. $q = \frac{P}{U} > 0$. Also $\kappa = \frac{\beta}{\lambda\pi_3} > 0$, so the crucial parameters are those determining the outflow rates from different unemployment states. To investigate when the above condition is met, it is useful to separate three main cases, of which the two first are fairly straightforward.[9]

In case 1, the average outflow rate of those participating in a labour market programme is reduced, i.e. $\pi_1 > \pi_2$. Furthermore, post-programme outflow rate is also lower than that of pre-participation, $\pi_1 > \pi_3$. This implies $\theta_2 < 1$, $\theta_3 < 1$, and so $m < 0$ always holds. Consequently, the average hiring rate is always smaller in the presence of a programme than without it.

In case 2, both the »during participation» and post-participation average outflow rates are higher than that of non-participants, i.e. $\pi_1 < \pi_2$ and $\pi_1 < \pi_3$. It follows that $\theta_2 > 1$, $\theta_3 > 1$, and $m > 0$ always holds. Consequently, the average hiring rate is always higher in the presence of a programme than without it.

Perhaps the most interesting case is the third one, where the average outflow rate is reduced during participation in the programme, i.e. $\pi_1 > \pi_2$, but is improved after participation, so that $\pi_1 < \pi_3$. The case 3 is thus the one with $\theta_2 < 1$, $\theta_3 > 1$. It is obvious that

a) $m > 0$, if $\kappa > \frac{1-\theta_2}{\theta_3 - 1}$ and consequently, the average hiring rate is always higher in the presence of a programme than without it, and that

b) $m < 0$, if $\kappa < \frac{1-\theta_2}{\theta_3 - 1}$ and consequently, the average hiring rate is always smaller in the presence of a programme than without it.

It can shown that the condition for an efficientprogramme in case 3 reduces to

$$D < -\frac{1}{\lambda\pi_2}\log K,$$

[9] *The fourth case with higher relative hiring rate during participation and lower after participation in a labour market programme is perhaps quite unlikely and will be omitted.*

$$\text{where } K = \frac{\pi_3(\pi_1 - \pi_2)}{\pi_1(\pi_3 - \pi_2)} < 1 \text{ and } \log K = \log\left(\frac{\pi_3}{\pi_1}\right) + \log(\pi_1 - \pi_2) - \log(\pi_3 - \pi_2) < 0.$$

So, the crucial factor affecting the efficiency of the programme is the maximum duration of participation: the shorter this duration whereby the post-participation outflow rate from open unemployment, nevertheless, is improved, the more likely it is that the programme has a beneficial effect on regular employment.

The condition for an efficient programme includes λ, the index which describes the state of the labour market. It becomes obvious that, *ceteris paribus*, the worse the labour market situation, i.e. the smaller λ, the more likely it is that the programme improves labour market outcome. Our model therefore suggests that in a very tight labour market, the introduction of a labour market programme will not pay off in case 3.

It is also clear that the bigger the improvement in post-programme outflow rate compared with the initial outflow rate from open unemployment $\left(\frac{\pi_3}{\pi_1}\right)$, or the smaller the reduction in the during participation exit rate $(\pi_1 - \pi_2)$, the longer participation is compatible with programme efficiency, *ceteris paribus*. However, the larger the post-programme exit rate compared with the during participation exit rate, $(\pi_3 - \pi_2)$, the smaller is the value of log K and the shorter must be the maximum duration of the programme, if it were to be efficient.

It is then obvious that an active labour market policy cannot be efficiently pursued if the state specific outflow rates to regular employment for persons in programme participation and after completing programme participation are lower than that of non-participants (case 1). In case 2, both the »during participation» and post-participation average outflow rates are higher than that of non-participants and the average hiring rate is always higher in the presence of a programme than without it. When the average outflow rate is reduced during participation in the programme, but the post-participation rate is improved our analysis suggests that the improvement of post-participation outflow rate has to be big enough to cancel the reduction in during participation in case 3. This improvement can be of a lesser degree if it can be established in a shorter duration of programme participation, i.e. the larger β is associated with improvement in exit probability after completing.

The policy maker can then influence the steady state outcome in the labour market by changing either the inflow probability to programmes, α, or by changing the average duration of completed spells in the programme, or implicitly the outflow probability β. In this partial model, it is impossible to determine the optimal level of policy intervention. The obvious limit to increasing programme participation to involve all unemployed in the favourable case, is that of financial constraint and possible decreasing returns at margin to increased number of participants in the programme, which are not dealt with in our partial model. We can merely suggest the direction of an effect due to changes in policy parameters.

The discussion above already revealed under which conditions the introduction of an active policy measure has a desirable effect. This leads us directly to the effect of changes in parameter α, since the introduction of a policy measure is essentially equivalent to introduction of a positive value of α. It can be shown that:

(i) $m < 0$, i.e. in cases 1 and 3b above,

$$\Rightarrow \frac{du}{d\alpha} > 0$$

(ii) $m > 0$, i.e. in cases 2 and 3a above,

$$\Rightarrow \frac{du}{d\alpha} < 0$$

These results are the ones expected from the previous discussion. Increasing programme participation has then favourable effect on steady state employment under conditions of programme efficiency. The resulting shifts of the U-V-relationship after an increased inflow to labour market programmes are shown in figure 2. In terms of the widely defined U-V-curve, increased inflow probability to a programme will shift the curve outwards, when the programme is inefficient. If the programme is efficient in increasing the average hiring rate, the U-V-curve will shift inwards, when α increases.

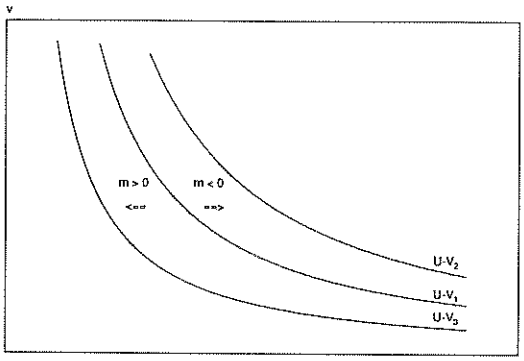

Figure 2. The shifting U-V-curve due to an inefficient and efficient active labour market policy.

2.3 Further modification of the model

In the basic model we treated the average inflow rate s into unemployment as exogenously given. It is, however, possible that the average separation rate in regular jobs is affected by the introduction of government policy. This may be the case, for instance, if programme participation upgrades skills, work habits and so on, which would make the employment contracts of those who have previously participated in the labour market programme more stable. The effect of a reduction in the average separation rate may be equally efficient in increasing the regular employment in the steady state. The model can be modified in order to take this into account.

Briefly, it can be stated that if programme participation reduces the (post-programme) separation rate from regular employment for those involved, the steady state open market employment will always be higher than in the case when inflow rate remains unaffected (and vice versa). This also implies that even if the average hiring rate is not improved (or is even worsened), like in cases 1 and 3b, the resulting lower separation rate will counteract the negative effect on regular employment, and even cancel it. Putting it differently, the immediate effects of the programme participation may not be favourable or may even be counterproductive, but the long-run effects due to a more qualified, skilled or motivated labour force may still be positive as the increased productivity of these workers will tend to make their employment contracts more stable. The effect on the separation rate may be quite important if a considerable proportion of unemployment is due to repeated unemployment spells concentrated on a small proportion on labour force, in which case the increased stability of these job contracts is more likely to have a positive effect on steady state employment.

Some of the results of the model presented above may be additionally modified if there are significant state-dependence effects in open unemployment. It is obvious that if individual exit probabilities deteriorate with the duration of unemployment there may be a stronger case for the introduction of active policy measures.[10] The sheer process of interrupting long spells of unemployment by offering these persons the possibility of escaping from open unemployment (thereby impeding further deterioration) will then produce a higher average outflow rate from the unemployment pool. Negative state dependence in unemployment will, of course, not ensure the efficiency of a policy measure. Merely that it is more likely to be efficient.

It is also obvious that the introduction of a programme, whether efficient or not, will reduce or even abolish any initial state dependence in open unemployment prior to participation. If in addition the programme is efficient in producing a higher exit probability for post-programme participants, i.e. when we have positive »programme participation dependence», the resulting overall exit rate would exhibit positive state dependence rather than negative. Because of the self-generating nature of state dependence on unemployment (i.e. hysteresis), there will be additional advantages in introducing an active policy, since the process of hysteresis would work the other way round than is normally expected, i.e. the equilibrium unemployment would tend to be reduced.

The basic model focuses on a homogeneous labour force (prior to participation in the programme). There may be, however, significant individual differences in the initial separation and exit rates. Heterogeneity of the unemployed may offer additional possibilities for the policy maker to improve the efficiency of the programmes. The condition for an efficient programme in this case, however, crucially depends upon the identification different types of unemployed. If it is possible to identify individuals who are likely to profit most from

[10] *Assuming, of course, that negative duration dependence does not continue during programme participation.*

programme participation, in terms of increased exit probability from unemployment, targeting programme offers to those individuals will clearly improve the average hiring rate more than a non-selective policy. This is the case, of course, only if the programme is efficient in the first place.

In addition to the change in the average hiring rate, the marginal hiring rate may be affected by the introduction of the policy. This will affect the slope of the U-V-curve. Generally, the flatter the U-V-curve, the more favourable it is since an small increase in vacancies will reduce the potential equilibrium unemployment rate more than in the case of a steeper U-V-curve.[11]

3. *Temporary active labour market policies in general equilibrium*

Since the presented model is partial we are only able to analyse the potential movements of the equilibrium unemployment rate. The final outcome in the labour market can only be detected by introducing an equilibrating mechanism in the model such as wage setting, that determines the equilibrium point along the U-V-curve. The outcome of the partial analysis may be modified if the active government policy affected wage setting.

A general fear is that even if the partial flow equilibrium effects of active labour market policies are favourable, the general equilibrium effect may not be, because of crowding out effects via wage setting.[12] It is clear that if the introduction of an active policy increases wage pressure this will always tend to increase the equilibrium unemployment rate. We then want to find an answer to two related questions. First, what are the mechanisms which would lead to increased wage pressure due to an active labour market policy? Second, how likely is it that these effects on unemployment (if they exist and are opposite to those implied by the partial analysis) are so large that the conclusions of the partial analysis would be reversed?

Wages are affected by the outside options available to the workers.[13] When a labour market programme, such as a training programme or temporary relief work, is introduced this adds another alternative for workers in the event of a layoff: instead of remaining openly unemployed there is a positive probability that they will become labour market programme participants. As for open unemployment, the wage effect depends on the relative disutility of participating in the programme compared with regular employment. As suggested by Calmfors & Nymoen (1990) wages remain unaffected if workers consider open unemployment and labour market programmes as perfect substitutes.[14] In that case workers are indifferent between participating in the programme and remaining unemployed. If, however, the expected value of participating labour market programme is higher than that of open unemployment there should be some upward wage pressure from the active policy. The potentially increased value of (open or hidden) unemployment is not, however, the only factor that affects wages after the introduction of a labour market programme. In addition, wages are directly affected by the changes in the average matching intensity and the average separation rate.

One crucial question then is what is the expected value of the programme to the participants? As with open unemployment, the expected value of participation in a labour market programme has two main components. The first is the pecuniary compensation paid to participants and the second is the probability of gaining regular permanent employment. The pecuniary compensation while participating in the programme will affect wage setting in the same manner as will any unemployment compensation. Generally, the higher the compensation while in programme, the higher is the value of programme participation and the higher is the wage pressure. Also, the longer the duration of the programme spells, the bigger is the effect of the pecuniary compensation during participation.

It should be noted, however, that if the compensation during programme participation is in the range of normal unemployment benefits, there will be no additional wage pressure from

[11] *Details of the modifications of the basic model, when future employment contracts are affected, unemployment exhibits duration dependence or the labour force is heterogeneous, are available from the author by request as well as the analysis of the marginal hiring rate.*

[12] *C.f. Calmfors & Nymoen (1990), p. 416–417.*

[13] *C.f. Layard, Nickell & Jackman (1991), ch. 2 and 3 for a comprehensive survey on wage determination.*

[14] *Calmfors & Nymoen (1990), p. 416.*

this source. Moreover, if the programme is efficient, the value of participation is higher due to an increased probability of gaining regular employment and higher compensation is not needed to ensure voluntary participation. The policy implication, therefore, is that the government should ensure programme participation by means of eligibility rules rather than by increasing compensation while in programme.

The probability of gaining regular employment is important for the participants as long as the pecuniary compensation while participating is lower than income from regular employment and the participants would therefore prefer regular employment. Moreover, even if the compensation is equal to market wage, by the temporary nature of programme, participation will eventually come to end, and the post-participation exit rate from unemployment becomes a determinant of the expected value of participation. The higher the probability of gaining regular employment, the higher is the expected value of programme participation. As programme participation may also affect the duration of future employment contracts, this may also increase the expected value of programme participation, if separation probability is reduced.

The general equilibrium effect of a changing exit probability to regular employment due to the labour market programmes is therefore the most interesting here. If the average exit probability to regular employment is increased the widely defined U-V-curve shifts inwards implying higher potential steady state regular employment, i.e. the programme is efficient in the sense discussed above. This increased average exit probability will, however, increase the expected value of programme to the participants. Thus, in a wage setting context the prospect of becoming unemployed becomes less frightening, which tends to increase wage pressure. The effect of reduced post-participation separation rate from regular employment is analogous.

There are, however, additional general equilibrium effects. Increased exit probability to regular employment is equivalent to improved average matching intensity and firms will find it easier to fill vacancies. There is then more competition for available jobs, and firms can more easily resist the wage pressure.[15] A reduction in the average separation rate would also tend to reduce wages. Without an explicit model it is hard to state which of these opposing effects on wages will dominate. It is, however, clear that the effect of the increased expected value of participation on wages must be quite large to reverse both the reduction of potential equilibrium unemployment due to the inward shift of the U-V-curve and the effect of improved matching intensity on wages.

The discussed general equilibrium effect of an efficient programme is illustrated in figure 3, when the effect of the expected value of programme dominates the effect of increased matching intensity on wages. The equilibrium of the wage determination process is represented by the upward sloping curve labelled (W-S).[16] Increased wage pressure then makes the reduced form wage schedule (W-S) flatter, which tends to increase equilibrium unemployment. The (widely defined) U-V-curve will, however, shift inwards, from $(U\text{-}V)_1$ to $(U\text{-}V)_2$. The general equilibrium outcome clearly depends on whether the effect on wages is so large that this reduction in potential equilibrium unemployment is reversed. In figure 3, an increase in wage pressure from the initial $(W\text{-}S)_1$-schedule to $(W\text{-}S)_2$ is not large enough completely to crowd out the improvement in equilibrium unemployment. If the wage schedule, however, becomes as flat as indicated by $(W\text{-}S)_3$, general equilibrium unemployment will be higher after the introduction of the programme. If wage pressure remains constant or is reduced, the W-S-curve is unaffected or becomes steeper, and total unemployment is unambiguously reduced, as long as the U-V-curve shifts inwards.

The labour market programme may be inefficient in the sense that it does not improve the average matching intensity in the regular job market (or reduce the average turnover rate). Then the expected value to the programme participants (assuming that pecuniary compen-

[15] *Pissarides (1990), p. 18, notes also that an exogenous shift in labour productivity raises the demand for labour at given wages. In the case that participation in the labour market programme improves the average productivity of labour foce, the number of vacancies at given unemployment increases, which also makes wage setting schedule steeper. In the long run, however, vacancies and wage setting should remain unaffected of productivity changes, since wages should absorb (labour-augmenting) productivity changes fully.*

[16] *For the derivation of the reduced form wage setting schedule, see e.g. Layard, Nickell & Jackman (1991), p. 274–275.*

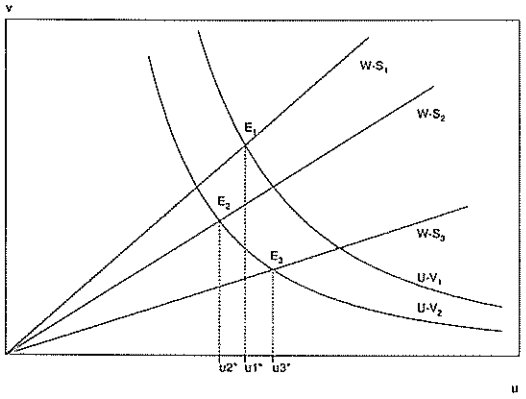

Figure 3. An example of the generation of possible equilibria in the labour market with an active labour market policy

sation is not higher than normal unemployment benefits) does not exceed the value of open unemployment, and the wage effects of the programme should be eliminated. Neither is the U-V-curve affected and the equilibrium unemployment rate would be left unaffected. Open unemployment and programme participation are perfect substitutes.

If, in fact, the probability of gaining regular employment is reduced due to programme participation, the expected value of (open and hidden) unemployment is reduced, and the wage effects should be opposite to those discussed above. Clearly, if the expected value of unemployment is reduced as is the case with an inefficient programme with no higher compensation than normal unemployment benefits, there will no additional wage pressure generated by the programme. There is, however, the problem that, nobody would voluntarily participate in a programme, which yields a lower expected value than is available from open unemployment. So, either the rules of the withdrawal of benefit entitlement would have to be relatively stringent or the pecuniary compensation would have to be higher than unemployment benefits. But in the latter case, if the government perceived the negative effect of the programme (both the outward shift of the U-V-curve and increased wage pressure due to higher compensation) and its policy goal is to increase regular employment, it would surely abandon the policy. The effect on open unemployment is ambiguous, since it may be reduced by the flow to programmes, which may explain why a government with a different policy goal may still want to introduce such a programme.

There is very little explicit modelling of general equilibrium effects of temporary labour market programmes focused in this study. Calmfors & Nymoen (1990) focused on the likely effects of active labour market policies on partial equilibrium outcome of wage setting. They do not extend the analysis to a full general equilibrium framework, omitting the flow equilibrium implications of active labour market policies, which are in focus in this study. Their conclusions may then be regarded as partial, as the efficiency of matching in the labour market is equally important determinant of equilibrium unemployment.

In their discussion Calmfors & Nymoen (1990) state that:

> »If workers prefer to be in a labour market programme rather than in open unemployment, an increased accommodative stance of labour market policies reduces the expected welfare loss in the event of a layout. This lessens the incentive for wage moderation,... If wages rise, employment falls and may do so to the extent that open unemployment actually increases,...[17]

This view is, in principle, in accordance to the one presented here: the welfare differences between labour market programmes and open unemployment may exert upward pressure on wages. They, however, maintain that these differences are likely to be big and that many programmes will be regarded as close substitutes for regular work, for instance, because participants are paid the going wage rate in relief work or because training programmes represent subsidized human capital accumulation. In our view it is mostly an empirical question how large these welfare differences are, but the following notions are still relevant.

Calmfors & Nymoen then implicitly regard programme participation as a permanent alternative available to unemployed workers.[18] If programmes are temporary, as most labour market programmes are, the specific rules of unemployment compensation for repeated spells of unemployment and programme participation become a crucial determinant of substitutability. The potential improvement of

[17] *Calmfors & Nymoen (1990), p. 416; the »accommodative stance of labour market policies» refers to a policy rule »according to which a certain percentage of disemployed workers are offered participation in a labour market programme».*

the probability of getting regular employment is the other important factor determining the value of participation, which (because of implications for the average increased matching intensity) has additional effects on wage setting as discussed above. Furthermore, in our view the government goal should be enhancing regular employment rather than reducing open unemployment, although we recognize that the political reasoning about labour market policies may confuse these goals in favour of focusing on the open unemployment (as also implied by Calmfors & Nymoen).

Finally, since the pursuit of active labour market policies is costly, the general equilibrium would be affected by financial constraints. The financial constraint will, of course, inhibit ever increasing allocation of resources to the active labour market policies, even if the effects of such policies taken on their own are arguably positive.[19] On the other hand, the effect of the active policies on wages may be affected if unions in centralised wage setting system know that labour market programmes, like unemployment benefits, are financed by taxes, which are extracted from the private sector and are then paid by all employed workers. This tends to moderate wage claims.[20] Without a formal general equilibrium model this question is left for further research.

4. Conclusion

The partial effect of temporary active policies as implicated by the movement of the widely defined U-V-curve is important on its own, since it is an indicator of the effectiveness of the policy measure in changing the average outflow and/or the average separation rate. It is therefore straightforward to test the efficiency of policy measures in increasing the long run regular employment through improved matching/increased duration of regular employment by estimating the appropriate equation for the U-V-curve, including the number of persons in various labour market programmes in the definition of unemployment rate and using an appropriate measure for inflow probability programmes.[21]

The changes in average matching intensity and average separation rate are important determinants of the general equilibrium outcome as well. In particular, if the programme is inefficient in improving the average matching intensity (or the duration of regular jobs), there is little reason for a government to stick to such policy whatever the wage effect may be, if the goal is to increase regular employment. Also, once the effect on the U-V-curve is detected, we are also in a better position to make judgements about the likely wage effects of the policy. The wage effect depends on how the expected utility of unemployment is affected by the possibility of participating in the programme. An efficient programme increases the value of unemployment because it acts as stepping stone to regular work, but in general equilibrium the effective labour supply is also increased due to improved matching intensity, which will counteract the increased wage pressure. Therefore, an active programme that improves matching intensity and/or reduces the average separation rate will always increase regular employment, as long as the adverse wage effects are controlled for. Clearly, the policy maker, once the partial effect of the programme is known, may improve the design of the programme in order to reduce the undesirable wage effects.

The U-V-relationship is a long-run concept based on the steady state partial equilibrium. The flow equilibrium nature of the model suggests some difficulties for the analysis of mass unemployment. For instance, using a standard matching function for generation of new hirings in the labour market is useful for the analysis of equilibrium unemployment. When the economy is characterized by mass unemploy-

[18] *C.f. Calmfors & Nymoen (1990), p. 441–443, where the wage effect of labour market programmes is analysed formally. The wages are set by unions based on maximising the expected utility of union members. Members may end up in four different states: continued employment with the current employer, alternative employment in another firm, open unemployment or labour market programme. The expected utility is then computed as if, once assigned to one of these states, the union members would remain permanently in that state. Clearly, people escape unemployment and do not participate in labour market programmes forever, which should be taken into account.*

[19] *This follows from the normal public finance distortions and crowding out of private sector at too high levels of taxation.*

[20] *C.f. Layard, Nickel & Jackman (1991), p. 129–130.*

[21] *See, Aarnio (1992) for an example of such an application.*

ment, indicating that the vacancy-unemployment ratio is very low, matching of unemployed job searchers and available vacancies is prevented by the lack of jobs, rather than by inefficiencies in matching. The active policies that aim to improve matching efficiency are then not very efficient means to deal with the mass unemployment problem in the short run. However, if increase in current unemployment involves hysteresis effects that will lead to an increase in long-run equilibrium unemployment rate, active policies may be useful in preventing this process.

References

Aarnio, O. (1992). »Labour Market Flows, the Beveridge Curve and Labour Market Policies in two Nordic Economies.» D.Phil. Thesis. University of Oxford.

Blanchard, O.J., and P. Diamond (1989). »The Beveridge Curve.» *Brookings Papers on Economic Activity*, No. 1, 1–76.

Calmfors, L. (1992). Lessons form the Macroeconomic Experience of Sweden. Seminar Paper No. 522, Institute for International Economic Studies, Stockholm University.

Calmfors, L., and H. Horn (1986). »Employment Policies and Centralized Wage Setting.» *Economica*, 53, 281–302.

Calmfors, L., and R. Nymoen (1990). »Nordic Employment.» *Economic Policy*, No. 11, 397–448.

Holmlund, B., and J. Linden (1990). Job Matching, Temporary Public Employment and Equilibrium Unemployment. Uppsala University, mimeo.

Holt, C.C. (1970). »Job Search, Phillips' Wage Relation, and Union Influence.» In *Microeconomic Foundations of Employment and Inflation Theory*. Eds. E.S. Phelps et al. New York: W.W. Norton, 53–123.

Jackman, R., C. Pissarides, and S. Savouri (1990). »Unemployment Policies.» *Economic Policy*, No. 11, 449–490.

Layard, R., S. Nickell, and R. Jackman (1991). *Unemployment – Macroeconomic Performance and the Labour Market*. Oxford: Oxford University Press.

Marston, S.T. (1976). »Employment Instability and High Unemployment Rates.» *Brookings Papers on Economic Activity*, No. 1, 169–203.

Perry, G.L. (1972). »Unemployment Flows in the U.S. Labor Market.» *Brookings Papers on Economic Activity*, No. 2, 245–278.

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