THE EFFECTS OF ACTIVE LABOUR MARKET PROGRAMMES ON UNEMPLOYMENT DURATION

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Abstract. *This study estimates the effects of Active Labour Market Programmes on unemployment insurance (UI) benefit recipients in Denmark, depending on the time spent in unemployment before entry into the programme. I estimate two separate effects of the ALMPs in the duration model: a locking-in effect and a post-programme effect, and finally, the net effects of ALMPs on unemployment duration are calculated.*

The results in this study are in line with the findings of studies in other countries, i.e. I find that only one of ALMP types – Private Job training – reduces unemployment duration. ***Analysis leads to a conclusion in favour of activation of unemployed persons in their first year of unemployment; however, it does not support activation in the first 1–6 months of UI benefit spells.***

Key words: *active labour market programmes, unemployment, duration analysis*

1. Introduction

The Active Labour Market Programmes (ALMPs) are regarded as an important tool while solving the problem of unemployment. Although improving employability of the long-term unemployed is the main goal of ALMPs, there is a growing interest in early activations of these individuals before they become-long term unemployed.

The main problem regarding early entry into the ALMPs is increasing costs of the programmes, since the target group increases. Furthermore, there is the risk that the persons who participate in the ALMPs would have found a job anyway, i.e. the deadweight costs will become higher. Most of existing studies, however, find early ALMP interventions to be effective, but conclude that there is no need for very early activations (see, e.g., Weber, Hofer, 2004 a, 2004 b and Carling, Larsson, (2005).

This study is a contribution to the discussion above. I estimate the effects of Active Labour Market Programmes on unemployment insurance (UI) benefit recipients in Denmark, depending on the time spent in unemployment before entry into the programme.

Research has been done using the timing-of-events model introduced by Abbring and van den Berg (2003) and estimating two separate effects of the ALMPs in the duration model – locking-in and post-programme. In the empirical studies, the exit rate from

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unemployment to employment is often relatively low during the programme participation period, and this decrease in the exit rate has been termed the locking-in effect. The reason for the decrease in job search intensity may be that there is less leisure time for making job applications, or the participant might also want to complete the education programme offered. If this is the case, the locking-in effect by itself increases the duration of the spell with UI benefits. The post-programme effect covers the period after participation in a programme. If a person experiences a higher exit rate to a job compared to the period before programme participation, there is a positive post-programme effect, i.e. the programme reduces UI benefit spell duration. Finally, I calculate the net effects of ALMPs on unemployment duration.

The results reported in this paper are in line with the findings of studies which carried out a duration analysis to estimate the effectiveness of the programmes in other countries (see, e.g., Weber, Hofer, 2004 b for Austria, Brodaty et al., 2002 for France), i.e. in favour of activation of unemployed persons in their first year of unemployment. However, the results do not support activation in the first 1–6 months of UI benefit spell.

The structure of the paper is the following: Section 2 briefly presents the Danish labour market policy, Section 3 is devoted to presentation of the data set, while Section 4 explains the econometric model. Estimation results are discussed in Section 5, and Section 6 concludes the paper.

2. The Danish labour market policy

The unemployment benefit system in Denmark consists of two elements: unemployment insurance (UI) benefits and social assistance benefits. Only members of UI funds who have been employed for at least 52 weeks within the last three years are eligible for UI benefits. Unemployed persons not belonging to this group (approximately 20% of the labour force) receive unemployment assistance administrated by municipalities.

The Danish labour market policy is characterised by the so-called flexicurity model consisting of three elements: 1) flexible hiring and firing rules (flex-element), 2) a fairly generous unemployment insurance system (security-element), and 3) the "rights and obligations" principle. The principle guarantees an individual the right to compensation for the loss of income, but also places on him an obligation to take active steps to get back into employment. On the one hand, society has the obligation to help the individual to improve his situation; on the other hand, society also has the right to make requirements of the individual concerned.

The ALMPs are classified into four types by the National Labour Market Authority:

- subsidised employment programmes with private employers (Private Job training). The individual is employed in the private sector for 6–9 months, and the employer is paid the subsidy corresponding to roughly 50% of the minimum wage;

- subsidised employment programmes with public employers (Public Job training). These programmes offer the individual temporary (6–12 months) jobs in public sector institutions;
- education / training programmes. These include all types (usually short-lasting) of training programmes tailored to the background of the unemployed individual concerned;
- other programmes (other ALMPs) which include all programmes that cannot be classified within one of the categories above. A variety of programmes is covered by this residual group, for example, job search assistance, competence detection programmes, individual specialised job training (in case the unemployed individual cannot participate in ordinary training programmes), etc.

3. Data set

Research is based on the data extracted from an event history data set developed by the Danish National Labour Market Authority (NLMA). The event histories are based on the administrative registers which record and govern the payments of public income transfers, as well as the register in which the employment agencies record the unemployed participation in ALMPs. Using these event histories constructed by the NLMA itself, the employment agencies determine the risk that an individual becomes a long-term unemployed (Hammer et al., 2004), so in this respect not only the underlying information, but also the event histories themselves are considered to be a very reliable data source.

The data used in this paper cover the period from January 1, 1999 to November 15, 2005. The records are updated on a weekly basis and include all spells where the unemployed has received a public income transfer. Since these data are used for administrative purposes, they are not merged with other registers containing information on such variables as education and work experience.

In this paper, I concentrate on the unemployment spells of workers who are eligible for UI benefits since the information available for UI recipients is of a much higher quality than for social assistance recipients. An unemployment spell is defined as a period in which an individual is either openly unemployed or participates in an ALMP. If a person has four consecutive weeks out of open unemployment where he does not receive any other public income transfer, then he is treated as having found a job. If an individual has more than four weeks out of unemployment where he receives other transfers, the unemployment spell is characterised as right censored.

Temporary lay-off unemployment is eliminated by excluding from our samples all unemployment spells lasting less than four weeks (note: about 40% of the unemployment spells belong to temporary unemployment, more than 90% of them last less than four weeks) since the ALMPs are not used in the case of a short-term unemployment.

4. Econometric model

The analysis is done using the timing-of-events model for identifying treatment effects in a duration model framework developed by Abbring and van den Berg (2003).

The timing-of-events model simultaneously models the transition rate out of unemployment and the transition rate into the ALMPs. The model is intended to correct for non-random selection into programmes with respect to observed as well as unobserved variables. Abbring and van den Berg (2003) show that with an assumption of 1) mixed proportional hazards and 2) a non-defective distribution of time until participation in ALMPs, given observed explanatory variables, the parameters of interest – say, the effect of participation in ALMPs – are identified non-parametrically.

Let T_u be a random variable denoting the duration of an unemployment spell, and let T_p be another random variable denoting the time from entry into unemployment until participation in the first ALMP. If we have $T_p < T_u$, a person participates in an ALMP during the unemployment spell. When $T_p \geq T_u$, T_p is censored, and the individual didn't participate in an ALMP before T_u.

Let $\boldsymbol{X}(t)$ be a vector of observed exogenous explanatory variables, and let V_u, and $V_p = (V_{p1}, V_{p2}, V_{p3}, V_{p4})$ denote the unobserved variables possibly affecting the exit rate out of unemployment and the entry rates into the four different types of ALMPs.

The hazard into ALMPs is the sum of four cause-specific hazard rates, one for each type of ALMP:

$$\theta_p\,(t_p|\boldsymbol{x}(t_p),v_p) = \sum_{i=1}{}^{4}\theta_{pi}(t_p|\boldsymbol{x}(t_p),v_{pi}).$$

Each of these cause-specific hazards is assumed to be of a mixed proportional hazard type,

$$\theta_{pi}(t_p|\boldsymbol{x}(t_p),v_{pi}) = \lambda_{pi}(t_p)\exp(\boldsymbol{x}(t_p)\boldsymbol{\beta}_{pi} + v_{pi}).$$

Next, I define two time-varying vectors of indicator variables, $\boldsymbol{d}_1(t)$ and $\boldsymbol{d}_2(t)$: $\boldsymbol{d}_1(t)$ is a 4×1 vector, where the i^{th} element takes the value 1 if the individual participates in an ALMP of type i at time t and takes the value 0 otherwise. Note that at most one element of $\boldsymbol{d}_1(t)$ can take the value 1 at time t. Similarly, the i^{th} element of $\boldsymbol{d}_2(t)$ (which is also 4×1) takes the value 1 if the individual has completed an ALMP of type i during the last 26 weeks (the implication is that I only allow ALMPs to affect the hazard rate out of unemployment up to 26 weeks after completion).

Assuming once again a mixed proportional hazard rate, the hazard rate out of unemployment in the model is specified as

$$\theta_u(t_u|\boldsymbol{x}(t_u),\, \boldsymbol{d}_1(t_u),\, \boldsymbol{d}_2(t_u),v_u) = \lambda_u(t_u)\exp[\boldsymbol{x}(t_u)\boldsymbol{\beta}_u + \boldsymbol{d}_1(t_u)\delta_1 + \boldsymbol{d}_2(t_u)\delta_2 + v_u].$$

The parameter δ_1 here measures the locking-in effect, while δ_2 measures the post-programme effect. In the estimations performed below, I will allow for separate effects of programmes that start in different intervals of the UI benefit spell, while for education and other ALMPs I run separate models to estimate the effects, depending on the length of the programmes. However, for expositional convenience, this interaction – between participation and completion indicators on the one side and the dummies of programme entry and programme length intervals on the other – has been ignored.

The timing-of-events model takes into account the potential endogeneity of $\boldsymbol{d}_1(t)$ and $\boldsymbol{d}_2(t)$ by allowing for correlation between the two unobserved components, V_u and V_p, i.e. this method allows for selection of unobservables as well as observed explanatory variables.

The unobserved heterogeneity terms are restricted to be perfectly correlated in the four cause-specific hazard rates into programmes. This is also called a factor-loading specification. It restricts the correlation between V_{pi} and V_{pj} to be either 1 or -1, if $I, \neq j$.

The expected duration of an unemployment spell may be calculated as

$$E[T_u|\boldsymbol{x}, \boldsymbol{d}_1, \boldsymbol{d}_2, \boldsymbol{v}_u] = \int S(t|\boldsymbol{x}, \boldsymbol{d}_1, \boldsymbol{d}_2, \boldsymbol{v}_u)dt.$$

Here, the time-variation in the explanatory variables has been ignored for analytical convenience.

Identification in the timing-of-events model is based on two assumptions, as mentioned above: a 'distributional' assumption requiring the hazard rates to be specified as mixed proportional hazards, and a 'no anticipation' assumption which implies that the individual is allowed to know the distribution of time until programme participation and the distribution of programme types, but not the exact moment at which he will participate.

5. Results

This section covers the results of the analysis. The timing-of-events model is estimated separately for the different age groups of the individuals, i.e. the effects of programmes are assumed to be constant across individuals in these age groups. Therefore, I create three data sets: for persons older than 29 and younger than 40, for the 40–49-aged, and for those 50–59 years old. The samples consist of 5% of the observations drawn randomly. While modelling the dependence of the impact of ALMPs on the programme entry time, the following intervals of the unemployment spell are distinguished: 1–6 months, 7–12 months, 13–18 months, 19–24 months and >24 months in unemployment.

Intuitively, locking-in and post-programme effects of ALMPs are estimated by comparing the unemployment-to-job transition rates of persons who participated in a programme with the transition rates of persons who have not entered or finished an ALMP.

The comparisons of the transition rates are made at similar durations of the unemployment spell.

The net effect shows the effect of the programmes on expected unemployment duration. The net effect is calculated for a standard person with the average characteristics for each of the samples used, and I use the following assumptions:

Interval of unemployment	ALMP participation is assumed	Programme length assumed
1–6 months	After 13 weeks on UI	26 weeks (private and public job training); 16 weeks (education); 8 weeks (other ALMPs)
7–12 months	After 39 weeks on UI	
13–18 months	After 52 weeks on UI	
19–24 months	After 78 weeks on UI	
>24 months	After 104 weeks on UI	

Figure 1 (graph I) shows the net effects of the programmes on unemployment duration, while the values of the estimated coefficients of locking-in, post-program and net effects are presented in Tables A.1–A.4 in Appendix.

Concerning the effectiveness of Private Job Training (Fig. 1.A. and Table A.1.), I find these programmes to increase unemployment duration of the 30–39 and 40–49 age group representatives (by 0.73 and 1.19 weeks, respectively) when the programme is assigned in the first half year of unemployment. However, the programme introduced in the interval of 7–12 months of the UI benefit spell gives a slightly positive response for the 30–39-age group (the net effect –0.37 weeks), while the biggest effect from Private Job Training is found when applying it after one year of unemployment. Then the programme reduces unemployment duration by 1.18 weeks for 30–39-year-old persons and by 1 week for 40–49-year-old. When introduced in 19–24 months of UI benefit spell or later, the programme still reduces the unemployment duration, but its effectiveness decreases.

Private Job Training is much more effective for elderly individuals (the 50–59 age group). Even in case of very early assignment (in the first 6 months of unemployment), the programme reduces unemployment duration by 2.69 weeks, while the biggest effect (the net effects of 5.35–6.4 weeks) is found if it is introduced within 7–24 months of an unemployment spell.

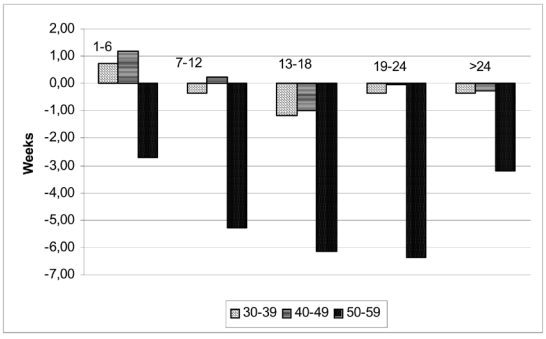
The estimated effects of Public Job Training (Fig. 1B.) are not nearly as positive. Although moderate positive post-programme effects were estimated in some cases, they are not nearly sufficient to compensate the dramatic locking-in effects (Table A.1). Thus, the programme increases unemployment duration for all age groups of the individuals and is found to be the most harmful for the elderly unemployed population. Public Job Training shows the worst performance when assigned in the first six months of an UI benefit spell. The negative effects of the programme gradually decrease (but remain negative) when the activation takes place at later stages of unemployment.

Education (Fig. 1C and Table A.2) and Other ALMPs (Fig. 1.D and Table A.2) perform worst in the very early stage of unemployment. When education takes place in the first half-year of an UI benefit spell, it increases unemployment duration by 4.14 weeks, 4.93 weeks and 9.43 weeks for the 30–39, 40–49 and 50–59 age groups, respectively. The corresponding figures for Other ALMPs are 1.86, 2.47 and 5.48 weeks.

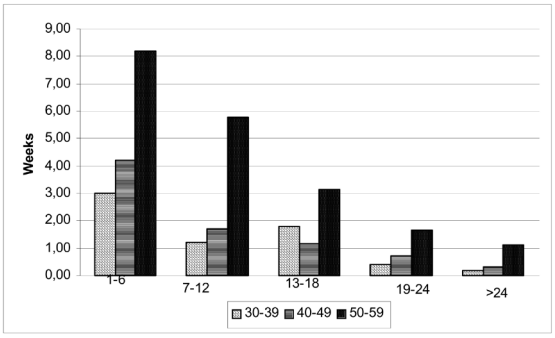
The performance of these two groups of ALMPs improves when the activation takes place after six months spent unemployed. The net effect of the programmes is then slightly positive (the programmes increase unemployment duration), while for the 50–59 age group the other ALMPs reduce unemployment duration by 1.19 weeks.

Other ALMPs, assigned in 13–18 months of UI benefit spell, decrease unemployment duration, but very slightly, while the effect of education is an increase in unemployment (the net effects of 0.9 weeks (30–39 group), 1.02 weeks (40–49 group) and 1.82 weeks (50–59 group)). And finally, both programmes become ineffective when the activation takes place after two years spent on UI benefits.

The results above seem to favour activation of unemployed in their first year on UI benefit. However, a very early activation is not supported. Neither of the programmes showed favourable performance in the first half-year of unemployment (with the exception of Private Job Training to 50–59 old persons). Having in mind the increasing costs of the programmes, since the target group of participants becomes wider (30–35% of all activations done during the period under study belonged to activations done in 1–6 months of UI benefit spell), we can conclude that the activation of unemployed persons in their first half-year of UI benefit spell does not lead to an efficient allocation of the means intended to the Active Labour Market Measures in Denmark.



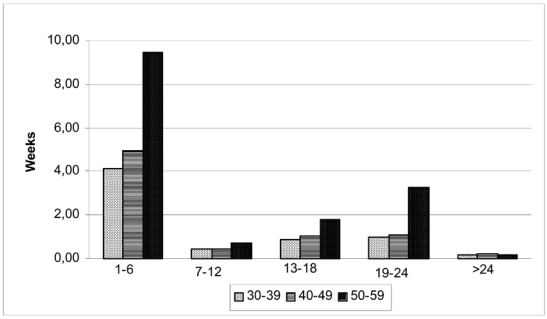
A. Private Job Training



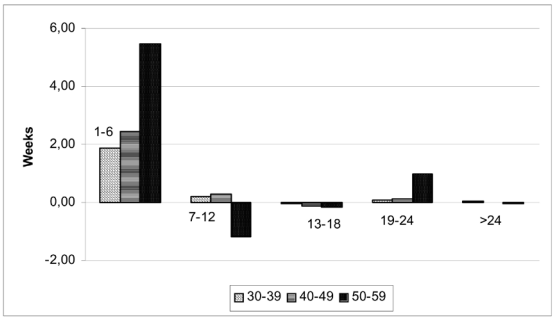
B. Public Job Training

FIG. 1. **Net effects of ALMPs (based on programme entry time, months)**

Only in one of the four groups of Danish ALMPs – Private Job Training –the post-programme effect is high enough to counteract the locking-in effect, and in most cases the programme reduces unemployment



C. Education



D. Other ALMPs

FIG. 1.

duration, while the participants in the other three types of programmes experience increasing unemployment duration (with some exceptions in case of other ALMPs). This is in line with findings in the previous studies on Danish data (see Bolvig et al., 2003; Graversen, 2004; Rosholm, Lauzadyte, 2008).

In addition, Private Job Training programmes are found to be highly effective for the 50–59-old individuals who are the weakest group of the unemployed population. Thus, a more active use of this programme to the elderly workers should be promoted.

And finally, it is disappointing that after two years spent unemployed the ALMPs become ineffective (with the exception of Private Job Training for 50–59-year-old individuals), considering that under the current Active Labour Market Policies in Denmark every person who is still unemployed after two and a half years has the obligation of a full-time participation in ALMPs during the rest time of UI benefit spell.

6. Conclusions

This study estimates the effects of ALMPs on UI benefit recipients in Denmark, depending on the time spent in unemployment before entry into the programme. I use the timing-of-events model introduced by Abbring and van den Berg (2003) and estimate two separate effects of the ALMPs in a duration model: the locking-in effect and the post-programme effect. Finally, I calculate the net effects of the ALMPs on unemployment duration.

The results reported in this paper are in line with the findings of studies in other countries, i.e. I find that in only one of the four groups of Danish ALMPs – Private Job Training – the post-programme effect is high enough to counteract the locking-in effect, and in most cases the programme reduces unemployment duration while the participants in the other three types of programmes in most cases experience an increasing unemployment duration. In addition, these programmes are found to be very effective for the 50–59-old

individuals who are the weakest group of the unemployed population. Thus, a more active use of this programme for the elderly workers should be promoted.

Analysis leads to a conclusion in favour of activation of unemployed individuals in the second half-year of the UI benefit spell. However, a very early activation is not supported by the results. Having in mind the increasing costs of the programmes, since the target group of participants becomes wider (30–35% of all activations done during the period under study belonged to activations done in 1–6 months of UI benefit spell), we can conclude that the activation of unemployed persons in their first half-year of UI benefit spell does not lead to an efficient allocation of means intended for the Active Labour Market Measures in Denmark.

Persons over fifty are found to be the group most sensitive to the influence (both positive and negative) of ALMPs, and private job training programmes are found to be highly effective in all stages of their unemployment spell. However, for the 30–49-year-old individuals, in Denmark all types of programmes are found to be ineffective after two years on UI benefits. Thus, the long-term unemployed seem to have specific problems which cannot be addressed by participation in the programmes.

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Appendix

Table A.1**. Effects of private and public job training**

Months in unemployment	Private job training			Public job training		
	Locking in effect, %	Post-progr. effect, %	Net effect (weeks)	Locking in effect, %	Post-progr. effect, %	Net effect (weeks)
1–6						
30–39	-34.4	50.1	0.73	-54.2	22.0	3.00
40–49	-33.1	39.0	1.19	-67.3	34.8	4.22
50–59	-13.4	65.4	-2.69	-73.8	10.1	8.21
7–12						
30–39	-18.1	58.6	-0.37	-46.3	10.8	1.21
40–49	-13.2	9.2	0.23	-49.8	-8.6	1.69
50–59	23.7	66.0	-5.27	-57.8	-14.1	5.78
13–18						
30–39	9.7	110.3	-1.18	-53.0	-30.5	1.80
40–49	29.8	54.9	-1.00	-58.6	15.0	1.14
50–59	52.3	131.4	-6.12	-55.3	3.7	3.14
19–24						
30–39	12.7	137.1	-0.35	-29.0	-4.9	0.39
40–49	-5.4	114.6	-0.05	-56.8	-5.6	0.72
50–59	64.7	102.8	-6.37	-53.1	14.8	1.66
>24						
30–39	-10.6	108.0	-0.34	-35.4	16.5	0.18
40–49	-11.0	87.0	-0.24	-47.8	5.8	0.30
50–59	40.0	83.8	-3.21	-39.5	-7.9	1.11

TABLE A.2. **Effects of education and other ALMPs**

Months in unemployment	Education			Other ALMPs		
	Locking in effect, %	Post-progr. effect, %	Net effect (weeks)	Locking in effect, %	Post-progr. effect, %	Net effect (weeks)
1–6						
30–39	-68.5	-15.0	4.14	-39.4	-17.1	1.86
40–49	-69.4	-17.6	4.93	-36.9	-24.9	2.47
50–59	-66.7	-21.9	9.43	-48.5	-16.8	5.48
7–12						
30–39	-56.8	5.3	0.42	-11.3	-5.4	0.19
40–49	-44.7	-11.5	0.43	-34.8	-1.3	0.29
50–59	-47.1	13.4	0.73	1.0	61.5	-1.19
13–18						
30–39	-57.2	2.1	0.90	-0.6	14.4	-0.05
40–49	-55.3	-11.2	1.02	8.2	11.4	-0.11
50–59	-46.1	-1.2	1.82	-0.8	14.3	-0.14
19–24						
30–39	-62.4	10.8	0.98	-23.4	12.4	0.07
40–49	-55.4	1.4	1.07	-13.0	1.0	0.11
50–59	-51.9	-3.9	3.24	-19.4	-6.2	0.98
>24						
30–39	-56.2	19.8	0.16	-29.8	16.9	0.03
40–49	-63.3	15.7	0.20	-15.1	6.6	0.00
50–59	-66.6	40.8	0.14	-4.3	9.2	-0.03