The effect of tightened UIB entitlement rules on incentives to accept employment
Empirical evidence from three Nordic countries

by

Merja Kauhanen*, Iben Bolvig**, Inés Hardoy***,

Reija Lilja*, Marianne Roed*** and Nina Smith**

May 2007

Second draft

*Labour Institute for Economic Research, Helsinki
**Aarhus School of Business, Aarhus
****Institute for Social Research, Oslo

ABSTRACT

There is ample amount of empirical evidence on how changes in the level of unemployment insurance benefits (UIB) affect job search and unemployment duration. However, despite the fact that it is well recognised that the effect of UI benefits on job search differs among those who are entitled to benefits and who are not, there is very little empirical evidence on how the entitlement rules affect unemployed job seekers' behaviour. In this paper we analyse the impacts of UIB reforms that tightened the entitlement rules in a similar fashion in three Nordic countries-Denmark, Finland and Norway - in 1997. We identify the effect of the reforms in UIB entitlement conditions by exploiting the quasi-experimental feature of the reforms, i.e. that they did not affect all the unemployed in the same way. In each country, we use representative unemployment spell data to estimate Cox proportional hazards competing risks model on unemployment duration. We find that UIB reform effects differ between the three countries. After the reform, unemployed job seekers, who were affected by the reform, had a higher likelihood to exit to employment in Denmark. In Finland, no change in the job seekers' behaviour was found, possibly due to high unemployment situation and related insufficient demand for labour. In Norway, the reform involved also shorter UIB durations, which seemed to have had a greater impact on job seekers' behaviour than the pure entitlement reform. Furthermore, in Denmark and Norway there was a clear increase in the likelihood to move out of the labour force after the reform while in Finland no such effect was detected.

1. Introduction

In empirical labour market research new types of data have allowed more rigorous analyses of the effects of unemployment insurance (UI) benefits on unemployment duration and job search. However, even though it is well recognised that the effect of UI benefits on job search among those unemployed job seekers *who are entitled* to benefits and among those *who are not* differs, very little attention has been devoted to the impact of entitlement or eligibility criteria for UI benefits on job-search behaviour. Potentially the entitlement or eligibility criteria may have a larger impact on individual behaviour than UI benefits as such because implications for the individual are larger: when a person is not entitled to UI benefits, his or her replacement rate can fall considerably, even to zero, if no other social welfare benefits are available.[1] This effect of unemployment should raise the escape rate from unemployment for workers who do not currently qualify for benefits because the potential for receiving benefits on a future job makes work more attractive (Meyer, 2002).

In fact, when it comes to fine tuning of UI policies there are still very little evidence from empirical research to guide policymakers. How effective would it be to combat unemployment by tightening entitlement rules for UI benefits compared to reducing UI benefits, is a question that the present empirical analyses have not yet provided answers for.[2] Would the incentive effects of different policy choices vary among different groups of job seekers, is another question that remains unanswered. Understanding the economic effects of UI requires knowledge of whether or not the entrance requirement has a significant impact on employment or unemployment durations and how individuals adjust to changes in the entrance requirement.[3]

The main purpose of this paper is to examine how the changes in the unemployment insurance benefits (UIB) entitlement rules, which took place in three Nordic countries, Denmark, Finland and Norway in the latter half of the 1990s, affected job finding among unemployed workers. Similar reforms were carried out in all three countries but were the effects similar in all countries? A cross-country comparison of three relatively similar yet different countries gives a more reliable picture of the incentive effects of UIB entitlement rules than a single country study would do. In all three countries register-based panel data sets are used in the analyses. We identify the effect of reforms in

---

[1] See Grubb (2000). "Entitlement" conditions (sometimes called "monetary" conditions) restrict benefits to people who either have sufficient record of contributions from work or an assimilated status and have been unemployed for a limited duration or have low total income. "Eligibility" conditions restrict unemployment benefit to people who are unemployed and who meet administrative requirements for receiving benefits.

[2] Katz and Meyer (1990) is an attempt to this direction by focusing on the effects potential duration of unemployment benefits on the duration of unemployment. See Geerdsen (2002:1) on Danish data.

[3] Green and Riddell (1997).

UIB entitlement conditions by exploiting the quasi-experimental feature of the reforms, i.e. that the reforms did not affect all the unemployed in the same way.

Our paper adds new insights into the previous literature on the causal effects of UIB reforms, in particular on the effects on tightened entitlement rules on unemployed job seekers' behaviour. Much of the earlier work has focused on the impact of increases in the entrance requirement on the average duration of employment spells (e.g. Baker and Rea 1994, Green and Riddell 1998, Green and Sargent 1998), and not so much on unemployment duration or job finding rates.[4]

The paper is organised as follows. The next section describes the three UIB systems and the reforms in the UIB entitlement rules of which impact we later will investigate. Section 3 describes the data sources, the construction of spell data to be used in the empirical analyses and sampling frame. Section 4 describes the selection of treatment and control groups. Section 5 reports the empirical model specification and provides the main results of the empirical analyses of how the UIB reform has affected unemployment duration and the probability of obtaining a job in the open labour market in the three Nordic countries. Section 6 concludes.

2. Nordic UIB systems and entitlement rules

Current features of the Nordic UIB systems

In many countries, including the Nordic welfare states, one of the responses to risen unemployment rates in the 1990s was to introduce new initiatives to reform UI benefit systems in order to mitigate potential disincentive effects for job search that these systems may create. The reforms addressed both the entitlement and eligibility rules for benefits as well as the level of benefits.

As regards entitlement rules for UIB in all three Nordic countries, Denmark, Finland and Norway, the unemployed job seekers must meet certain requirements to be entitled to an earnings-related unemployment allowance. These requirements have to do with employment criteria and a membership in an unemployment fund in the case of Denmark and Finland and with an earnings requirement in the case of Norway.

---

[4] There is still relatively little empirical analysis of the impact of UIB entitlement rules on job findings. Instead, a lot of empirical research based on micro data on individual unemployment spells has been carried out to investigate how changes in the benefit parameters such as replacement rate and benefit duration affect job findings (see e.g. Atkinson and Micklewright 1991, Holmlund 1998) and how UIB reforms in these areas have affected financial incentives (e.g. Meyer 1995 (a review); Carling, Holmlund and Vejsiu 2001; Røed and Zhang 2003; Bennmarker, Carling and Holmlund 2005; Heyma and van Ours 2005; Lalive et al. 2006)

In Denmark present entitlement rules for an earnings-related UIB requires minimum one year membership in an unemployment insurance fund and at least 52 fulltime weeks of paid employment within the last three years.[5]

In Finland the present entitlement rules require membership in an unemployment fund for at least 10 months and at least 43 weeks (at least 18 hours a week) of paid work during the last 28 months before becoming unemployed. For persons who have previously received unemployment allowance the condition for renewal of benefits is 34 weeks of employment during the last 24 months. The monthly wage in earlier employment must be in line with the collective agreement or at least 40 times the amount of the basic unemployment allowance (23,50 €/day), i.e. 940 €/month.[6]

In Norway to become eligible to UIB is calculated on the basis of wage income during the last calendar year directly preceding the start spell (R1) or as an average of the previous three calendar years (R2), whichever is highest. Work related transfers like sickness benefits and maternity leave benefits count as wage income. In the present UI system income from self employment, income/allowance on ALMP (UIB),UA or SA are not included in the calculation of R1 and R2. The values of these minimum income requirements are defined by a basic quantity (G) in the Norwegian social security system, i.e., R1 equals 1.5 G while R2 equals 1 G. This basic quantity is index regulated annually and changed May 1. In 2006 G equals NOK 62,161.

In all three countries, in addition to the employment or income requirements, the unemployed must fulfil certain demands with regard to his or her behaviour as a job seeker to become eligible for the UI benefits. In practice this implies that job seekers must register at the local employment office, meet for consultations when called in and to some extent document that they really apply for jobs.

Tightening of the entitlement rules in 1997

Our focus is on the reforms of UIB entitlement rules that were implemented in the latter half of the 1990s in Denmark, Finland and Norway. Common feature in these reforms was that they implied a tightening of the UIB entitlement requirements. In Denmark and Finland the focus was on the entitlement rules for the UI benefits. In Norway both entitlement requirements were tightened and maximum duration shortened. The main intention for shortening the benefit duration was to increase the job search incentives of the unemployed and thereby reduce the length of their unemployment periods (Report of the Storting 9:2006-2007).

---

[5] For part-time insured the requirement is 34 weeks in fulltime equivalent work.
[6] Furthermore, basic unemployment allowance is paid to unemployed job seekers who fulfil previous work requirement but have not been members in unemployment funds.

In all three countries the reform was implemented at the beginning of 1997. In Denmark and Finland unemployed job seekers had to increase working weeks and in Norway earnings in order to meet the new eligibility requirements for UI benefits.

In Denmark, according to the reform the employment requirement was increased in 1997 from 24 to 52 weeks within the last 3 years.

In Finland the required minimum period of employment was extended from 26 weeks to 43 weeks during the last 24 months. The requirement for the length of a membership in the unemployment fund was lengthened from 6 months to ten months in 1997.

In Norway eligibility is attached to previous income rather than working period, as in Denmark and Finland. In 1996 R1 was 0.75 G and R2 was 1 G. As of 1 January 1997 R1 became 1.25 G while R2 remained 1G, as it still is today. This implies an increase of 67 per cent if last year's income (R1) is used as the basis to calculate UI benefits and an increase of 33 per cent if the average of all three previous years (R2) are used instead.

At the same time, the maximum of 186 weeks, made up of two periods of 80 weeks followed by 13 additional weeks, was replaced with one uninterrupted period of 156 weeks. Furthermore, maximum duration was reduced to 78 weeks if R1 was in the interval between 1.25G and 2G or R2 was in the interval between 1G and 2G. Thus, as of January 1997 the very lowest income groups eligible for UIB were granted a lower maximum duration compared to those with income above the threshold mentioned above. In addition, as of January 1st 1997 income from labour market programmes could no longer be included in the calculation of eligibility entitlements.

3. Data

Data sources

The Danish data consist of a detailed longitudinal data set, which allows us to follow the same person in different labour market states over a period of considerable length.

The main sources are the Integrated Database for Labour Market Research (IDA), which contains individual information on a yearly basis, and a spell database containing information on each person's labour market state on a weekly basis. The spell database includes the period 1986-2002, but for this paper only the period 1996-2000 is applied.

The Integrated Database for Labour Market Research (IDA) is the most used administrative database for labour market studies in Denmark. It is an employer-employee linked database, and it

covers the entire Danish population (about 5.3 million) as well as all firms with at least one employee (about 250,000). About 250 different variables are available from IDA. For each employment spell, information on the employer is available and it is linked to the employee via a unique employer id. Both individuals and firms can be followed over time.

IDA also provides information on the annual amount of UI benefit paid to each person. Even though these data only are available on an annual basis, they can still be used to estimate the amount of UIB spent within the reference period, which is important for the definition of eligibility.

For the present study, we use IDA to collect information on individual characteristics such as age, gender, level of education, number of children, marital status and immigrant status.

For Finland, a data set from Statistics of Finland that consists of information on 350,000 individuals (a 7% sample of population) from years 1987-2000 from various separate registers is used. Besides normal employment statistics the data include information on the unemployed person's individual unemployment spells, participation in retraining schemes, subsidised employment, and marital and family status. It also include income information from tax registers, information on different kinds of social transfers from the registers of the Social Insurance Institution of Finland and on the length of employment contracts from the register of the Finnish Centre for Pensions.

The Norwegian data is based on a panel database covering the entire Norwegian population. FD-Trygd, as it is called, is compiled by Statistics Norway. The statistical unit is the individual and information in the data base comprises all registered events in the person's life and her/his family per 1.1.1992 and onwards. It is updated continuously. It is build on the basis of a series of administrative registers, covering information on areas from demography, education, income and employment to unemployment, social assistance and social security.

Spell data

In Denmark, the spell data is constructed from various administrative registers from Statistics Denmark. It defines each person's labour market state on a weekly basis within the following states: employment, unemployment, active labour market program, in formal education and out of the labour force including different welfare programs such as rehabilitation and social assistance. In case a person is observed in more than one register at the same time, the following order of preference between the different labour market states has been made: 1) unemployment, 2) education, 3) welfare programs and pension schemes, 4) employment and 5) otherwise out of the labour force. Hence, registration in the unemployment register (CRAM) dominates registration in

any other register, whereas individuals not registered in any of the applied registers are defined as out of the labour force.[7] For the present paper a 10 per cent random sample is drawn from a merge between the spell data and the IDA data.

In Finland, the spell data is collected from the Ministry of Labour Statistics on the unemployed job seekers and gives day by day account on all unemployment spells as well as participation in different kinds of ALMP measures. The spell data was gathered for and merged with the 7 per cent random sample of Finnish population by the Statistics Finland.

In Norway, the unemployment spell data comprises all new records of open unemployment, part-time unemployment and labour market programme participation from January 1st 1992 and onwards. The open unemployed must report every two weeks (the second and fourth Tuesday in the month), while the data base is updated once a month. This implies that very short spells of open unemployment within the same month are likely to be under-reported and/or inaccurate.

The labour market states relevant for this paper are open unemployment, employment and out of the labour force. The open unemployment state constitutes the base of the analysis, whereas the other labour market states are used for identifying destination states from open unemployment.

Sampling frame

In all countries we focus on the age group 25-49 years of age, since special rules apply to those below 25 and those 50 years or older, which can influence their job search behaviour considerably. Spells of 5 days or less are deleted and spells of 4 days duration for one and the same individual are merged. Due to data limitation on duration of time spent in active labour market programs (ALMP) in Denmark we have truncated all unemployment spells whenever a person enters ALMP.

In Denmark, the policy change in the eligibility rules was implemented 1 January 1997. From the above mentioned data set, we create two flow samples, a before- and an after-sample. Hence the before- and after-periods are placed in 1996 and 1997, respectively. However, in order to avoid the effect of a policy change in the duration of passive UIB effectuated for some groups of unemployed by 1 July 1996, the before- and after-periods are drawn from the second half of 1996 and 1997, respectively. Hence, the before-sample consists of all individuals entering a fresh unemployment

---

[7] See Larsen (2005) for further description of the spell data.

spell between 1 July and 31 December 1996, and the after-sample consists of all individuals entering a fresh unemployment spell between 1 July and 31 December 1997.[8]

Due to the Danish UIB system with long reference periods of UIB payments prior to 1996 and 1997, some unemployed individuals might have been eligible for UIB at the start of a new unemployment spell even though they did not fulfill the work requirement just before. This is the case if they are still within the reference period of an old UIB period. These individuals are deleted from the analysis, but will be included in the control group1 in a robustness analysis.

In Finland, the focus is also on new unemployment spells before (about 1 year before) and after the reform (taking into account the possibility of earlier adjustment to the reform after decisions were published about it). In Finland the UI-reform was proposed by the Government in May 1996 and was passed as a law by the Parliament in September 1996. It took place on 1 January 1997. This means that we can be confident that those people, whose unemployment spell started in January-April 1996 had no information of the coming reform (it became certain only in September). Thus, our before-reform data includes all new unemployment spells between 1 January 1996 and 30 April 1996 and the after-reform data all new unemployment spells between 1 January 1997 and 30 April 1997.

In Norway, one sample is drawn before the reform was introduced and another after the reform was introduced. Two dates need to be taken into account when deciding the period of the draw. The reform was passed by law on 28 June 1996. At the same time the basic quantity G in the Social Security System is updated on the 1st of May every year. Hence the period chosen is from the 1st of January to 30th of April. The before reform sample comprises all spells of full time unemployment starting between 1 January 1996 and 30 April 1996 and the after reform group comprises all spells of full time unemployment starting between 1 January 1997 and 30 April 1997. The total sample comprises about 107,000 spells.

4. Selection of treatment and control groups

The *treatment group* comprises of those workers who enter unemployment between January-April 1996 and January-April 1997 in Finland and Norway, and between July-December 1996 and July-December 1997 in Denmark, and *fulfil the old UIB eligibility requirement but not the new one*. Due to the change in the entitlement for UIB in this group, the behaviour of this group can be expected

---

[8] The reform was already suggested and decided in December 1995, but we have chosen not to draw the before-sample prior to this date, because too many other changes in the UI system have taken place during the time from decision to implementation.

to be affected by the reform (in the case of Norway there are more changes in 1997 than the eligibility criteria that may affect this group).

The *control group 1* includes those workers who enter unemployment during these intervals and are *entitled to UIB according to both old and new eligibility requirements*. This group should not be affected by the eligibility criteria.[9] It can be regarded as the *basic comparison group* in subsequent estimations when reform-effects are evaluated.

Those workers, who enter unemployment and are *not entitled to unemployment benefits* neither according to old or new rules, constitute *control group 2*. The overall entitlement effect plays a role for this group of unemployed job seekers. In this group incentives to accept employment are not affected by the change in entitlement rules as such but are very much related to the subsequent levels of UI benefits that the unemployed job seeker will be able to 'earn' after becoming employed. The Nordic UIB reforms should only have an effect in this group, if at the same time as the entitlement requirements are tightened, the reform also leads to higher levels of future UI benefits among those who will be entitled to them, which might be the case in Norway. Stricter work requirement for future UI benefits, on the other hand, may discourage this group of unemployed job seekers from job search and make them more likely to exit from the labour force.

Descriptive statistics on the basic features of the unemployed job seekers[10] belonging to one of the three groups 1) before and 2) after the UIB reform are reported for each Nordic country separately in Table 1.[11] It is apparent from Table 1 that there are many similarities, but also differences, between the selected groups in the three countries.

---

[9] In Norway, control group 1 is also affected by the change in the UIB duration.
[10] The statistics refer to unemployment spells rather than individuals (in the case of multiple spells the same individual is calculated as an observation more than once).
[11] The statistics refer to mean values of the variables and in the case of indicator variables correspond to percentage shares.

Table 1. Descriptive statistics (at the beginning of the unemployment spell)

Denmark

	Treatment		Control group 1		Control group 2	
	Before	After	Before	After	Before	After
Female	0.57	0.59	0.49	0.51	0.49	0.50
Under 30	0.31	0.33	0.27	0.25	0.38	0.38
Spouse	0.59	0.58	0.65	0.65	0.50	0.48
Young child	0.32	0.36	0.29	0.30	0.32	0.32
Dependent child	0.50	0.52	0.49	0.51	0.46	0.46
Number of children	0.88	0.94	0.83	0.88	0.88	0.89
Non-native	0.14	0.12	0.07	0.07	0.27	0.31
Low education	0.42	0.40	0.36	0.36	0.47	0.49
Medium education	0.38	0.40	0.50	0.49	0.31	0.30
High education	0.20	0.20	0.14	0.15	0.22	0.21
Local U-rate	9.59	8.42	9.08	8.18	9.62	8.61
Earlier U-spells	0.75	0.71	0.55	0.56	0.50	0.46
Number of U-spells	2.83	2.69	2.19	2.25	1.88	1.76
ALMP	0.12	0.26	0.02	0.03	0.59	0.88
N	2,510	1,511	8,974	8,796	8,465	7,998

Finland

	Treatment		Control group 1		Control group 2	
	Before	After	Before	After	Before	After
Female	0.50	0.53	0.44	0.47	0.56	0.54
Under 30	0.25	0.23	0.22	0.22	0.24	0.24
Spouse	0.65	0.68	0.70	0.71	0.62	0.59
Young child	0.24	0.25	0.25	0.26	0.31	0.29
Dependent child	0.49	0.53	0.49	0.50	0.52	0.50
Number of children	0.89	0.97	0.87	0.91	1.01	0.97
Non-native	0.01	0.02	0.01	0.01	0.05	0.07
Low education	0.23	0.22	0.23	0.21	0.30	0.33
Medium education	0.40	0.39	0.39	0.39	0.39	0.35
High education	0.16	0.16	0.16	0.17	0.12	0.12
Local U-rate	20.86	18.06	19.95	17.50	20.29	17.43
Earlier U-spells	0.80	0.82	0.53	0.58	0.62	0.60
Number of U-spells	3.81	3.72	2.79	2.96	2.69	2.40
ALMP	0.23	0.25	0.12	0.14	0.21	0.25
N	1,424	1,511	2,612	2,531	5,403	4,959

Norway

	Treatment		Control group 1		Control group 2	
	Before	**After**	**Before**	**After**	**Before**	**After**
Female	0.53	0.48	0.41	0.44	0.51	0.53
Under 30	0.45	0.47	0.33	0.32	0.36	0.35
Spouse	0.38	0.31	0.43	0.41	0.35	0.34
Young child	0.26	0.22	0.31	0.30	0.28	0.29
Dependent child	0.45	0.41	0.49	0.49	0.48	0.50
Number of children	0.84	0.76	0.88	0.88	0.91	0.96
Non-native	0.16	0.18	0.09	0.10	0.28	0.30
Low education	0.59	0.57	0.60	0.59	0.66	0.66
Medium education	0.21	0.22	0.28	0.28	0.18	0.19
High education	0.20	0.21	0.12	0.13	0.16	0.16
Local U-rate	5.36	4.27	5.61	4.51	5.11	4.09
Earlier U-spells	0.50	0.56	0.55	0.55	0.49	0.50
Number of U-spells	1.92	2.07	2.01	2.00	1.97	1.97
ALMP	0.67	0.70	0.57	0.53	0.60	0.60
N	2,203	1,640	47,299	38,276	9,417	8,288

The *treatment group* represents relatively established job seekers in Denmark and Finland. In Norway, on the other hand, young people and relatively more people with high education are more likely to be in this group. In Denmark and Finland, this group has somewhat higher than average risk to experience *multiple unemployment spells* than the other groups. Looking at three years back in time, about 70-73 per cent of Danish (and 80-81 per cent of Finnish) job seekers in the treatment group had been previously unemployed more than once. In control group 1 this share is only 52-57 per cent, and in control group 2 even less. This reflects the specific nature of the Danish and Finnish treatment groups. They are attached to the labour market but find it difficult to find permanent employment. In Norway, on the other hand, the treatment group is made up more of females and young people (some of which may be students or graduates) with a temporarily marginal attachment to the labour market.

Control group 1 is the most established group among the comparison groups, since it represents unemployed job seekers who have long enough employment history or high enough earlier earnings to entitle them to UI benefits. In this group one is more likely to find a male, native job seeker with a spouse, with children, medium level education and less experience from earlier unemployment than in other groups.

Control group 2 comprises unemployed job seekers who were entitled to unemployment benefits neither before nor after the reform. In this group one is more likely to find a female, non-native unemployed job seeker with low level of education and relatively high likelihood to have earlier participated in active labour market measures.

5. Model specification and results

Empirical model specification

In order to estimate how changes in UIB entitlement conditions affect unemployment duration and the probability of employment in the three Nordic countries, we apply the Cox proportional hazards competing risks model:

The Cox model is specified as follows:

(1) $h(t) = h_0(t) \exp(\alpha\ treat + \beta after + \gamma treat*after + \eta control2 + \kappa control2*after + m(x,y(t);\Omega))$

in which

$h_0(t) =$	baseline hazard
treat =	1 if in treatment group; =0 if in comparison group (=our control groups 1 and 2)
control2 =	1 if in control group 2 (to be used to identify the business cycle effect); 0 otherwise
	after = 1, if after treatment (i.e. 1997 spell); =0 if before treatment (i.e. 1996 spell)
$\gamma =$	the coefficient of the interaction term, which gives the difference-in-differences estimate of the effect of the UIB reform on the treatment group
$\kappa =$	the coefficient of the interaction term, which gives the difference-in-differences estimate of the effect of UIB reform on the control group 2
m(.) =	function of time- varying (y(t)) and fixed (x) variables (fixed variables x describe the situation at the beginning of the unemployment spell)
$\alpha, \beta, \eta, \Omega$	represent other parameters to be estimated

In subsequent estimations two failure types are identified; 1) exits to a job in the open labour market and 2) exits to non-participation. Both failure types are estimated separately treating other failures as truncated observations.

In order to identify the effects of the UIB eligibility reforms on the duration of unemployment and job finding, we compare the hazard rates into open employment for the treatment and comparison groups before and after the reforms applying so called difference-in-difference approach. If the

hazard rate for the treatment group increases more (declines less) between the before-reform and the after-reform period than the hazard rate for the comparison group then we conclude that the reform increased the hazard rate.

We focus on the coefficients of the *interaction terms*, γ and κ, (specified above). They give the *impact of the reform* for the treatment group and control group 2 *compared to control group 1*. For instance, in the case of exit to employment, the reform has had an overall positive employment effect for the treatment group if we find that $\gamma > 1$ (and $\gamma > \kappa$) .

Results

In Tables 2 and 3 estimated hazard ratios for the Cox proportional hazards model (with two failure types) are reported. They show that the overall behaviour of unemployed job seekers in these three countries appears to be remarkably similar with respect to the most common background variables.

We start by looking at the transitions into open employment. From Table 2 it appears that in Denmark, Finland and Norway unemployed job seekers in the treatment group are clearly less likely to get a job in the open labour market than otherwise similar job seekers in control group 1. The likelihood of finding a job in the treatment group is only 69-73 per cent of that in control group 1. This reflects the strong attachment to the labour market that the control group 1 has. The difference is even more apparent when one compares control groups 1 and 2 with one another. In Denmark and Finland, job seekers in control group 2 are about half (47-59 per cent) as likely to find a job in the open labour market as those in group 1, and as low as one fourth in Norway .

The UIB reform effects differ between the three countries. In Denmark, the reform seemed to have worked in the expected direction. After the reform, the treatment group experienced a 20 per cent increase in their likelihood of finding a job in the open labour market compared to a similar job seeker in control group 1. Furthermore, the treatment group had 36 per cent higher likelihood than control group 2 to find employment after the reform.[12] Thus, in Denmark the reform seems to have created a strong incentive to find a job among those job seekers who no longer were entitled to unemployment benefits. After the reform, the likelihood of finding a job in the open labour market is still lower for the treatment group compared to individuals in control group 1.

---

[12] This figure is obtained from the following ratio of the coefficients of the interaction terms 1.200*(1/0.880). Control group 2 experienced 22 per cent decrease in their likelihood to find employment compared with a similar unemployed control group 1 person.

Table 2. Exit to open employment

	Denmark		Finland		Norway	
	Hazard ratio	P > |z|	Hazard ratio	P > |z|	Hazard ratio	P > |z|
Treatment group	0.687	0.000	0.725	0.000	0.708	0.000
After reform	0.967	0.038	1.072	0.014	0.995	0.579
Treatment*after	1.200	0.000	0.992	0.569	0.885	0.013
Control2 group	0.593	0.000	0.470	0.000	0.262	0.000
Control2*after	0.880	0.000	0.942	0.092	1.23	0.000
Female	0.816	0.000	0.849	0.000	0.842	0.000
Under 30	1.282	0.000	1.162	0.000	1.136	0.000
Spouse	1.225	0.000	1.410	0.000	1.164	0.000
Young child	0.848	0.000	0.943	0.047	0.835	0.000
Dependent child	1.086	0.001	1.069	0.103	1.106	0.000
Number of children	0.969	0.004	1.033	0.088	1.033	0.000
Non-native	0.514	0.000	0.433	0.000	0.6754	0.000
Low education	0.818	0.000	0.735	0.000	0.872	0.000
High education	1.394	0.000	1.347	0.000	0.926	0.000
Local U-rate	0.971	0.000	0.984	0.000	1.011	0.000
Earlier U-spells	0.951	0.002	1.567	0.000	0.944	0.000
Number of U-spells	1.111	0.000	1.013	0.000	1.024	0.000
ALMP	0.757	0.000	0.980	0.537	0.785	0.000
Log likelihood	-282,704.18		-62,712.04		-777,567.97	
LR chi2 (df) Prob > chi2	8,931.80 (18) 0.0000		2,130.03 (18) 0.0000		12,553.74 (18) 0.0000	
Number of oservations Number of failures	56,511 28,600		18,378 6,950		107,120 72,484	

In Finland, the likelihood of finding a job in the open labour market did not change in the treatment group after the reform compared to that in control group 1. For all three groups together, the probability of transition to employment increased a little bit after the reform, but no additional effects were found for the treatment group. Compared to the control group 2, however, the treatment group's likelihood to find employment increased slightly. These relatively modest results for the treatment group could be explained by still quite high rates of unemployment, which puts limits on how the economic incentives can improve employment.[13] Incentives for increasing labour supply and accepting a job are effective only if there is sufficient demand for labour. Finland still

---

[13] We will perform also additional robustness tests to see how sensitive our results are to the definitions used for different groups.

recovered from the early 1990s recession in 1996 and 1997. The average local unemployment rates were very high, around 20 per cent, which might have influenced the treatment group's ability to find a job no matter how hard they were searching for it.

In Norway, surprisingly the reform seems to have had the opposite effect. According to our estimation results, after the reform control group 1 had 11 per cent larger probability of finding a job in the open labour market than the treatment group. This may reflect the shorter UIB durations implemented at the same time as the eligibility reform: maximum duration was reduced to 78 weeks for those with wage income under that 2G. Hence, for those individuals eligible for UIB, i.e. control group 1, the shortening of the benefit duration meant that they were confronted with the threat of loosing UIB in the foreseeable future, and this might have had a greater impact on the job search behaviour, than the pure non-eligibility effect.

Since the shortening of the benefit duration was greater for unemployed persons with a previous annual income between 1.25 and 2G (1 and 2G on average), we will try to separate this effect in a later version of the paper, by dividing control group 1 into two groups: group 1a with previous annual wages above 2G and hence modest shortening of UIB duration, and group 1b with wages below 2G and hence with large shortening of the UIB duration.

Next, we take a look at the non-participation effects of the reform; hence the effects leading to increased (or decreased) transitions into non-participation, i.e. leaving the labour force (see Table 3). Again, we do not find any significant effects for Finland. For Denmark and Norway, however, the estimations clearly show an increased likelihood to move out of the labour force after the reform. Both in Denmark and in Norway, this increase is present only for the treatment group, which has 27 per cent and 10 per cent increase in their likelihood of exiting from the labour force compared to control group 1 after the reform, respectively. The increase in the mobility out of the labour force is not present for control group 2.

Table 3. Exit to non-participation

	Denmark		Finland		Norway	
	Coefficient	P >|z|	Coefficient	P >|z|	Coefficient	P >|z|
Treatment group	0.970	0.325	0.960	0.724	1.894	0.000
After reform	1.142	0.000	1.015	0.890	1.297	0.000
Treatment*after	1.273	0.000	0.848	0.330	1.101	0.070
Control2 group	1.059	0.018	0.936	0.425	3.212	0.000
Control2*after	0.771	0.000	1.154	0.226	0.799	0.000
Female	1.145	0.000	1.625	0.000	0.975	0.061
Under 30	1.050	0.008	1.281	0.000	1.162	0.000
Spouse	1.047	0.009	0.996	0.938	0.895	0.000
Young child	1.078	0.001	1.621	0.000	1.174	0.000
Dependent child	1.032	0.267	1.070	0.439	0.891	0.000
Number of children	0.987	0.228	0.923	0.023	1.010	0.308
Non-native	1.077	0.000	1.298	0.010	0.921	0.000
Low education	0.957	0.007	0.882	0.020	1.042	0.004
High education	0.965	0.113	1.340	0.000	0.917	0.000
Local U-rate	0.958	0.000	1.003	0.537	0.969	0.000
Earlier U-spells	1.206	0.000	1.105	0.064	0.985	0.436
Number of U-spells	1.057	0.000	1.006	0.242	1.04	0.000
ALMP	0.658	0.000	1.083	0.212	0.908	0.000
Log likelihood	-174879.89		-15,859.04		-220,733.09	
LR chi2 (df) Prob > chi2	2,358.52 0.0000		298.27 (18) 0.0000		9,913.19 (18) 0.0000	
Number of oservations Number of failures	83,428 18,274		18,378 1,850		107,120 21,298	

Results from table 3 can give us some idea of the effect of the reform in Norway. They suggest, as mentioned, that the more restrictive benefit entitlement has lead to a greater withdrawal from the labour market. For some groups, who have low expectations regarding current and future income from work, the relative utility of alternatives such as entering education or some sort of welfare support may increase more than the utility related to employment as a result of a tightening in the UI system. Descriptive statistics showed that the treatment group had a greater share of females and of young people. These are groups with a not so stable attachment to the labour market and who are maybe more likely to withdraw than to increase search activity. In this respect it can be mentioned that Røed and Westlie (2006) find that approximately 25 percent of completed unemployment spells

in Norway ends in transition to other types of benefit, such as social assistance and temporary and permanent disability pensions.

6. Conclusions

This paper addresses the issue of how the changes in the unemployment insurance benefits (UIB) entitlement rules that took place in three Nordic countries, Denmark, Finland and Norway in the latter half of the 1990s affected job finding among unemployed workers. Common feature in these reforms was that they implied a tightening of the UIB entitlement requirements in all three countries. In Denmark and Finland unemployed job seekers had to increase working weeks and in Norway earnings in order to meet the new eligibility requirements for UI benefits. In Norway, the maximum duration of UIB benefits was also reduced at the same time.

A country comparison of three relatively similar but yet different countries gives a more reliable picture of the incentive effects of UIB entitlement rules than a single country study would give. We identify the effect of reforms in UIB entitlement conditions by exploiting the quasi-experimental feature of the reforms, i.e. that the reforms did not affect all the unemployed in the same way which shows in the selection of the treatment and control groups.

In order to identify the effects of the UIB eligibility reforms on the duration of unemployment and job finding, we compare the hazard rates into open employment for the treatment and comparison groups before and after the reforms applying the so called difference-in-difference approach. In each country, we use representative unemployment spell data to estimate Cox proportional hazards competing risks model on unemployment duration.

In this paper we find that the UIB reform effects differ between the three countries. In Denmark, the reform seemed to have worked to the expected direction. After the reform, the likelihood of finding a job in the open labour market increased by 20 per cent in the treatment group, which due to the reform lost its eligibility to UI benefits, compared to similar job seekers in a control group that were eligible before and after the reform. Furthermore, the treatment group had 36 per cent higher likelihood than a group of job seekers who were eligible to UI benefits neither before nor after the reform. Thus, in Denmark the reform seems to have created a strong incentive to find a job among those job seekers who no longer were entitled to unemployment benefits.

In Finland, the likelihood of finding a job in the open labour market did not change in the treatment group after the reform compared to that in a control group that was not affected by the reform. For all job seekers together, the probability of transition to employment increased a little bit after the

reform, but no additional effects were found for the treatment group. One reason for these relatively modest results for the treatment group can be the still quite high rates of unemployment in 1997, which put limits on how the economic incentives can improve employment. Incentives for increasing labour supply and accepting a job are effective only if there is sufficient demand for labour.

In Norway, the reform seems to have decreased the employment probabilities of those directly affected by it, i.e. those loosing the eligibility entitlement, by 11 per cent.. This may reflect the shorter UIB durations implemented at the same time as the eligibility reform. Hence, for those individuals eligible for UIB, the shortening of the benefit duration, hence the threat of loosing UIB, might have had a greater impact on the job search behaviour, than the pure non-eligibility effect. This effect will be further discussed in the later version of the paper.

This paper also deals with the non-participation effects of the reform; hence the effects leading to increased (or decreased) transitions into non-participation. Again, we do not find any significant effects for Finland. For Denmark and Norway, however, the estimations clearly show an increased likelihood to move out of the labour force after the reform is present for those affected by the reform. Hence, whereas the reform in UIB eligibility rules did not seem to have any effect in Finland (probably due to very low labour demand during this period), the effect of a similar reform in Denmark seems to be an increase in the mobility from unemployment to employment but also out of the labour force for those affected by the reform. Moreover, a slightly different tightening of the eligibility reform in Norway seems to have increased the mobility out of the labour force, but decreased the mobility into a job in the open labour market, at least for the affected unemployment group. Hence, in Norway the reform seems to have pushed more people out of the UI system, without increasing their employment rates.

In the later version of this paper we'll also undertake sensitivity analyses in order to check whether our results are robust to changes in the composition of the treatment and control groups. The unobserved heterogeneity will also be taken into account in future model specifications.

References

Atkinson, A. and Micklewright, J. (1991) Unemployment compensation and labor market transitions: a critical review, *Journal of Economic Literature,* Vol. XXIX, 1679-1727.

Baker, M. and Rea, S. (1998), Employment spells and unemployment insurance eligibility requirements, *The Review of Economics and Statistics* Vol.80 No.1 , 80-93.

Bennmarker, H., Carling, K. and Holmlund, B. (2005), Do Benefit Hikes Damage Job Finding? Evidence from Swedish Unemployment Insurance Reforms. Working Paper 2005:15, Department of Economics, Uppsala University.

Carling, K., Holmlund, B. and Vejsiu, A. (2001), Do benefit cuts boost job finding? Swedish evidence from the 1990s, *The Economic Journal,* Vol.111 No.474, 766-790.

Geerdsen, Lars Pico (2002:1), The Identification of Effects of Benefit Exhaution in Unemployment Insurance Systems, SFI.

Green, D. and Riddell, W. (1997), Qualifying for unemployment insurance: An empirical analysis, *The Economic Journal*, Vol. 107 No. 440, 67-83.

Green, D. and Sargent, T. (1998), Unemployment insurance and job durations: Seasonal and non-seasonal jobs, *The Canadian Journal of Economics*, Vol. 31 No. 2, 247-278.

Grubb, D. (2000) Eligibility criteria for unemployment benefits. OECD Economic Studies no.31, 2000/II.

Heyma, A. and van Ours, J. (2005), How eligibility criteria and entitlement characteristics of unemployment benefits affect job finding rates of elderly workers? A mimeo.

Holmlund, B. (1998), Unemployment insurance in theory and practise, *Scandinavian Journal of Economics*, Vol. 100, No. 1, 113-141.

Katz, L. and Meyer, B. (1990), The impact of the potential duration of unemployment benefits on the duration of unemployment, *Journal of Public Economics,* Vol. 41, 45-72.

Lalive, R., van Ours, J. and Zweimüller, J. (2006), How changes in financial incentives affect the duration of unemployment, *Review of Economic Studies*, Vol.73, 1009-1038.

Meyer, B. (1995), Lessons from the U.S. unemployment insurance experiments, *Journal of Economic Literature*, Vol.33, 91-131.

Meyer, B. (2002), Unemployment and workers' compensation programmes; rationale, design, labour supply and income support, *Fiscal Studies*, Vol.23 No.1, 1-49.

Røed, K. og L. Westlie (2006), Unemployment Insurance in Welfare States: Soft Constraints and Mild Sanctions. Manuskript. Frischsenteret

Røed, K. and Zhang, T. (2003), Does unemployment compensation affect unemployment duration?, *The Economic Journal*, Vol. 113 No.484, 190-206.