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**Transitions to Employment  
from Labour Market Enterprises  
in Norway**

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**Abstract**

We analyse a labour market programme for partly disabled workers that involves the transition from Labour Market Enterprises to a job in the ordinary labour market. We find that the percentage of these people finding jobs after a maximum two-year programme period has increased over time. In 1995, 28 per cent became employed in the ordinary job market in that year after they have left the programme. Exit rates to employment increased to 36 per cent in 1998 and to 39 per cent in 1999. We also find heterogeneity in the job transitions. Employment ratios for men are relatively stable over time, varying between 30 and 40 per cent over the period 1995–1999. For women, however, we find a significant change in employment ratios, with 21 per cent finding a job in 1995 and 40 per cent in 1999. In 1995, employment ratios for female participants were below those of male participants, although there was no difference over the whole period studied (1995–1999). In 1999, the average transition rate to employment was higher for female than for male participants.

*Keywords:* labour market enterprises, vocational rehabilitation, disability, employment

Word count: 8389

## 1. INTRODUCTION

The first half of the 1990s brought major changes in the welfare policies in Norway. It was part of a broader change in welfare policies seen in several countries (e.g. Denmark, France, UK, US) under the heading “activation”. This term refers to: “. . . policies and measures targeted at persons claiming public income support or who are in danger of becoming permanently excluded from the labour market” (Drøpping et al., 1999: 134). An important reason for these changes/reforms in Norway was the increasing costs of the sickness insurance and disability pension schemes in the previous decade. Two government-appointed committees’ work resulted in a white paper (St.meld. nr. 39 (1991-1992)) that, among other things, recommended several changes in the system for vocational rehabilitation (VR). A reform process was initiated, and in the period 1993-95 a whole range of new measures was introduced with the purpose to limit or reverse the inflow of new sickness insurance and disability benefit recipients.

One of these measures was the introduction of a new support and management system for the Labour Market Enterprises (LMEs) from January 1, 1993. In the white paper (p. 98) it is written that the purpose of the reform is: “. . . to open the companies towards the surrounding world through introducing a structure that encourage them to strengthen the attention and quality of the rehabilitation and outplacement activity/work.” The LMEs had for several years a relatively low outplacement rate to the open labour market, and the reform had as an ambition to increase this rate. The

average outplacement rate for the period 1983-93 was only around 8 per cent, and the LMEs therefore more or less had character of permanent sheltered employment.

In several countries there have been attempts to make the sheltered employment sector more business-like and competitive, in the hope of increasing the chances of transition into the open work sector and reducing the problem of segregation and stigma effects for work disabled people. Sheltered employment is widespread in many countries with around 10 participants per 1000 of the population in the Netherlands and Poland, around 5 per 1000 of the population in Switzerland, Sweden and Norway, followed by 3 per 1 000 in Austria, Belgium, France and Germany; see OECD (2003: 114).

The reorientation of sheltered employment towards temporary training and focus on reintegration of disabled persons in the open labour market has taken place for instance in Norway, the Netherlands, UK, and Spain. This reorientation has only in few cases been successful; see OECD (2003). Norway has experienced relatively high outplacement rates, at least in periods of declining unemployment.

The success of vocational rehabilitation has not been subject to extensive analysis in Norway, and a major reason for this is most likely lack of data and methodological difficulties. But there are a few exceptions, e.g. Aakvik (2001, 2003), Spjelkavik and Widding (1999), and Andreassen and Børing (2000). Internationally there is an extensive literature on evaluations of vocational rehabilitation programmes for unemployed, but according to Frölich et al. (2000) there are very few studies of

occupational rehabilitation programmes where the health status of the participants are included in the analysis. Examples of such studies, except Frölich et al. (2000), are Marklund (1995), Heshmati and Engström (1999), Selander et al. (1997) and Menckel and Strömberg (1996).

In this article we analyse the transition from the LMEs as a labour market programmes for partly disabled workers to a job in the open labour market. We use a sample of workers who ended their vocational rehabilitation effort in September and October over a five-year period from 1995 to 1999. Partly disabled workers can participate in the program for a maximum period of two years, and the success of the program is measured by the number of persons going from the programme into a job in the ordinary labour market. An important part of the study is to analyse outplacement job ratios over time. Have job ratios changed over time? What factors can explain this change? Do individual characteristics, such as education, work experience, age, health, etc., and conditions on the local labour market have any influence on the vocational rehabilitation process?

We find that the percentage of participants finding jobs after a maximum two-year programme period has increased over time. In 1995, 28 per cent became employed in the ordinary job market in that year after they have left the programme. This increased to 36 per cent in 1998 and to 39 per cent in 1999. These transition rates are much higher compared with other countries. We also find heterogeneity in the job transitions. Employment ratios for men are relatively stable over time, varying between 30 and 40 per cent over the period 1995–1999. For women, however, we

find a significant change in employment ratios, with 21 per cent finding a job in 1995 and 40 per cent in 1999. In 1995, employment ratios for female participants were below those of male participants, although there was no difference over the whole period studied (1995–1999). In 1999, the average transition rate to employment was higher for female than for male participants.

The remainder of the paper is organised as follows. In the next section we briefly describe the international context in which the changes in the vocational rehabilitation policy must be understood, and the institutional features of the Norwegian vocational rehabilitation system. This is followed by a description of the data, descriptive statistics and statistical modelling. In the subsequent sections we present the empirical results from our analysis. The last section provides a more general discussion of our results and what policy implications these might have.

## **2. BACKGROUND AND INSTITUTIONAL SETTING**

In the Nordic countries active measures have been a central part of social policies since the Second World War. Active labour market policies have a strong and long tradition, especially in Sweden, and the work approach has been a guiding principle behind income maintenance schemes (Hvinden, 1994; Lindqvist and Marklund, 1995).<sup>1</sup> In this approach there is a direct link between the social security system and labour market services, and it has been a part of the income maintenance schemes to maximize labour market participation (Drøpping et al., 1999). Long-term public

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<sup>1</sup> The underlying ideology of the work approach and activation is approximately the same (Hvinden, 1999).

income support, such as disability pension, should therefore not be granted before all possibilities for making the person self-sufficient through employment have been exhausted. Even though the work approach has a long history in the Nordic welfare states the concept got more attention, renewed content and strengthened emphasis during the early 1990s.

In general, the activation policies in labour market and social policies came as a response to challenges faced by developed welfare states – high and persistent unemployment, an increasing number of early retirees, disability pensioners and social assistance recipients, and increasing costs of cash benefit systems. These policies have in common a process or movement from “passive” to “active” measures in the way that one seeks to increase the labour market participation of persons who have not been employed (Hvinden, 1999; Hvinden et al., 2001). The OECD (e.g. 1990, 1995) was a driving force behind the switch from passive to active measures. The policies implemented in different countries covered a whole range of schemes (e.g. social assistance, unemployment benefits, sickness insurance and disability benefits) using both incentives and disincentives to achieve the desired aim of making people self-sufficient through work.<sup>2</sup>

In general one can distinguish between four types of activation measures for people with disabilities (Hernes, 1995): legislative, vocational rehabilitation, sheltered work and wage subsidies. In the Nordic countries the three last mentioned measures have

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<sup>2</sup> For discussion of activation of social assistance recipients see e.g. Lødemel and Trickey (2001), and of unemployed see e.g. Clasen et al. (2001) and Andersen et al. (2002).

played a key role while legislative approaches have played a limited role compared with many other European countries (Drøpping et al., 1999).

The focus in social policy in Norway since the 1990s has been on integration in the regular and open labour market, and the policy towards the vocationally disabled should be an active one with early intervention as an important goal (NOU 2000: 27). According to Drøpping et al. (1999) the objective of integration has been promoted through wage subsidies and financial support to and/or counselling employers, while sheltered employment and workshops have been seen as supplementary provision, largely for those who would not be able to find work in the labour market even after vocational rehabilitation.

The vocational rehabilitation sector in Norway has expanded rapidly since the National Insurance Act was passed in 1966. The expansion has neither been guided by a firm knowledge of the overall economic impact of the training programmes, nor on which groups may benefit most from programme participation. In 1998, around 35,000 persons participated in a training programme each day, which is around 1.5 per cent of the labour force.

Most persons who apply for a VR job-training programme have previously been employed. The term “vocational disabled” in our context applies to a job seeker who has a physical, mental or social handicap, which reduces his or her job opportunities in the open labour market. Income replacement for workers with a health problem usually starts with sickness benefits while the worker receives medical treatment. The



sickness benefit in Norway is generous, paying 100 per cent of previous income for up to 52 weeks, subject to a maximum benefit restriction of around NOK 335,800 (€ 41,000) in 2003.<sup>3</sup>

Individuals unable to return to work after 52 weeks on sickness benefits are entitled to a VR benefit. From 1994, the labour market authorities decide both on rehabilitation benefit payments and training participation. The VR benefit is usually two-thirds of the gross income in the previous year subject to maximum and minimum benefit restrictions. Health status is the legal eligibility criterion for VR benefits, but labour market prospects and social integration may also implicitly be taken into account. Waiting periods exist neither for episodes between work and sickness benefits nor between sickness benefits and VR benefits.

While receiving VR benefits, a decision has to be made whether the individual can return to the old job or have to search for a new job. At this stage, some workers return to their old job or apply for a disability pension without entering the employment-training sector. Individuals that are not granted a disability pension or who by their own effort return to their old job are referred to the local Employment Office<sup>4</sup> for participation in a job-training programme. The local Employment Office evaluates whether training may help applicants obtain a job. The process at the local Employment Office starts with a conversation between a VR labour consultant and the VR client. The consultant inquires about the interests and potential occupations,

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<sup>3</sup> State and municipal employees and many employees in large companies have collective agreements stipulating that the employer is to make up the difference between the employee's wage and sickness benefit. This secures that even high-income earners often receive full pay during illness.

<sup>4</sup> 'Aetat lokal' in Norwegian.

and the severity of the person's medical condition.<sup>5</sup> The caseworker and each client usually decide upon a rehabilitation plan which includes participation in one or more training programmes, where the final goal is to place the client in a new job in the open labour market.

The current principle is that vocational rehabilitation should be tried before disability pensions are made available. All labour markets programmes for vocationally disabled persons and general labour market programmes may be used, depending on the individual's needs and motivation. Programmes include information, guidance, ordinary labour market measures, and job-placement assistance. In addition, vocationally disabled persons may utilise schemes that have been specially developed for disabled job seekers. Measures outside the public employment service, e.g. ordinary schools, may also be used.

The local Employment Office is responsible for vocational rehabilitation, which may include (1) educational measures in schools/courses and training or job training in visiting positions, (2) wage subsidies and contributions to operating costs received by ordinary employers, (3) supported employment and (4) sheltered employment. There are two types of sheltered employment. These are work-cooperatives for permanent

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<sup>5</sup> Each individual has at least one medical diagnosis, for instance "hardness of hearing", "lower back injuries", "migraine", "alcoholism", "drug abuse", "minor mental disorders", "problems in social adjustment", "musculoskeletal diseases", etc. There is a clear administrative distinction between medical rehabilitation (MR) and vocational rehabilitation (VR) in Norway. Even though health improvements may occur during vocational rehabilitation, the main purpose of VR training programs is to enhance employability given the medical diagnosis, not to improve health impairments.

employment, and labour market enterprises (LMEs) aiming at transition into a job in the open labour market after programme participation.<sup>6</sup>

The local Employment Office, the companies themselves, and the central government organise vocational rehabilitation. Owners of the LMEs are usually the local municipality and the county, and they are joint-stock companies. The work-disability must be documented before the rehabilitation takes place. The LMEs are organized into 3 different phases, but only phase 2 focuses on employment after training. Phase 1 clarifies each person's employment potential (for a period of up to 6 months), while phase 3 is sheltered work if all form of rehabilitation is unsuccessful. Training to obtain new skills and work experience in phase 2 can usually last for up to 2 years, which is also the maximum training period. Training takes place in a production environment and is closely related to practical job training. In this report we analyse only phase 2 in the LMEs since transition to employment is not the main aim in the two other phases.

A total of around 5000 partly disabled persons work in LMEs at each point in time. This number includes all three phases. Around 2500 workers are employed in phase 2, which is the phase we are focusing on in this paper. On average, around 900 persons are employed in the open labour market after training in a LME each year.

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<sup>6</sup> Work-cooperatives offer permanent employment in sheltered sectors for persons with special needs or extensive disabilities who cannot benefit from other labour market programmes who receive (or will receive) disability benefits. This includes the mentally retarded. Sheltered work is also a part of the Labour Market Enterprises. Sheltered work is termed "phase 3" in the LMEs and is not included in our study.

### 3. DATA SOURCES

We use individual data in addition to data collected at the municipality level, such as unemployment and type of industries where the LMEs are localized. The unemployment rate in municipalities is calculated separately for males and females. Both the unemployment and industry sector data comes from Statistics Norway (SSB). The individual data is collected from the Directorate of Labour.<sup>7</sup> We have data on persons ending their vocational rehabilitation effort in September and October for the years 1995-1999 given that they have been in phase 2, giving us a total of 994 individual observations. We have background variables like age, gender, level of education, work background, and medical diagnosis. We also have detailed information about each LME. These data are collected by the central organisation of the LMEs (AMBL)<sup>8</sup> each year, and include data on total number of partly disabled workers, type of training (industrial sector), average duration of training, number of exits to jobs in the open labour market (and also what type of jobs), etc. We use data from 87 LMEs located all around Norway. These firms have accurate data for all the years we use in our analysis. Four firms have been dropped due to invalid data for some of the years.

Our sample includes persons who ended their rehabilitation effort in September and October each year. We have no indication that those who left a LME in these two months are different from those leaving in another month of the year. We have

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<sup>7</sup> 'Aetat Arbeidsdirektoratet' in Norwegian.

<sup>8</sup> AMBL (Arbeidsmarkedsbedriftenes Landsforening) is the national organisation for the labour market enterprises. It is the industrial body for these enterprises, and their purpose is to help organise the work related to vocational rehabilitation in the LMEs. They also have substantial contact with the central government.

compared our results with aggregate statistics for all leavers, and the exit rates are very similar to the exit rates on average for all leavers in a given year. The Directorate of Labour gives aggregate statistics on exit rates, giving us an opportunity to compare our results.

The maximum duration of training in phase 2 is two years. Thus, every participant will eventually be a leaver. This means that those who leave a LME in a given month is not necessarily a selected group and different from an average participant on work training in a LME. We have compared background variables, such as age, education, health, etc., for those who leave to aggregate statistics from the LMEs about persons participating in the programme. Due to the maximum participation period of two years, the leavers are not very different from the average worker in the LME. Since everyone eventually will be a leaver, those who leave at a given point in time is not very different for the pool of participants, although small differences may occur.

The quality of the data is very good. Health data (medical diagnosis) is the only variable with some missing observations. Around 10 per cent of the individuals in our sample have a missing observation on health status. We have solved this problem by including a separate dummy variable for medical diagnosis if a person has a missing observation on this variable.

Our outcome variable is constructed by the caseworker in the firms (LMEs) where the person had training. The caseworker reports to the Directorate of Labour whether the person starts in a job in the open labour market or has other exits, such as disability

pension, out of the labour market or further rehabilitation. The local Employment Office today checks this information. The information provided by the LMEs is considered to be accurate. We do not have information about the duration of employment given that the person obtains a job; neither do we have information about earnings. This would have been useful information in a more broader cost-benefit analysis.

#### **4. DESCRIPTIVE STATISTICS**

Table 1 gives variable explanation and descriptive statistics for the sample we use in the regression analysis. From Table 1 we can see that the LMEs are male dominated. Around 70 per cent of trainees in LMEs are male participants. The mean age of the persons in the sample is more than 37 years. The number of persons with an upper secondary school diploma (high school diploma) or more is only 20 per cent. This is much lower than the average number of years of education in the population. However, this can probably be explained by the fact that LMEs are oriented towards manufacturing industry, and that those attending this type of training in general has very little education above compulsory education. Around 5 per cent are dropouts from the compulsory school system. Around 35 per cent of the sample has work experience from traditional manufacturing industry.

In terms of medical diagnosis, most of the participants have a medical diagnosis related to musculoskeletal pain. More than 30 per cent of the persons in the sample had this diagnosis. Other medical groups used in this article are mental

suffering/psychic disease and alcohol/drug abuse (21 per cent), and social misbehaviour or social adjustment problems (20 per cent). The fourth group consists of other small medical diagnoses that are grouped together. This group includes for instance persons having problems with sight and hearing, cardiovascular diagnoses, lung diseases, allergies, etc., or because medical diagnosis are unknown/missing (around 10 per cent of the sample).

In 1995, 191 persons left phase 2, while the number in 1997 was 232. The number decreased in 1998, but then increased again in 1999 to 214 persons. For the period 1995-99 as a whole the increase is 12 percentage points. Our sample includes only persons who have finished their rehabilitation in the months September and October, and include persons leaving directly from a LME. Persons leaving the LMEs can do that for several different reasons: work, education, other training programmes, sickness leave, social assistance, disability pension, etc. In this paper, we focus on the transition to regular jobs.

**Table 1.** *Variable explanation and simple descriptive statistics.*

<i>VARIABLE</i>	<i>EXPLANATION</i>	<i>MEAN</i>
AGE	Age in number of years	37.8 years
GENDER	Indicator variable for gender, taking the value 1 if male, and 0 if female	71.2 per cent males
EDUC	Indicator variable for upper secondary education (high school), taking the value 1 if the person has at least upper secondary education, and the value 0 otherwise	20 per cent had upper secondary education or more
INDUSTRY	Indicator variable taking the 1 if the person has work experience from manufacturing industry, and 0 otherwise	35.1 per cent had background from manufact. Industry
MISB	Indicator variable taking the value 1 if the person has the medical diagnosis “mental suffering/psychic disease and alcohol/drug abuse”, and 0 otherwise	21 per cent had this medical diagnosis
MUSC	Indicator variable taking the value 1 if the person has the medical diagnosis “musculo-skeletal diseases”, and 0 otherwise	30.5 had this medical diagnosis
SOCIAL	Indicator variable taking the value 1 if the medical diagnosis was related to social misbehaviour/adjustment problems, and 0 otherwise	20.4 had this medical diagnosis
VR_DUR	Number of days in vocational rehabilitation the last 4 years	514 days
YEAR 95	Indicator variable taking the value 1 if the person left a LME in 1995, and 0 otherwise	191 persons
YEAR 96	Indicator variable taking the value 1 if the person left a LME in 1996, and 0 otherwise	181 persons
YEAR 97	Indicator variable taking the value 1 if the person left a LME in 1997, and zero otherwise	232 persons
YEAR 98	Indicator variable taking the value 1 if the person left a LME in 1998, and 0 otherwise	176 persons
YEAR 99	Indicator variable taking the value 1 if the person left a LME in 1999, and 0 otherwise	214 persons



## 5. STATISTICAL MODELLING

Logistic regression is used when the dependent variable is dichotomous. In our case we analyse the transition from a labour market programme to a job, where the variable job have two values, 0 if the person left for other reasons than work, and the value 1 if the person is registered with a job after leaving. As a starting point, a logistic regression estimates logit coefficients. The probability of employment is given by

$$\Pr(Y_{it} = 1 | X_{it}) = \frac{1}{1 + \exp^{-X_{it}\beta}}, \quad (1)$$

where  $\exp$  is the base of the natural logarithm, and

$$X_{it}\beta = \beta_0 + \beta_1 X_{1it} + \dots + \beta_k X_{kit}, \quad (2)$$

where  $k$  is the number of variables in the regression. The  $\beta$ -vector is the marginal effects. The regression results from estimating equation (1) can be hard to interpret since they are estimated on logit form. We thus transform the regression equation to obtain the marginal effects, which are usually the parameters we are interested in. The transformation takes place in two steps. First, we write

$$\frac{\Pr(Y_{it} = 1 | X_{it})}{1 - \Pr(Y_{it} = 1 | X_{it})} = \frac{1 + \exp^{X_{it}\beta}}{1 + \exp^{-X_{it}\beta}} = \exp^{X_{it}\beta}. \quad (3)$$

Then we take the natural logarithm

$$\ln\left(\frac{\Pr(Y_{it} = 1 | X_{it})}{1 - \Pr(Y_{it} = 1 | X_{it})}\right) = X_{it}\beta, \quad (4)$$

to obtain the marginal effects. In the regression, we have recalculated coefficients to percentage points. The estimated coefficients in the Table 5 are in other words to be interpreted as percentage points.

Given our data and statistical modelling it is not possible to answer counterfactual questions like: “How would the participant in the training programme do if s/he was not participant in the programme?” This type of question requires data on (comparable) persons who have not participated in the programme. The best way to conduct such an investigation would be through a randomised controlled experiment, as in the medical science tradition, where participation in a training programme is randomly assigned. The VR literature reports no estimates of training effects based on such experiments. Also, randomization of training participants in the VR sector would raise ethical questions.

Our estimation strategy is to look at changes over time, implicitly assuming that the transition rates for participants had they not participated, is constant over time. A change in the employment rate for participants, under this assumption, is a relevant measure of the effect of training. In this approach, it is paramount to control for as many background variables as possible, in particular individual characteristics and the unemployment rate in the area where participants live and work. Selection on observed variables is controlled for by including these variables in the regression

model. Since we compare changes over time rather than comparing participants with non-participants, we must guard our results by the fact that different unobserved selection mechanisms may affect the results. The assumption of a constant transition rate to jobs in the ordinary labour market for participants had they not participated, is probably optimistic. Thus, the results from the regression models will give an upper bound of the treatment effect.

## 6. EMPLOYMENT OUTCOMES

Table 2 gives, in per cent, the annual rate of exit to regular work in the years from 1995 to 1999. The table also gives the job rate for males and females separately. In our sample, more than 30 per cent were women, which is in accordance with company data from AMBL also showing that more than 30 per cent of the employees in the labour market enterprises were females. This percentage has been relatively stable over time.

**Table 2.** *Percentage with employment as rehabilitation outcome 1995-1999.*

	1995	1996	1997	1998	1999
All	28 %	25 %	28 %	36 %	39 %
Men	32 %	30 %	33 %	37 %	39 %
Women	21 %	9 %	16 %	35 %	40 %

The percentage of persons who obtained a job after ending their rehabilitation effort from a LME has increased in the observation period we are looking at. While 28 per

cent of those who left in 1995 obtained a job, the share with ordinary work increased to 39 per cent in 1999.<sup>9</sup> This is an 11 percentage points increase over the period. A simple t-test concludes that the increase is not significantly different from zero in 1996 and 1997, but that the increase is significant in 1998 and 1999 at the 5 per cent level.

We will at the time being not speculate in the causes of the increase in employment for training participants. An important question is whether the persons who was in rehabilitation in the LMEs in for example 1995 is different from the persons going through rehabilitation in 1999. The composition of leavers may change only if different types of persons are selected into the programme over time. For instance, more employable persons may be selected into the programme over time. This may potentially explain the increasing year-specific job exit rates. Labour market conditions can also play an important role. In periods with high unemployment we will expect that it will be more difficult for partly disabled workers to find a job in the ordinary labour market compared with periods with low unemployment. A third factor could be a learning effect, where LMEs are more efficient in helping people obtain a job over time. In regression analyses, we will be able to control for several background variables and labour market characteristics. We will then get a clearer picture of the causes of the increased employment, and if it is an increase in

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<sup>9</sup> It is difficult to measure job quality after re-employment. We thus use a simple measure of the re-employment opportunities in the primary labour market as an indicator of the effectiveness of labour market programmes. Although job quality is of crucial importance in this context, our data is not suitable to analyse this aspect of re-employment. Another important aspect is the duration of employment and wages. These are also important in a more broader cost-benefit framework, but unavailable for us in this research project.

employment that cannot be explained by individual characteristics or conditions on the labour market.

Table 2 shows that the employment shares among men are relatively stable over time. Men have a job ratio between 30 and 39 per cent from phase 2 with an increase from 32 per cent in 1995 to 39 per cent in 1999. For females, we can see a clear and substantial increase in job ratios over time. In 1995, 21 per cent of those who completed their rehabilitation obtained a job in the ordinary job market. In 1999, the share increased to 40 per cent. This is a 19 percentage points increase. From the table we can see that females had a considerably lower employment share compared with men. Over time this difference have been equalized. In fact females had on average a slightly higher employment rate in 1999 than males.

Part of the explanation of increasing employment rates for women is an increased effort on educating and training persons within what has traditionally been looked upon as typically female occupations. This is work training within sectors such as health care, childcare, cleaning, restaurants, etc. In times with very low unemployment this will be jobs in demand, which means that it is easier to get a job within these occupations than in several other occupations. This leads us back to the fundamental problem in effect evaluation: Is it possible that those who obtain these types of jobs would have obtained such jobs even without training in a LME? Is it worthwhile the effort of going through training in times with for instance low unemployment? We will address this issue in the regression analysis in the next section.

Next we compare employment rates for partly disabled person with completed 3 years of upper secondary education or more, with employment ratios for persons without a diploma from upper secondary education. Completed upper secondary education means that they have completed this type of education with a diploma. Generally speaking the partly disabled in the LMEs have relatively low education with a clear majority without secondary upper education or a craft certificate.

Table 3 gives the job percentages for persons who have completed upper secondary education or vocational education or more,<sup>10</sup> and job percentages for persons who have not completed secondary upper education. In our data a relatively low percentage of persons in LMEs had completed secondary upper education. Of those who had completed vocational rehabilitation, less than 20 per cent of the persons from phase 2 had completed secondary upper education or more. In table 3, EDUC=1 means that they have completed upper secondary education or vocational education, and EDUC=0 that they do not have secondary upper education or more.

**Table 3.** *Percentage with employment as rehabilitation outcome by level of education.*

	1995	1996	1997	1998	1999
EDUC=1	29 %	33 %	46 %	50 %	47 %
EDUC=0	28 %	23 %	25 %	34 %	38 %

Note: EDUC = 1 is upper secondary education or higher, EDUC = 0 otherwise

<sup>10</sup> Less than 3 per cent of the partly disabled workers we analyse in this paper have more education than upper secondary education.

Table 3 shows that the employment ratios for persons with upper secondary education have increased over time. We can observe a clear effect of education on the job possibilities from phase 2, but the difference varies a lot. In 1995, persons with upper secondary education had an exit rate to regular work of 29 per cent, while the job ratio was 28 per cent for clients without specific education. The difference was only 1 percentage point in 1995. The difference in job ratios increased to 10 percentage points in 1996, and 21 percentage points in 1997. The difference fell in 1998 and 1999, to 16 and 11 percentage points, respectively. In other words there seems to be a very clear effect of education on the job probabilities. Having completed upper secondary education prior to entering the VR sector increases the probability of a successful outcome substantially. Similar tables can be made for all the other background variables, for instance health, but we choose to discuss these results within the framework of a regression model.

## **7. EMPIRICAL RESULTS FROM REGRESSION MODELS**

We will now tighten up the results by analysing the data within the framework of regression analysis and including more variables in the analysis. In this part we will analyse closer the probability of getting a job after finishing rehabilitation using a logistic regression model. We include available variables such as age, gender, education, year indicators, duration in VR, municipal unemployment level split into different measures for males and females, and medical diagnosis.

Table 4 shows the results from a logistic regression where we have estimated the effect of important individual characteristics, duration as partly disabled, and unemployment in local municipalities on the probability of obtaining a regular job after ending rehabilitation in a LME.

**Table 4.** *Probability of employment. Logistic regression. The coefficients are reported as marginal effects in percentage points.*

<b>Variable</b>	<b>Coefficient</b>	<b>SE</b>	<b>P[ Z &gt;z]</b>	<b>Mean X</b>
Constant	-10.81	0.094	0.250	
Age	-0.56	0.002	0.000	37.8
Gender	10.72	0.036	0.001	0.712
Educ.	10.27	0.041	0.013	0.20
Industry	-8.58	0.032	0.094	0.35
VR duration	0.01	0.000	0.094	514
Misb.	-8.48	0.047	0.069	0.21
Musc.	7.37	0.048	0.057	0.31
Social.	-4.31	0.042	0.306	0.20
Unemployment	-0.11	0.001	0.942	2.87
Year 96	-3.15	0.051	0.541	0.182
Year 97	2.27	0.052	0.957	0.233
Year 98	10.04	0.055	0.070	0.177
Year 99	12.84	0.054	0.017	0.215
Note. Number of observations = 994. $R^2 = 0.21$ . Mean of dependent variable = 0.312.				

The results from Table 4 shows that men have on average a 10.7 percentage points higher exit probability to work in the ordinary labour market compared with women, when all other variables are held constant. This number is an average over the sample period of five years.



The effect of age is negative on the probability of regular employment. Older persons have a significantly lower probability of obtaining a job in the open labour market compared with younger persons. For instance, increasing the age with 10 years reduces the probability of employment by almost 6 percentage points.

Persons with completed upper secondary education have a 10.3 percentage points higher probability to obtain a job after rehabilitation compared with persons without such an education. Persons with low education have in other words more difficulties getting a job in the ordinary labour market than persons with somewhat higher education. It is worthwhile stressing that the level of education for this group is substantially lower than the mean education for comparable persons with no work disability. The mean level of education for the cohort born in 1960, which approximately reflects the mean age in our sample, is 11.9 years.

Persons with occupational background within manufacturing companies have on average an 8.6 percentage points lower probability for getting a job compared with persons with a different occupational background, holding all other variables constant. It is no advantage to have a background from manufacturing industry when it concerns the possibility of getting a new job after completed rehabilitation.

We have chosen to divide the persons into four different medical diagnosis groups. The original data has 10 different medical diagnosis groups, but some of them are very small. The sample consists of three large groups. These are: 1) Psychological diseases and drugs/alcohol abuse, 2) musculoskeletal diseases, and 3) social

adjustment problems. The other (six) diagnosis groups are treated as reference category, also including missing observations on health. We find that persons with musculoskeletal diseases have 7.4 percentage points higher probability for leaving to a job compared with other diagnosis groups. Persons with psychical diseases and drugs/alcohol abuse problems have the lowest probability for transition to a job. Persons in this group have almost 16 percentage points lower job probability compared with persons with musculoskeletal diseases. Further, persons with psychical diseases and drugs/alcohol abuse problems have 8.5 percentage points lower job probability than persons in the reference category. Persons with psychical diseases and drugs/alcohol abuse are the most difficult group to successfully rehabilitate.

The table also shows that partly disabled with social adjustment problems have a relatively low probability for finding a job, especially compared with persons with musculoskeletal diseases. Persons with social adjustment problems have 4.4 percentage points lower job probability than the reference category, 12 percentage points lower than persons with musculoskeletal diseases, but 4 percentage points higher job probability than persons with psychical diseases and drugs/alcohol abuse problems.

The year variables in Table 4 are compared with 1995, which is used as the base category for the time indicators. The coefficient for the variable Year96 means that, after controlling for several background variables, persons who completed their rehabilitation effort in 1996 had 3.2 percentage points lower job probability compared

with those who completed their rehabilitation in 1995. From 1997 to 1999 the year coefficients are positive. This means that persons who completed their rehabilitation efforts in 1997, 1998 and 1999 all have higher probability of having a job compared with persons who completed their rehabilitation in 1995. It is important to stress that we are controlling for local unemployment at the municipality level in the regressions. Persons who completed their rehabilitation in 1999 have almost 13 percentage points higher probability of leaving for regular work compared with those who left in 1995. The coefficient for 1999 is significant at the 5 per cent level. We can also compare the different years with each other. Persons who left in 1999 have in average (12.8 – 10.0) 2.8 percentage points higher employment rate compared with persons completing rehabilitation in 1998. The major increase in employment came in 1998.

The results also show that a higher unemployment rate reduce the probability of obtaining a job, but that the estimated coefficient is not significantly different from zero. This is perhaps surprising, since the unemployment rate decreased during the period, and the exit rate from LMEs increased during the same period. We should thus expect to find a negative correlation between the two variables. However, after adjusting for several individual characteristics, this relationship is washed away. We have included year dummies in the regression. These time dummies will capture some of the national changes in unemployment and other trends over time. The unemployment variable included in the regression will mostly capture local variation in unemployment. Although there is a large variation in the local unemployment rate

over municipalities, this variable is not significant and cannot explain the increasing employment exit rates for the labour market enterprises over time in our model.

## **8. CONCLUSION AND DISCUSSION**

The purpose of this study has been to evaluate the changes in outplacement rates from Norwegian labour market enterprises over time. We have analysed the transition from the LMEs to ordinary work for persons who have completed their rehabilitation, and analysed the change in employment ratios over a time period of five year. Although participants can exit for several reasons, we focus on exit to employment in the open labour market since this is the main goal of the training programme.

The analysis of individual data shows that the percentage that got a job in the ordinary labour market after training in a LME has increased over time, from 28 in 1995 to 39 per cent in 1999. This is substantial higher compared with outplacement rates prior to the activation reform in 1994. In the period 1983-93 the average outplacement rate was around 8 per cent.

Even if we can analyse changes over time, we do not know how many of the persons in phase 2 who would have found a job without rehabilitation in a LME. If we assume that the job ratio without rehabilitation is constant over time, which is a less restrictive assumption than to assume that no one would have been in job without participating in the rehabilitation programme, the effect would have increased with 11 percentage points. The assumption of a constant transition rate to jobs in the ordinary

labour market for participants had they not participated, is probably too optimistic. The 11 percentage points effect must thus be considered an upper bound of the treatment effect.

The regression analysis shows that the employment rates increase over time, and that the probability of getting a job decrease with age, is higher for males than females, is higher for persons with secondary upper education than for persons without, is lower for persons with background from manufacturing industry than others, increases with the length of the period as partly disabled, and is higher for persons with musculoskeletal diagnoses than for persons with psychological diseases and drugs/alcohol abuse and social adjustment problems. The higher the municipal unemployment rate, the lower is the probability of work. However, it turned out that this variable is not significantly different from zero, at least for the period we are analysing, which is characterised by decreasing unemployment.

Several of the findings is in accordance with what is found in research about sickness absence, rehabilitation and disability pension, for example according to the effect of age, education, sex and unemployment (e.g. Hansen, 1999). If we from our analyses are going to evaluate which one of the partly disabled workers to concentrate on to get them back to work, it seems to be young persons with good education, with musculoskeletal diagnoses who do not have occupational background from manufacturing industry. The problem with such a conclusion is that these persons probably have the highest probability of getting a job on their own, and that the benefits for society of focusing on this kind of persons is lower than with using the

resources on other groups. An empirical analysis of Norwegian rehabilitation programmes in general by Aakvik and Risa (1999) shows that the programme effect is higher for elderly with low education compared with young persons with high education, even though younger persons with high education have a higher gross employment rate than elderly partly disabled workers with low education. Accordingly, the positive effect of persons being for a long time in a programme before transition to work must be evaluated against the alternative cost. In such a perspective it is not sure that long programme periods is most rational.

We can see from the analysis above that persons with occupational background from manufacturing industry is doing worse when it comes to getting a job than persons with another occupational background. We also know that a majority of the LMEs are oriented towards manufacturing industry (mechanical, wood ware, graphical industry, etc.). What we do not know is whether or not persons with background from manufacturing industry is over-represented in this kind of companies. If this is the case, it may represent a problem because employment in manufacturing industry for a long time has been falling, while the employment rate is increasing in the service sector. It is therefore a possibility for a “discrepancy” between the job training given in the LMEs and the demand in the labour market. Widding (2000) finds that only 12 per cent of the caseworkers in the local Employment Offices think that there is good correspondence between the companies’ work and training and the demand in the labour market. With better correspondence between the companies’ activities and the demand in the labour market, the transition to ordinary work can increase. This question can be thrown light on by merging individual and enterprise data. Also, with

such data it would be possible for example to analyse individual career choices as a function of individual background characteristics, the employment effect of different composition of partly disabled workers in the LMEs, and if specific investments in the LMEs are relevant for successful rehabilitation.

Widding (2000) finds in interviews that it is more difficult to recruit persons to LME's over time. At the same time, we do not find that the number of persons in LME's have decreased over time. The easier it is to recruit persons into LME's, the easier it is to recruit favourable candidates that are easy to rehabilitate. If the number of potential candidates is reduced, the composition of candidates might be less favourable for the enterprises. However, it is an empirical question whether the training effect is lower for this group.

## REFERENCES

- Aakvik, A. (2001) "Bounding a Matching Estimator: The Case of a Norwegian Training Program," *Oxford Bulletin of Economics and Statistics*, 63: 115-143.
- Aakvik, A. (2003) "Estimating the Employment Effects of Education for Disabled Workers in Norway," *Empirical Economics*, 28: 515-533.
- Aakvik, A. and Risa, A.E. (1999) "Success through Selection in Norwegian Rehabilitation Programs?" Mimeo. Bergen: Department of Economics, University of Bergen.
- Andersen, J.G., Clasen, J., Oorschot, W.v., and Halvorsen, K. (eds.) (2002) *Europe's new state of welfare. Unemployment, employment policies and citizenship*. Bristol: The Policy Press.
- Andreassen, J. and Børing, P. (2000) *Registeranalyse av yrkeshemmede i arbeidsmarkedsbedrifter fase 1 og 2* (Analysis of register data of vocationally disabled in Labour Market Enterprises in phase 1 and 2), No. 2 May 2000. Oslo: Aetat.
- Clasen, J., Kvist, J. and Oorschot, W.v. (2001) "On condition of work: Increasing work requirements in unemployment compensation schemes," pp. 198-231 in M. Kautto, J. Fritzell, B. Hvinden, J. Kvist and H. Uusitalo (eds) *Nordic Welfare States in the European Context*. London: Routledge.
- Drøpping, J. A., Hvinden, B. and Vik, K. (1999) "Activation policies in the Nordic countries," pp. 133-158 in M. Kautto, M. Heikkilä, B. Hvinden, S. Marklund and N. Ploug (eds) *Nordic Social Policy. Changing welfare states*. London: Routledge.
- Frölich, M., Heshmati, A. and Lechner, M. (2000) "Mikroekonometrische Evaluierung Berufsbezogener Rehabilitation in Schweden," *Swiss Journal of Economics and Statistics*, 136: 433-461.
- Hansen, H-T. (1999) *Kunnskapsstatus for den nordiske trygdeforskningen på 1990-tallet*, (Knowledge status for Nordic research on social security in the 1990s), SNF-report 12/99. Bergen: Institute for Research in Economics and Business Administration (SNF).
- Hernes, T. (1995) "Employment and rehabilitation of people with disabilities," in S. Bengtson (ed) *Employment of Persons with Disabilities*. Copenhagen: Socialforskningsinstituttet.
- Heshmati, A. and Engström, L.G. (1999) "Estimating the Effects of Vocational Rehabilitation Programs in Sweden," *SSE/EFI Working Paper Series in Economics and Finance*, 293. Stockholm: Stockholm School of Economics.



- Hvinden, B. (1994) *Divided against itself: A study of integration in welfare bureaucracy*. Oslo: Scandinavian University Press.
- Hvinden, B. (1999) "Activation: a Nordic Perspective," pp. 27-42 in M. Heikkilä (ed) *Linking Welfare and Work*. Dublin: European Foundation for the Improvement of Living and Working Conditions.
- Hvinden, B., Heikkilä, M. and Kankare I. (2001) "Towards activation? The changing relationship between social protection and employment in Western Europe," pp. 168-197 in M. Kautto, J. Fritzell, B. Hvinden, J. Kvist and H. Uusitalo (eds.): *Nordic Welfare States in the European Context*. London: Routledge.
- Lindquist, R. and Marklund, S. (1995) "Forced to work and liberated from work: a historical perspective on work and welfare in Sweden." *Scandinavian Journal of Social Welfare*, 4, pp. 224-237.
- Lødemel, I. And Trickey, H. (eds.) (2001) *'An offer you can't refuse'. Workfare in international perspective*. Bristol: The Policy Press.
- Marklund, S. (1995) "Vilka långtidssjukmelta blir rehabiliterade?" (Who of the long-term sick are rehabilitated?) in S. Marklund (ed) *Rehabilitering i ett samhällsperspektiv* (Rehabilitation in a societal perspective). Lund: Studentlitteratur.
- Menckel, E. and Strömberg, A. (1996) "The Rehabilitation Work of Occupational Health Physicians in Sweden: A Survey and 530 Occupational Health Units," pp. 181-192 in J. Behrens and P. Westerholm (eds) *Occupational Health Policy, Practice and Evaluation*. Geneva: WHO Regional Office for Europe.
- NOU 2000: 27 Sykefravær og uførepensjonering (Sickness absence and disability pension). Oslo: Statens forvaltningstjeneste.
- OECD (1990) *Labour Market Policies for the 1990s*. Paris: OECD.
- OECD (1995) *The OECD Jobs Study: Implementing the Strategy*. Paris: OECD.
- OECD (2003) *Transforming Disability into Ability. Policies to Promote Work and Income Security for Disabled People*. Paris: OECD.
- Riksrevisjonsverket (2000) *Stødet til arbeidshandikappede – modeller for en reformering av statens instanser*, (The support to work handicapped – models for reforms of state organisations) RRV 2000: 14. Stockholm: Riksrevisjonsverket.
- Selander, J., Marnetoft, S-U., Bergroth, A. and Ekholm, J. (1997) *Arbetslivsinnriktad rehabilitering – en jämförande studie av anställdas och arbetslösas arbetslivsinnriktade rehabilitering*, (Workrelated rehabilitation – a comparative study of employed and unemployed's rehabilitation). Report 1997: 2, Centrum för Socialförsäkringsforskning (CSF). Östersund: Mitthögskolan i Östersund.

Spjelkavik, Ø. and Widding, S. (1999) "Recent Trends in the Development of Vocational Rehabilitation in Labour Market Enterprises in Norway." Mimeo. Oslo: Work Research Institute (AFI).

St.meld. nr. 39 (1991-1992) Attføring og arbeid for yrkeshemmede. Sykepenger og uførepensjon (Attføringsmeldingen) (Vocational rehabilitation for vocational disabled. Sickness benefits and disability pension). Oslo: Ministry of Labour and Government Administration.

Widding, S. (2000) *På rett kurs. Saumfaring av arbeidsmarkedsbedriftene*, (On the right track. A critical examination of the Labour Market Enterprises), AFI-report 4/2000 (in Norwegian). Oslo: Work Research Institute (AFI).