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UNEMPLOYMENT BENEFIT SYSTEM AND UNEMPLOYMENT DURATION IN FINLAND*

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In this paper a competing risks model for the probability of exiting from the labour force or becoming employed under three different benefit schemes are estimated using data from the Finnish Labour Force Surveys. According to our results employment probability is three times higher for a non-claimant and about twice as high for an earnings-related unemployment insurance receiver than for a similar person on means-tested unemployment assistance. These figures suggest that the unemployment benefit system does not improve the benefit claimants' performance compared to that of the non-claimants in Finland. (JEL C14, J64)

1. Introduction

In recent literature on unemployment duration it has been emphasized that other features in the unemployment compensation system than just the benefit level may involve important incentive and other effects affecting an unemployment jobseeker's probability of finding a job.[1] For instance, it has been argued that benefit claimants can enjoy informational advantages relative to non-claimants due to the fact that they are looking for work in a more formal environment. A hypothesis that benefit claimants have a closer attachment to the labour market is supported e.g. in the case of Britain where, according to Wadsworth (1992), this group appears to have a higher effective labour supply compared to the non-claimants. Moreover, there also seem to be differences in the job search activity between the two groups; it appears that unemployment benefit receivers search more actively for work than the non-claimants, see Wadsworth (1991) for Britain and Blau and Robins (1990) for the United States.

This study is explorative by its nature and its purpose is to investigate how unemployment benefit system affects the probability of becoming employed in Finland. In particular, we will study how the employment probability conditional on the benefit system varies among unemployed jobseekers with similar characteristics. In our empirical analyses data from the Finnish Labour Force Surveys for the years 1984–1987 are used.

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[1] *For a general discussion on the matter see Atkinson and Micklewright (1991).*

The paper proceeds as follows. In the second section an unemployed jobseeker's optimal behaviour is discussed. In the third section the data and empirical model specification are reported. In section four results are discussed and in section five concluding remarks are given.

2. *Theoretical considerations*

We use the dynamic model of labour market behaviour of workers by Toikka (1976) as a basis for highlighting optimal decision rules for the unemployed. According to this model a person can be found in one of the following three states at any point of time; employment (e), unemployment (u), and out of the labour force (n). Movements between different states are characterized by a Markov matrix of transition probabilities.

Persons who are initially unemployed decide first at the beginning of each period t whether or not to exit from the labour force. Conditional on the decision to remain in the labour force and on constraints imposed by a market environment an unemployed jobseeker then either decides to remain unemployed or to accept a job offer if such an offer is received.

Let H_t represent the value of nonmarket activity of an unemployed person generated by a random process in each period t. It is assumed that a person exits from the labour force if the value of his or her nonmarket time H_t exceeds the reservation value h_t. The probability that an unemployed person exits from the labour force p_t^{un} can be expressed in terms of the density function $f_t(H)$ and the reservation value h_t.

$$(1) \qquad p_t^{un} = 1 - \int_{-\infty}^{h_t} f_t(H)\,dH = 1 - F_t(h_t)$$

The probability that an unemployed person receives a job offer p_t^o is a function of individual characteristics (including search activity) and general labour market conditions in period t. Each job offer comes with a wage W_t. An unemployed worker uses a reservation wage rule w_t in deciding whether or not to accept a job offer. If offered wage W_t exceeds the reservation wage w_t the job is accepted, otherwise it is rejected. Thus, the probability of acceptance p_t^a can be written as follows

$$(2) \qquad p_t^a = \begin{cases} 1, \text{ if } W_t > w_t \\ 0, \text{ if } W_t \le w_t \end{cases}.$$

The probability of simultaneous job offer and acceptance p_t^{oa} is then

$$(3) \qquad p_t^{oa} = p_t^o \times p_t^a .$$

The probability of a transition from unemployment to employment p_t^{ue} and the probability of remaining unemployed p_t^{uu} during period t are conditional on the decision of remaining in the labour force at the beginning of period t

$$(4) \qquad \begin{aligned} p_t^{ue} &= (1 - p_t^{un}) \times p_t^{oa} \\ p_t^{uu} &= (1 - p_t^{un}) \times (1 - p_t^{oa}) \end{aligned}$$

The sum of transition probabilities from unemployment to different labour market states equals one $p_t^{un} + p_t^{ue} + p_t^{uu} = 1$. Furthermore, each labour market transition results in a payoff to the worker. The expected payoff of nonmarket activity v_t^{un} can be expressed as the mean of density $f_t(H)$ truncated at the reservation value h_t:

$$(5) \qquad v_t^{un} = E(H \mid H > h_t) .$$

The payoff of becoming employed v_t^{ue} equals the wage W_t and the payoff of remaining unemployed v_t^{uu} will depend on, among other things, search costs and unemployment insurance. At the beginning of each period t an unemployed worker is assumed to maximize his or her expected value of payoffs V_t over a lifetime of length $T(t=1,\ldots,T)$ with respect to the set of decision variables (such as reservation wages h_t and w_t), which are assumed to affect the probability of a particular state being occupied in the future but not the expected payoff conditional on that state being occupied. To decide whether or not to remain in the labour force an unemployed worker maximizes the following expected payoff function (6) with respect to the reservation value h_t.

$$(6) \qquad Max\ V_t = \sum_{j=n,e,u} p_t^{uj} [v_t^{uj} + \delta V_{t+1}^j]$$

where $\delta = 1/1+r)$ is the discount factor and where V_{t+1}^j (j=n,e,u) represents expected fu-

ture payoffs. The optimal reservation value equals the expected immediate payoff to job search plus the expected net gain in the future from being in the labour force now:

$$(7) \quad h_t = p_t^{oa} W_t + (1 - p_t^{oa})\, v_t^{uu} + \delta\,[p_t^{oa} V_{t+1}^{e} + (1 - p_t^{oa})\, V_{t+1}^{u} - V_{t+1}^{n}\,].$$

It appears from equation (7) that, among other things, the optimal reservation value h_t depends on the job offer probability p_t^o. An increase in p_t^o will result in a decrease in the withdrawal rate if the expected immediate and future benefits from taking a job are positive. It has been argued that p_t^o may be positively related to unemployment benefit b_t ($dp_t^o/db_t > 0$) due to the fact that the unemployed eligible for compensation are more attached to the labour market and due to this receive more job offers than the non-claimants, see e.g. Wadsworth (1992).

If an unemployed person decides to remain in the labour force he or she searches for a job. The rule for accepting a job offer when such an offer arrives can be obtained by maximizing the payoff function (6) conditional on the person being in the labour force ($p_t^{un}=0$) and having received a job offer ($p_t^o=1$). The reservation price w_t that maximizes the expected payoff is

$$(8) \quad w_t = v_t^{uu} + \delta\,(V_{t+1}^{u} - V_{t+1}^{e}).$$

According to equation (8) the optimal rule for accepting a job is to set the reservation wage equal to the expected immediate and future payoffs from remaining unemployed instead of taking a job now. Equation (8) gives the standard result in job search literature that an increase in the immediate payoff from being unemployed v_t^{uu} lowers the probability of job acceptance, other things equal. Equation (8) also suggests that an unemployed person not only takes into account the immediate payoff but also considers future payoffs from remaining unemployed. According to the theoretical framework highlighted above observing an unemployed person becoming employed is conditional on three things; first, on the unemployed person's decision to remain in the labour force; second, on the condition of receiving a job offer, and third, on the condition of accepting the offered job. This framework can explain why employment probabilities of different groups of unemployed may systematically differ from one another. For example, it is quite possible that benefit claimants and non-claimants have different probabilities of withdrawing from the labour market or receiving or accepting a job offer due to differences in individual characteristics or in incentive-schemes.

An empirical implementation of this model requires estimating both withdrawal rates and employment probabilities for the unemployed. However, in estimation one cannot usually separate the effects of demand side factors in the labour market from the supply side responses of the unemployed workers (i.e. models are by their nature reduced-form models). This means that the optimizing behaviour of unemployed workers described above provides only a partial explanation to the observed behaviour, which, in fact, reflects both demand and supply side effects of the labour market on unemployment duration.

3. *Data and method of estimation*

The data base for this study has been collected from the Finnish Labour Force Surveys for the years 1984–1987. Each survey contains 5 consecutive interviews of individuals over a period of 15 months the first interviews being collected during a period of 4 months between September and December. Thus, the pooled sample period extends from September 1984 to May 1989. The subsample of the study consists of those 15–54 years of age who were unemployed in the first interview each year. The upper age limit of 54 was chosen due to our wish to exclude early retirement behaviour of older workers from the study.[2] The final sample includes data on 992 unemployed persons.

For each unemployed there is a self-reported retrospective data on the duration of unemployment (in weeks) until the date of the first interview. To detect the labour market transitions of the unemployed we check

[2] *During the survey period unemployment pension was available under certain eligibility conditions for those over 54 years of age. The transition to unemployment pension for the age group 55–64 has been studied separately in Lilja (1990).*

whether or not a person has exited from the labour force or obtained a job at subsequent interviews. When we find the first change in the labour market state we conclude that the termination of unemployment spell occurred in the middle of the two interviews between which the change was observed. The total spell length is calculated as the sum of the weeks of unemployment until the first interview and the weeks of unemployment until the detection of the termination of the spell. If a person has remained unemployed at each one of the 5 interviews we treat the relevant unemployment spell as right-censored at the 5^{th} interview.

The time period between different interviews in the Labour Force Surveys is generally 3 months, between 3^{rd} and 4^{th} interviews it is as long as 6 months. Thus, during the survey period transitions from one labour market state to another are reported relatively infrequently. It is clear that the simple rule used to calculate the length of completed spells in our study overestimates the length of spells for some individuals and underestimates the spell length for some others. To account for the rough nature of the collected data we group calculated unemployment spells into 3 months' sequences and use this grouped data instead of actual spell lengths in empirical estimations. When time aggregation is a problem, as it is in the case of our data set, using grouped data and semiparametric models seems to be the best strategy in empirical estimation; according to Bergström and Edin (1992) in the presence of time aggregation semiparametric models for grouped data produce more stable estimates than other model specifications for unemployment duration.

In introducing the theoretical framework for the study we assumed that an unemployed person first decides whether or not to exit from the labour force and on the condition of remaining in the labour force starts to search for a job. Thus, unemployment spell can be terminated either due to an exit from the labour force or due to finding a job and finding a job is conditional on the decision of remaining in the labour force. This means that in an empirical application of this model an approach that allows different causes of termination for unemployment spells (failure types) is required. In subsequent empirical work we will use a semiparametric competing risks model for grouped data similar to that in Narendranathan and Stewart (1990), which fulfills this requirement.

So, let us next specify the statistical model for the duration of unemployment. Due to the fact that our sample of unemployed has been collected at fixed points of time by stock sampling the distribution of completed duration in our study will differ from the distribution that would be obtained for new entrants (by flow sampling). In general, stock samples involve a length bias; the expected durations of unemployment for individuals randomly sampled from a stock are greater than those of new entrants.[3] Thus, the subsequent statistical model refers to the distribution of completed durations of unemployment spells obtained by stock sampling. One of our aims of this paper is to study whether or not unemployment duration and factors affecting these durations are the same among unemployed jobseekers under different unemployment benefit schemes. Comparisons of different groups of unemployed are based on the distribution of unemployment durations from a stock sample. Thus, the hazard rates to be reported are comparable between the different groups of benefit receivers in our sample but are, on average, lower than those that would be obtained from a similar flow sample.

Let D be the length of an individual's completed unemployment spell (from a stock sample). We assume that there are K different failure types (k=1,...,K) that can terminate the unemployment spell. The probability that an unemployment spell is completed by time t+s due to a failure type k, given that it still was continuing at time t, is defined by the following discrete-time proportional hazards model $\lambda^k(t)$:

$$(9) \quad \lambda^k(t) = P(D < t+s \mid D \geq t)$$

$$= 1 - \exp\left\{-\exp[x(t)'\beta] \int_t^{(t+s)} \lambda_0^k(u)\,du\right\},$$

where $\lambda_0{}^k(t)$ is the baseline hazard for the failure type k at time t, x(t) is a vector of time dependent and time-invariant explanatory fac-

[3] *See e.g. Lancaster (1990), pp. 91–97, for further details. The density function of completed durations from a stock sample f(s) has the following relationship with that of a flow sample g(s): f(s)=sg(s)/μ (s>0), where μ is the mean of completed durations in the flow sample.*

tors (covariates) and β is a vector of unknown parameters. The hazard function (9) can be rewritten as

$$(10)\quad \lambda^k(t) = 1-\exp\{-\exp[x(t)'\beta] + \gamma^k(t)\},$$

where

$$(11)\quad \gamma^k(t) = ln\left[\int_t^{(t+s)} \lambda_0^k(u)\,du\right].$$

Specifying the above baseline hazard allows consistent estimation of β parameters even when the baseline hazard is unknown (a semi-parametric model specification). We assume that cause-specific hazards $\lambda^k(t)$ are mutually independent. This means that the conditional probability of a spell being completed by time t+s by any of the failure types k is

$$(12)\quad \lambda(t) = \sum_{k=1}^{K} \lambda^k(t).$$

The log-likelihood component for an unemployed person with an observed duration d can be written as follows:

$$(13)\quad \begin{aligned} \ln(l) &= c\ln[\lambda^k(d)] \\ &+ \sum_{t=0}^{d-1}\{\sum_{j=1}^{K} \ln[1-\lambda^j(t)]\}, \end{aligned}$$

where c is an indicator variable equal to 1 if the observed spell is completed due to a failure type k and equal to 0 if it is censored (uncompleted). It appears from equation (13) that the log-likelihood contribution of each person can be partitioned into separate terms that are functions of single cause-specific hazards. This means that parameters of a given cause-specific hazard can be estimated separately by treating durations terminated by other failure types as censored at the point of completition.

In section 4 of this paper we will report results from maximizing the log-likelihood function specified by the above hazard functions covering 8 duration categories (t=0,...,7) each of the length of 3 months (s=3). Durations of the length of 24 months or over are treated as censored in estimation.

Moreover, in subsequent empirical analyses three different failure types are studied. Firstly, we will take into account the fact that a person can exit from the labour force for two reasons; first, due to optimizing behaviour (such as described in the previous section) but second, also due to compelling reasons, which are not subject to voluntary choice. To avoid possible state aggregation bias these two exits are treated as separate failure types in estimations. Among the 992 unemployed in our data set there are 126 unemployed who left the labour force voluntarily (in order to start studies or homemaking) and 51 unemployed who exited due to necessity (military service, disability or related causes). Finally, the probability of becoming employed (the third failure type) among three different benefit groups are studied separately; among earnings-related unemployment insurance (UI) and basic unemployment allowance (UA) receivers and non-claimants.[4]

UI-benefit is available to unemployed trade union fund members who have been members of the fund for at least six months preceding unemployment. Unemployment insurance benefit is payable for a maximum of 500 working days (100 weeks) during four consecutive calendar years. From January 1985 to March 1987 the amount of UI-benefit decreased by 20 per cent after 100 days of unemployment and from April 1987 to June 1989 by 12.5 per cent after 200 days of unemployment. Furthermore, the replacement ratio (the ratio of UI-benefit to previous earnings) decreases with earnings. As of 1991 the compensation ratio for previous earnings of FIM 5.000,– was about 72 per cent whereas for earnings of FIM 12.000,– it was 53 per cent.

Basic unemployment allowance (UA) is payable, depending on a means test, to all unemployed jobseekers aged 17–64 who are fit and looking for full-time employment, provided they are not eligible for union fund benefits. UA-benefit is payable for five days a week for an unlimited period as long as the conditions are met. As for the means test, nearly all types of income, personal as well as spouse's, are taken into account when calculating the allowance. There is a qualifying waiting period of five working days for both UI- and UA-benefits.[5] Non-claimants are not eligible for either

[4] *We cannot distinguish exits due to labour market programmes from other exits in our data set. So, an unemployed jobseeker who enters labour market training is regarded as having voluntarily exited from the labour force and a jobseeker who receives a job through a labour market programme is regarded as becoming employed.*

of the benefit schemes and they form a heterogeneous group of unemployed jobseekers including labour market entrants as well as highly qualified employees with long working careers.

There are 601 employed persons in our data set for whom unemployment spell terminated due to finding a job and 214 persons who remained unemployed. Furthermore, there are 337 persons on UI-benefits, 403 on UA-benefits, and 252 non-claimants in our data set. The benefit group is based on the retrospective information on the benefits received during the previous 12 months.

To account for the fact that the market environment may affect an unemployed jobseekers probability of finding a job a measure of the tightness in the local labour market, the ratio of unemployed jobseekers to vacancies (UV-ratio), is included among the covariates in the hazard function. Because the situation in the local labour market can change substantially during an unemployment spell we treat the UV-ratio as a time-varying variable in estimation.[6] Another time-varying covariate in subsequent estimations will be an unemployed jobseeker's age.

4. *Results*

Let us first examine the probability of leaving the labour force among the Finnish unemployed jobseekers. In our data set 23 per cent of all completed unemployment spells ended because an unemployed jobseeker exited from the labour force. In estimations we have treated exits due to voluntary choice and due to necessity as different channels of exit. Results from hazard model estimations for these two failure types are reported in table 1.

It appears from table 1 that age has a negative effect on voluntary exit from the labour force suggesting that younger unemployed are more likely than their older counterparts to start studying or homemaking when faced with unemployment. Clearly, this reflects the different payoffs from these activities in the two groups. Furthermore, the positive coefficient of the indicator variable for less than a year work experience in the second column of table 1 carries also an age effect; the young men are more likely than the others to be drafted. Otherwise, there is no clear influence from age as such on the probability of exit due to necessity, which reflects the fact that this exit can be caused by various reasons such as disability pension (concerns generally older people) and military service (concerns young males).[7]

Table 1 suggests that unemployed women have a higher probability of leaving the labour force voluntarily than similar unemployed men. This reflects the fact that for unemployed women payoff from education or homemaking is higher than that for similar men. On the other hand, women tend to be less likely to leave the labour force due to necessity than men, which partly reflects the fact that women do not enrol in military service and partly the fact that men have slightly higher incidence of disability than women in Finland.

Unemployed who are either single or who have dependent children are less likely to exit from the labour force than those with a spouse and no children. This suggests a close labour force attachment for these groups of unemployed and a low payoff from leaving the labour force. On the other hand, high school diploma increases the exit probability, which partly reflects the age effect (a young person is more likely to have a high school diploma than an elderly person) and the fact that persons with a high school diploma are more likely to start studying because high school is generally a prerequisite for studying at the university. If an unemployed is specifically looking for a part-time job he or she is more likely to leave the labour force voluntarily. This result can reflect potential difficulties that unemployed jobseekers face in trying to find part-time jobs, since working part-time is relatively uncommon in the Finnish labour market. For example, in the late 1980s the share of part-time workers in Finland has been one of the lowest among OECD countries, about 6–8 per cent.

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[5] *The waiting period is 6 weeks for labour market entrants and for those who voluntarily quitted their jobs.*

[6] *In creating local UV-ratios for the unemployed we have assumed that the local labour district did not change between the beginning of the unemployment spell and the first interview in the Labour Force Survey. After the first interview, in subsequent interviews, the UV-ratios follow reported changes in the local labour market. The data for UV-ratios for each major labour district are collected from the Ministry of Labour Monthly Statistics.*

[7] *Due to the small number of observations for this exit (N=51) we could not treat various causes as separate failure types.*

Table 1. Hazard model estimates for the probability of exiting from the labour force*

Independent variables	Exit due to voluntary choice N=992		Exit due to necessity N=992	
Family and other background:				
Age	–0.0734	(0.0115)	–0.0060	(0.0196)
Female	1.0856	(0.2264)	–1.1784	(0.4848)
Single	–0.5498	(0.2445)	–0.6635	(0.4223)
Dependent children	–0.5554	(0.2430)	–2.0408	(0.7773)
High school	0.4644	(0.2894)	1.3483	(0.3946)
Looking for part-time work	0.8587	(0.3145)	0.1000	(0.7730)
Status prior to unemployment:				
Top white-collar worker	1.0685	(0.5111)	–0.3017	(1.1882)
Public sector employee	0.6103	(0.3013)	–0.2354	(0.5138)
Industry: services	–0.5163	(0.3375)	0.3691	(0.6108)
Work experience <1 year	–0.1929	(0.2936)	1.2208	(0.4507)
General conditions:				
Local UV-ratio	0.0045	(0.0055)	0.0159	(0.0089)
Interview in 1986	0.3831	(0.2319)	0.4456	(0.3954)
Interview in 1987	0.4443	(0.2460)	0.5470	(0.4024)
Mean log-likelihood	–0.4462		–0.1959	

* Standard errors of the parameters are shown in parentheses.

Moreover, table 1 suggests that unemployed, who were previously top white-collar workers or public sector employees, are more likely to leave the labour force voluntarily than otherwise similar jobseekers. It seems that payoffs from education and homemaking are relatively high compared with remaining unemployed for these groups of unemployed, too. On the other hand, those unemployed, who were previously working in services, are less likely to leave the labour force most possibly due to higher than average job-offer rates in this group of unemployed. General labour market conditions measured by the local UV-ratios and the time of the first interview in the sample do not seem to be particularly significant factors in explaining the voluntary exit from the labour force. We also tested whether or not withdrawal rates for jobseekers under different unemployment benefit schemes differed significantly from one another by adding indicator variables for these schemes (for both UI and UA) into the hazard models, but we could not detect statistically significant benefit scheme effects in estimations. These results suggest that the hypothesis that unemployment benefit system generates such an increase in the attachment to the labour force that produces smaller exit rates from the labour force for benefit claimants than for the non-claimants is not supported by our data. At least in this respect the Finnish evidence does not correspond with that obtained e.g. for Britain where benefit claimants seem to be more likely to participate in the labour force than the non-claimants.[8]

To sum up the results presented in table 1 the baseline hazard estimates for the probability of exiting from the labour force are reported in table 2. Reported figures refer to conditional probabilities (conditional on the fact that unemployment spell has continued until the time of observation) and to a reference person whose age and local UV-ratio are in the mean values of the sample and for whom all indicator variables obtain zero values.[9]

[8] *For further details see Wadsworth (1991) and (1992).*

[9] *This means that our reference person is a male with a spouse and no dependent children, who has not a high school diploma, who is looking for a full time work, who previously was working in the private sector (but not in services) as a lower white collar or blue collar worker with more than one year's work experience and who was interviewed either in 1984 or 1985 in the Labour Force Survey.*

Table 2. Baseline hazard estimates for the probability of exiting from the labour force*

Unemployment duration, months	Exit due to voluntary choice	Exit due to necessity	Total exit
[0,3[	0.0113	0.0153	0.0266
[3,6[	0.0207	0.0232	0.0439
[6,9[	0.0159	0.0073	0.0232
[9,12[	0.0274	0.0133	0.0407
[12,15[	0.0257	0.0164	0.0421
[15,18[	0.0207	0.0166	0.0373
[18,21[	0.0241	0.0274	0.0515
[21,24[	0.0042	0.0077	0.0119

* Baseline hazards refer to a case in which continuous variables obtain their mean values and indicator variables are zero.

It appears from table 2 that the probability of leaving the labour force due to voluntary choice is around 2 per cent and due to compelling reasons between 1–2 per cent at different unemployment durations. E.g. among the group of unemployed for whom unemployment spell has lasted until 9–12 months the probability of leaving the labour force voluntarily is 2,7 per cent and on the whole 4 per cent when exits due to necessity are accounted for. Except for the drop in the exit rate at the final spell category of 21–24 months exit rates seem to exhibit a relatively flat time pattern. Moreover, the estimated hazard rates in table 2 suggest that only 75 per cent of the original group of unemployed are still in the labour force (i.e. 'survivors') after a period of 2 years and 25 per cent leave that labour market during this period.

Let us next study the estimation results for the probability of becoming employed in our data set. All estimations are conditional on the fact that before an unemployed person can become employed he or she has to have remained in the labour force. To take into account the fact that unemployment compensation system can affect both job offer arrival and job acceptance probabilities the hazard models for the probability of becoming employed will be estimated for three different groups of unemployment benefit receivers separately; for those on earnings related unemployment insurance (UI-benefit receivers), for those on means-tested unemployment assistance (UA-benefit receivers), and for the non-claimants. The comparison of different groups of benefit receivers is potentially important and can reveal how other aspects of the unemployment compensation system than just the benefit level can affect unemployment duration. There are some empirical studies which suggest that unemployment benefit receivers search more actively for new jobs in the labour market than the non-claimants, see Wadsworth (1991) for Britain and Blau and Robins (1990) for the United States. It has also been suggested that benefits could influence job arrival rates due to the fact that unemployed jobseekers who receive unemployment compensation may have informational advantages due to the benefit system, see Wadsworth (1992). If these suggestions held true in the Finnish labour market one would expect the hazard rates to be higher for unemployment benefit receivers than for otherwise similar non-claimants.

In table 3 hazard model estimates for the probability of becoming employed are reported for the three different benefit groups separately. Unemployment benefit (or replacement ratio) is not included as a covariate in estimations due to the lack of data. The only group in which unemployment benefit can vary substantially among the unemployed is the UI-benefit group which gets earnings related unemployment insurance. UA-benefit group receives a flat rate unemployment assistance (includes a supplement which depends on the number of dependent children) and the third group receives no compensation whatsoever. Thus, some of the differences between UI-benefit receivers and the other groups can be due to the fact that the effect of unemployment benefit could not be controlled for.[10]

It appears from table 3 that coefficients for the covariates explaining the probability of becoming employed are distinctively different for the three benefit groups. The likelihood-ratio test clearly rejects the null hypothesis that the covariates have equal coefficients in these three groups (the test statistic $\chi^2(40)$ obtained the value of 77.4, whereas the critical value at a 5 per cent significance level is 55.8). This result suggests that there are distinctive differences in the way in which unemployed per-

[10] *However, there is some evidence that this is not a major problem. We tested the magnitude of the benefit effect with a subsample from the 1987 interview and could not find statistically significant coefficients for the replacement ratios in hazard model estimations using pooled data from all benefit groups.*

Table 3. Hazard model estimates for the probability of becoming employed in different benefit schemes*

Independent variables	UI-benefit N=337	UA-benefit N=403	No benefit N=252
Family and other background:			
Age	–0.0156	–0.0576	–0.0299
	(0.0090)	(0.0094)	(0.0107)
Female	–0.3914	0.2387	–0.0231
	(0.1782)	(0.1777)	(0.1948)
Single	–0.7332	–0.2323	–0.5457
	(0.1975)	(0.1993)	(0.2357)
Dependent children	–0.0384	0.0904	–0.3127
	(0.1796)	(0.2107)	(0.2517)
Lower secondary school	0.4986	0.4029	0.3078
	(0.1615)	(0.1552)	(0.2053)
High school	1.1065	0.8127	0.5946
	(0.3091)	(0.2449)	(0.2256)
Status in the labour market:			
Temporarily laid off	0.2312	0.9014	–0.1678
	(0.2078)	(0.3874)	(0.4385)
Quitted voluntarily	–0.8883	–0.6701	–0.5404
	(0.2479)	(0.2595)	(0.2159)
Re-entered the labour force	–1.1035	–0.2767	–0.5274
	(0.4754)	(0.2625)	(0.3417)
Looking for part-time work	0.1131	–0.9694	–0.1352
	(0.5972)	(0.5930)	(0.3672)
Status prior to unemployment:			
Top white-collar worker	0.4139	–1.9026	–1.3970
	(0.4275)	(1.0419)	(0.7535)
Public sector employee	–0.1809	–0.1408	–0.1892
	(0.2116)	(0.2190)	(0.2783)
Work experience <1 year	1.6617	–0.0944	0.0803
	(0.6215)	(0.2095)	(0.2599)
Industry: Services	0.7094	0.6251	0.4267
	(0.2407)	(0.2299)	(0.2780)
Occupation:			
Managerial & related work	0.1845	0.9229	–0.2868
	(0.2551)	(0.3256)	(0.3462)
Agricultural & related work	0.8167	0.0037	–0.0834
	(0.2759)	(0.2196)	(0.4132)
Transport & related work	–0.9041	–0.0816	–0.0072
	(0.4290)	(0.3299)	(0.3631)
General conditions:			
Local UV-ratio	0.0113	0.0077	0.0014
	(0.0046)	(0.0039)	(0.0053)
Interview in 1986	0.2404	0.4300	–0.0847
	(0.1872)	(0.1849)	(0.2117)
Interview in 1987	0.3292	0.7892	–0.2443
	(0.1781)	(0.1864)	(0.2390)
Mean log-likelihood	–1.5769	–1.3570	–1.4380

* Standard errors of the parameters are shown in parentheses.

sons' characteristics affect employment probability in these groups. Why this is the case may be due to many reasons. One possibility is that search effort and search effectiveness varies among the different groups of unemployed. Another possibility is that market environments where different groups operate vary affecting the results. Furthermore, differences may be due to unobserved characteristics of the unemployed or due to the fact that there is a latent self-selection process into different unemployment schemes not taken into account in the analysis. All in all, table 3 suggests that one cannot treat different benefit groups as homogeneous in estimations.

According to table 3 age has a negative effect on the probability of becoming employed in all benefit groups. It seems that, in particular, among the UA-benefit receivers aging is a problem; for the unemployed who receive unemployment assistance the negative age effect is 3,7 times higher than for those who obtain unemployment insurance. A female UI-benefit receiver has a lower probability of becoming employed than a similar male job-seeker whereas a female UA-benefit receiver has a higher probability of becoming employed than her male counterpart. Thus, with respect to becoming employed male UA-benefit receivers seem to be in a much worse position than male UI-benefit receivers even though differences in many background factors are controlled for. It is hard to believe that the behaviour and the market environment of unemployed men and women with similar characteristics could explain all of these differences, and it is plausible that some latent processes which affect labour market attachment of the unemployed can partly explain the observed differences.

What comes to the family status it appears that unemployed who are single are less likely to be employed than those with a spouse. According to table 1 single jobseekers had smaller withdrawal rates from the labour force than otherwise similar unemployed with a spouse. These results suggest that even though single jobseekers have a higher than average attachment to the labour force their probability of finding a job is smaller than that for the others. Dependent children do not seem to affect the probability of becoming employed in any of the benefit groups. Having either or a lower secondary school or a high school diploma increases the probability of finding employment. These results are to a large extent in

accordance with similar studies on unemployment duration in different countries.[11]

In both UI- and UA-benefit groups temporarily laid off unemployed find jobs faster (are recalled?) than those who have been made redundant. It appears that those unemployed who quitted voluntarily or who re-entered the labour market have a much lower probability of finding a job than otherwise similar unemployed jobseekers. One explanation to this result could be found from a (possibly) looser labour force attachment of these persons (and hence smaller job-offer rates) compared with the others. Small markets for part-time jobs can partly explain the fact that UA-benefit receivers who are looking for a part-time job are less likely to find one than similar persons who prefer full-time employment.

Previous top white-collar workers are less likely to find employment in the un-compensated group than the others whereas among UI- and UA-benefit receivers previous socio-economic status does not play a significant role in explaining employment probability. These results could possibly, again, reflect differences in the labour force attachment of these groups of unemployed. It appears from table 3 that private and public sector workers do not seem to differ from one another in terms of expected unemployment duration. In the group of UI-benefit receivers those with a less than a year work experience have a higher probability of finding a job than the others. However, this group is very small among UI-benefit receivers. For the other benefit groups the work experience indicator did not receive statistically significant coefficients. An unemployed person with previous industry in services seems to be more likely than the others to find employment in all benefit groups. This result most probably reflects differences in job-offer rates in different industries.

According to table 3 different occupational groups have differing probabilities of becoming employed in the three benefit groups. This may be an indication that possible latent mechanisms that affect the probability of finding a job in the three benefit groups are related to occupation. Otherwise it is difficult to see, for example, why an UI-benefit receiver in a certain occupation would have a different probability of finding a job than an un-compensated unemployed person with similar characteristics and market environment.

The coefficient for UV-ratio obtains somewhat unexpectedly a positive sign suggesting that when in the local labour market the ratio of unemployed persons to vacancies increases, the duration of unemployment spell decreases. Similar result has been obtained by Meyer (1990), who also used time-variant UV-ratios in his estimations for different U.S. states. Due to the time-variance in the UV-ratios the cyclical variation in unemployment are reflected in estimation results. According to Meyer the positive relationship between UV-ratios and the probability of finding a job can be explained by the counter-cyclical nature of layoffs; in recessions the fraction of unemployment to layoffs rises and because layoff spells tend to be shorter than other spells, the average duration of unemployment spells falls at times when UV-ratios rise.

For the Finnish case a more potential explanation than the one presented above for the positive coefficients for UV-ratio is the practised regional labour market policy, which provides a larger than proportional share of job opportunities in regions with higher than average unemployment rates. In other words, active labour market policy measures are not equally distributed among different regions with respect to experienced unemployment rates in Finland. Rather, there is higher than average proportion of unemployed jobseekers employed with selective employment measures in regions which have high unemployment rates. This matter of fact is a plausible cause for positive coefficients for local UV-ratios. On the other hand, other regional indicators, when we included them as additional covariates in estimation, could not obtain statistically significant coefficients. The improvement in economic environment over time is reflected in the two interview-year indicators of 1986 and 1987. The unemployed who were interviewed in 1986 and 1987 seem to have a slightly higher probability of becoming employed than those interviewed earlier in 1984 and 1985.

The baseline hazard estimates from table 3 for each benefit group are reported in table 4. Firstly, it appears from table 4 that there is no significant negative duration dependence in

[11] *See e.g. Atkinson and Micklewright (1991) and Holmlund, Löfgren and Engström (1989) for comparisons concerning international studies on unemployment duration. For the Finnish case, see Eriksson (1985), Kettunen (1990), Pääkkönen (1990) or Sääski (1981).*

Table 4. Baseline hazard estimates for the probability of becoming employed*

Unemployment duration, months	UI-benefit	UA-benefit	No benefit
[0,3[	0.1085	0.0466	0.3302
[3,6[	0.1600	0.0921	0.3128
[6,9[	0.1522	0.0624	0.1500
[9,12[	0.1783	0.0888	0.3881
[12,15[	0.2068	0.0957	0.2439
[15,18[	0.1088	0.0671	0.0837
[18,21[	0.2594	0.0356	0.1761
[21,24[	0.0767	0.0394	0.0775

* Baseline hazards refer to a case in which continuous variables obtain their mean values and indicator variables are zero.

the probability of becoming employed in any of the benefit groups, if a drop in hazard rates at the duration of 21–24 months is not accounted for. The sudden increase in the probability of exiting to employment at the interval 18–21 months among UI-benefit receivers and the non-claimants is partly a reflection of the Finnish labour market policy which has, among other things, an obligation to provide employment for the long-term unemployed. Korpi (1991) has also found similar evidence for Sweden. In addition, the fact that for the UI-benefit receivers the benefits run out if an unemployment spell increases 100 weeks contributes to the rise in the employment probability at the interval 18–21 months among this group of jobseekers.

A striking result that appears from table 4 is the fact that UA-benefit receivers have much smaller probability of becoming employed than other benefit groups even when a number of background factors have been controlled for. The probability of becoming employed is generally twice as high for a person on UI-benefit and at times three times higher for an un-compensated jobseeker than for a similar person on UA-benefit. It is remarkable that un-compensated jobseekers perform as well and even better than the unemployed on unemployment compensation. This suggests that the hypothesis on benefit claimants finding jobs faster than the non-claimants due to informational (or other) advantages related to the benefit system is not supported in the Finnish case. Rather, it seems that the most problematic group among the unemployed in Finland is UA-benefit receivers.

In interpreting the results presented in table 4 it is useful to recall the basic features in different unemployment benefit schemes. Earnings-related UI-benefits are received by members of trade union funds if they have been employed and contributed insurance payments to the fund for at least 6 months preceding unemployment. Thus, UI-benefit receivers have a relatively close attachment to the labour market before becoming unemployed. On the other hand, UA-benefit receivers are either trade union members not eligible for UI-benefits or non-members, who all must pass a means test. The family income and the number of dependent children determines eligibility for an UA-benefit. Those unemployed neither eligible for UI- nor UA-benefits remain uncompensated. The quite different eligibility criteria for the benefit schemes means that the unemployed can differ from one another in other respects than those controlled for in our estimations. In particular, it seems plausible that there can be a latent selection process into the schemes that would partly explain obtained differences in estimation results. For example, if there were a latent selection process of persons who have a weaker than average attachment to the labour market into the UA-benefit scheme, lower than average employment probabilities for UA-benefit receivers would be obtained as a result of this. Equally, the smaller likelihood of employment among UA-claimants could as well be explained by »adverse selection» if employers regard receiving UA-benefit as a signal for low productivity among these jobseekers.

5. *Conclusions*

In this paper the dynamics of unemployment duration in Finland has been studied using data from the Finnish Labour Force Surveys from the years 1984–1987 and semiparametric discrete-time hazard models in estimation. Unemployment spells have been allowed to be terminated by three different failure types; exiting from the labour force either due to voluntary choice (studying or homemaking) or due to necessity (military service, disability or related reasons), and becoming employed.

It appears from our results that an unemployment spell is surprisingly often terminated by an exit from the labour force; 1 unem-

ployed person out of 4 left the labour force during the two first years of unemployment spell in our sample. Our results suggest that mechanisms affecting the probability of exit from the labour force and the probability of becoming employed are somewhat different and that the distinction between the two failure types is relevant in our sample of unemployed. According to our results the withdrawal rates from the labour force of benefit claimants and the non-claimants did not statistically differ from one another. Thus, the hypothesis that an unemployment benefit system creates a closer attachment to the labour force and, hence, smaller withdrawal rates for the compensated jobseekers than for the others is not supported by our data.

To study the effect of unemployment benefit system on unemployment duration we estimated the probability of becoming employed separately for three different benefit groups; for the earnings-related unemployment insurance receivers (UI-benefit), for the means-tested unemployment assistance receivers (UA-benefit) and for the uncompensated jobseekers (non-claimants). According to our estimation results the probability of becoming employed is generally twice as high for a person on UI-benefit and, at times, three times higher for a non-claimant than for a similar person on UA-benefit. This result suggests that despite the fact that institutional arrangements (employment service, access to training and so forth) are the same for all benefit claimants, they do not form a homogeneous group. In particular, contrary to the British evidence, see Wadsworth (1992), the hypothesis that the benefit system would create informational or other advantages to the claimants which increases their probability of becoming employed compared with that of non-claimants is not supported by the Finnish data. Rather, our results suggest that the UA-benefit receivers are the most problematic group among the unemployed, and that in trying to understand the observed differences between employment probabilities under different benefit schemes in Finland, potential advantages related to the benefit system as such do not provide an answer. There seems to be more in this matter than meets the eye. In fact, our results could reflect some latent underlying mechanisms that affect the employment probabilities of the unemployed. A potentially fruitful line of research would be to study how much these underlying factors could explain the differences in the probability of becoming employed in different benefit groups.

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Appendix 1.

Sample Means of Variables

Independent variables	UI-benefit N=337	UA-benefit N=403	No benefit N=252	All N=992
Family and other background:				
Age1*	35.46	29.53	28.31	31.23
Age2	35.78	29.88	28.75	31.60
Age3	36.07	30.21	29.03	31.90
Age4	36.27	30.38	29.16	32.07
Age5	36.46	30.53	29.31	32.23
Age6	36.78	30.88	29.75	32.60
Age7	37.07	31.21	30.03	32.90
Age8	37.27	31.38	30.16	33.07
Female	0.4748	0.3673	0.4762	0.4315
Single	0.3502	0.6303	0.5238	0.5081
Dependent children	0.4985	0.2481	0.2540	0.3347
Lower secondary school	0.4095	0.3325	0.1230	0.3347
High school	0.0504	0.1141	0.1865	0.1109
Status in the labour market:				
Temporarily laid off	0.1454	0.0372	0.0397	0.0746
Quitted voluntarily	0.1484	0.1464	0.2698	0.1784
Re-entered the labour force	0.0326	0.1117	0.1032	0.0827
Looking for part-time work	0.0208	0.0422	0.0833	0.0454
Status prior to unemployment:				
Top white-collar worker	0.0267	0.0149	0.0317	0.0232
Public sector employee	0.2433	0.2606	0.1706	0.2319
Work experience <1 year	0.0119	0.1911	0.2302	0.1401
Industry: Services	0.1899	0.2208	0.1984	0.2046
Occupation:				
Managerial & related	0.0861	0.0422	0.0794	0.0665
Agricultural & related	0.0712	0.1588	0.0595	0.1038
Transport & related	0.0504	0.0496	0.0635	0.0534
General conditions:				
UV1**	25.76	26.88	21.95	25.25
UV2	26.45	28.28	23.16	26.36
UV3	21.90	22.95	17.65	21.25
UV4	19.29	20.30	15.75	18.80
UV5	21.53	22.83	17.89	21.14
UV6	21.17	23.67	18.27	21.45
UV7	17.34	18.75	14.97	17.31
UV8	15.38	17.17	12.96	15.49
Interview in 1986	0.2433	0.2804	0.2341	0.2561
Interview in 1987	0.3323	0.2606	0.1984	0.2692
Unemployment duration (months)	13.40	17.79	10.88	14.54

* Age1–Age8 refer to ages at different duration categories of unemployment.
** UV1–UV8 refer to UV-ratios at different duration categories of unemployment from]0,3[to [21,24[months.