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Labour market programmes and geographical mobility:
migration and commuting among programme participants and openly unemployed

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Labour market programmes and geographical mobility: migration and commuting among programme participants and openly unemployed♠

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Abstract

We study migration and commuting among participants in labour market programmes and individuals in open unemployment. Post-programme mobility of participants in Employment Training, which is a supply-orientated program, is compared to the mobility of individuals participating in two demand-orientated programmes and the openly unemployed. The empirical results indicate higher geographical mobility among participants in Employment Training as compared to participants in Relief Work and the Work Experience Scheme. Individuals participating in Employment Training also have a higher probability of mobility than the openly unemployed. In this case, this is due to the relatively higher probability of commuting that predominates the relatively lower probability of migration. Hence, our results indicate that different labour market programmes are associated with different amounts of post-programme mobility. Moreover, using functional regional labour markets as the regional entity, we find interregional commuting to be relatively more important than migration as a means of geographical labour mobility.

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1 Introduction

Labour market measures may, in broad terms, be subdivided into those influencing labour demand, labour supply and job matching. The job-creation measures are supposed to decrease unemployment by increasing the demand for labour. The measures related to labour supply and job matching, such as Employment Training and Mobility Grants, aim at diminishing the structural imbalances on the labour market by stimulating occupational and geographical mobility. However, the various labour market measures may generate so-called locking-in effects, for example in terms of decreased geographical mobility, which may emerge through several mechanisms. The unemployed may e.g. participate in a labour market programme to postpone or avoid moving. This direct effect is presumably accompanied by indirect effects, since the supply of labour market programmes may affect wage formation and regional employment - two potential determinants of migration and commuting. Calmfors *et al* (2002) provide a summary of the theoretical effects of active labour market programmes on wages and employment.

Previous studies on labour market policy and geographical mobility have mainly focused on the effects on migration (e.g. Edin *et al* 1998, Fredriksson 1999, Harkman 1988a, Nilsson 1995, Storrie & Nättorp 1997, Widerstedt 1998, Westerlund 1997, Westerlund 1998). In particular, labour market measures like Mobility Grants, Employment Training and Relief Work have been analysed.[1] As regards labour market programmes, most of these studies indicate negative effects on mobility. Furthermore, an increase in the number of individuals participating in programmes reduces regional out-migration.[2]

A problem related to previous studies is that generally they do not consider that different kinds of labour market measures may have diverse effects on interregional migration. An exception in this respect is a recent study by Fredriksson & Johansson (2003). Supply-orientated measures, like Employment Train-

[1] As regards the effects of Mobility Grants, Harkman (1988a) finds positive effects on migration. The results reported by Storrie & Nättorp (1997) and Westerlund (1998) indicate the impact of Mobility Grants on interregional migration to be minor or even non-existent.

[2] Harkman (1988a) shows Public Employment Services and Mobility Grants to have positive effects on geographical mobility. McCormic & Skedinger (1991) find that labour market programmes increase regional unemployment via negative effects on migration. Summaries of previous studies are provided in Ackum Agell *et al* (2000) and Westerlund (2001).

ing, may have a different impact on geographical mobility than, for example, Relief Work and similar demand-orientated measures.

Moreover, the above-mentioned studies do not take interregional commuting into account. Commuting is a potential alternative to migration and tends to increase in importance as a means of mobility.[3] There has been a gradual increase in the number of individuals travelling to work across municipality borders on a daily basis throughout the last decades. Since the beginning of the 1970s, there has been approximately a 100% increase and in the late 1990s, there were more than one million commuters across municipality borders (Statistics Sweden 1998).[4] This development is rendered possible by changes in transportation technology and infrastructure, which have extended the individual's reach. The geographical space covered increases exponentially by the workable length of commuting distance. As regards migration across local labour market borders, the annual number of movers has fluctuated in the interval of 100 000 to 140 000 during the period 1980 to 1993. In 1994, there was a considerable increase up to levels close to 150 000, which can partly be related to significantly larger migration flows among foreign-born people in that year (Storrie & Nättorp 1997).[5]

The aim of this study is to analyse differences in contracted geographical mobility among individuals in Employment Training, participants in two job creation activities, and individuals in open unemployment. Contracted mobility represents mobility preceded by an employment contract. In the empirical analysis, we compare participants in Employment Training (ETR) with participants in Relief Work (RW), participants in the Work Experience Scheme (WES) and individuals in open unemployment. The differences between the groups are analysed with respect to employment, commuting and migration.

There is a large number of programmes within the Swedish labour market policy. The programmes chosen for this study are justified by their different purposes and their importance in terms of number of participants. Although Relief Work and Work Experience Schemes were abolished in 1998, they represent an important type of job creation activities within the framework of active labour market policy.

[3] There are surprisingly few studies on interregional commuting in Sweden, especially in the light of its relevance for questions related to the functioning of the labour market.
[4] Official statistics does not provide information on commuting between labour market regions.
[5] As a basis for comparison, the Swedish labour force and the population of working age amounted to approximately 4.3 million and 5.5 million, respectively.

In the next section, we provide a brief discussion on the determinants of employment, migration and commuting. The problem in defining geographical labour markets is also discussed in Section 2. The empirical analysis is presented in Section 3, followed by a summary and discussion in Section 4.

2 Employment, geographical mobility and regionalization

This study deals with three interrelated processes; the transition from unemployment to employment, interregional migration and interregional commuting. In the empirical analysis, we treat these as three separate processes. The theoretical literature on commuting and migration provides models where either residential choice and workplace location, or employment status and migration, are simultaneously determined or, alternatively, are the outcome of sequential choices of the individual (e.g. Evers & van der Veen 1985, Reitsma & Vergoossen 1988, Simpson 1986, Simpson & van der Veen 1992, and Zax 1994). A simultaneous and dynamic treatment of on-the job search and residential relocation of full time employed individuals is provided by van Ommeren *et al* (2000). It is reasonable to expect the transition from unemployment to employment, the choice of residential location and the location of the workplace to be more or less simultaneously determined. To the best of our knowledge, the theoretical literature contains no model for simultaneous determination of employment status, the location of the workplace and residential location.

In the remainder of this section, we briefly discuss some theoretical aspects of job search, geographical mobility and regionalization.

2.1 Job search and mobility

In this section we provide a simple job search theoretical framework for contracted mobility and discuss some implications with respect to potential differences between labour market programmes.

Job searchers in open unemployment or labour market programmes are assumed to choose between continued search or accepting a job offer in each period. The job search is conducted in the region of residence as well as in other regions. The individual's reservation wage for accepting a job is endogenously determined by exogenous factors: a known wage distribution, the amount of job

offers in each period, the discount rate, the direct cost of search and the alternative costs of continued search.[6] The alternative cost of continued search is the forgone income by not accepting a job offer minus the mobility costs and the value of time in unemployment or labour market programmes. The mobility cost is the minimum cost for commuting and the cost for migration associated with each wage offer. The value of staying in unemployment or programmes depends among other things on the level of unemployment benefits and the compensation for programme participation.

The job searcher maximises the expected return by choosing the level of the reservation wage equalising the marginal cost and the expected marginal return of continued search. The probability of transition to employment and contracted mobility is affected by changes in the exogenous variables. We confine our discussion to the effects of changes in the job offer arrival rate, the alternative cost for continued search and the mobility costs.

The effect of an increase in the job offer arrival rate on the escape rate into employment is the result of two effects; a positive direct effect of an increase in offers at a given level of the reservation wage, and a negative indirect effect of an increase in the reservation wage. Under reasonable assumptions, an increase in the job offer arrival rate increases the probability of employment, which is positively correlated with the alternative cost of continued search. An increase in the alternative cost, for example a decrease in unemployment benefits, compensation to programme participants, or a decrease in mobility costs increases the probability of employment and mobility.

Participation in programmes may affect the job offer arrival rate through several mechanisms. One potential effect of programme participation is an increase in skills through formal education or work experience, which qualifies the individuals to an increased number of jobs. The increased skill through Employment Training is presumably more general and less place specific than the skills acquired in Work Experience Scheme and Relief Work. Since the individuals may affect the job offer arrival rate through search efforts, the spatial distribution of job search efforts will affect the spatial distribution of job offers. Individuals with a larger portion of skills specific to the region of residence, allocate a relatively larger amount of their search efforts to that region. Moreover, participants in job creation programmes such as WES and RW get in direct con-

[6] The exposition in this section is based on Mortensen (1986) and Rogers (1997). See also Eliasson *et al* (2001).

tact with one or several local employers, which increases the probability of receiving an offer from these employers or employers in local networks. Hence, it is likely that the share of employment offers pertaining to work places in other regions is relatively larger for participants in ETR than for participants in the other two programmes. This speaks in favour of relatively higher migration/and or interregional commuting rates among participants in ETR.

Participants in Relief Work receive compensation equal to the ordinary wage according to the agreements between trade unions and employers. In most cases, participants in ETR and WES receive a compensation equal to the unemployment benefits. Others things equal, the alternative cost for continued search is higher for participants in ETR and WES, which is another reason for expecting a higher escape rate into employment and higher mobility among participants in Employment Training in comparison to participants in Relief Work.

The job search and the probability of finding one are affected by the individual's pecuniary as well as non-pecuniary benefits and costs of migration and commuting (e.g. Simpson & van der Veen 1992, Van den Berg 1992, Van den Berg & Gorter 1997). For job searchers, the probability of becoming employed in another region may be related to their place utility (at their place of residence) and their assessment of commuting time. In general, it is reasonable to believe that the transition into employment and geographical labour mobility are negatively affected by strong preferences for a current place of residence and a relatively stronger disutility of commuting time. Mobility costs vary across individuals due to differences in individual and regional characteristics. Low mobility costs mean higher alternative costs for continued search and a relatively higher share of the individuals' search effort is allocated to regions outside the region of residence. There is, however, no obvious reason why mobility costs should be different for participants in training programmes compared to participants in WES and RW.

Summing up, there are some reasons to expect geographical mobility to be more frequent among participants in Employment Training in comparison to participants in two job-creation measures. This is, however, conditional on the probability of employment.

2.2 Regionalization

The way the regionalization is carried out influences the amount of total interregional mobility as well as the distribution of migration and commuting. Moreover, the driving forces for migration vary with the chosen regionaliza-

tion. A common assumption is that labour market-related migration mostly takes place over longer distances than moves related to the "housing career". However, there are no obvious principles for subdividing a country into local labour markets and thereby defining the geographical mobility of the labour force. For practical reasons, analyses must be based on existing administrative divisions of the territory. Here, we use Statistics Sweden's classification of local labour markets (n=108), which are functional regions created by amalgamating municipalities (n=286) according to a specific commuting-minimising algorithm.[7]

Interregional migration and commuting are defined by the regional system as well as observations of place of residence and workplace location. An obvious drawback associated with this approach, which is applied in most studies of migration, is that some observations of interregional migration and commuting occur between locations close to borders. Interregional commuting may then, in fact, occur over shorter distances at lower mobility costs than most of the intraregional commuting. This problem applies to migration as well as commuting and is inherent in virtually all empirical studies based on a system of regions. For example, migration flows between counties or labour market areas may contain a substantial share of short-distance moves where the locations of the places of work do not change. Hence, there is probably no clear-cut and unquestionable regionalization method defining interregional and intraregional mobility. Our choice of functional regionalization based on observed commuting patterns is most likely less problematic in this respect. The exact definitions of interregional migration and commuting employed in this study are provided in the next section.

[7] The labour market region is defined by the observed patterns of residential and job locations, which may reflect revealed preference for commuting. The procedure that creates the regions minimises interregional commuting by generating clusters of municipalities according to a specific algorithm. The first phase of the procedure determines which municipalities to regard as commuting independent, and in the second phase, the remaining municipalities are connected to any of the commuting-independent municipalities (Statistics Sweden 1991, pp. 24-26).

3 Empirical analysis

3.1 Data

This sub-section consists of five parts. In the first part, data and sampling procedures are presented. The analysis of migration and commuting requires a definition of geographical mobility, which is provided in the following part. In the third part, there is a discussion of following-up periods. Thereafter, the explanatory variables and their characteristics are presented. The sub-section is concluded by some descriptive statistics on migration and commuting rates.

3.1.1 The sample

The data used for the analyses in this study is from registers administrated by the Labour Market Board (HÄNDEL) and Statistics Sweden (LOUISE). LOUISE is a longitudinal micro-database that contains information about education, income and employment for the entire population aged 16 to 64. The sample contains all individuals that became registered as job searchers at the Public Employment Service during the first quarter of 1994 in one of the four categories; Employment Training, Work Experience Scheme, Relief Work, and Open Unemployment.

The sample includes the inflow of new job applicants as well as individuals in the stock of job searchers who change search category within an ongoing registration period. A relatively higher portion of the unemployed was sampled from the inflow to the stock of registered job searchers, while most of the participants in ETR were drawn from the existing stock. Hence, there is probably a relatively stronger over-representation of individuals with a longer duration in unemployment in the three groups of programme participants than in the group of openly unemployed. This is considered in the empirical analysis by including variables indicating the individual's unemployment in the previous periods as covariates in the models to be estimated. In addition, we check for the stability of the parameters of main interest when excluding individuals with no registered period of unemployment in 1993. The main reason for not employing a strict flow-sampling procedure is that it would result in small and unrepresentative samples of programme participants.

To be included in the ETR-group, individuals must satisfy three conditions: first, they became registered as participating in Employment Training during the first quarter of 1994; second, they did not participate in this labour market measure in 1993; and third, they did not participate in Relief Work or the Work

Experience Scheme in 1993 and 1994. To be included in Relief Work and the Work Experience Scheme, respectively, the individual must satisfy the same conditions (adjusted to each measure).[8] The group of openly unemployed is defined as individuals who flowed into the search categories "Without work, can accept job immediately" (Search category 11), "Without work, in need of guidance" (Search category 12) or "Without work, waiting for decided measure" (Search category 13). Moreover, they did not participate in Employment Training, Relief Work or the Work Experience Scheme in 1993.[9]

The supply-orientated programme, Employment Training, focuses on vocational training. However, basic theoretical courses may also be provided if preparations are needed for the vocational courses, which can run for up to forty weeks. The purpose of the measure Work Experience Scheme, which is demand oriented, is somewhat different as it aims at carrying out projects related to different parts of the labour market in order to improve the local trade and industry or work within non-profit organisations. It is possible to get WES for up to six months. Relief Work, also a demand-orientated programme, is shaped as a temporary job where the employer receives a wage subsidy. The main purpose of this programme is to occupy long-term unemployed individuals, who have difficulties in finding permanent jobs or other appropriate labour market programmes. As in the case of the Work Experience Scheme, Relief Work has an upper limit of 6 months (Arbetsmarknadsstyrelsen 1998).

[8] To be included in the WES-group, the individuals must satisfy the same three conditions: first, they became registered as participating in the Work Experience Scheme during the first quarter of 1994; second, they did not participate in this labour market measure in 1993; and third, they did not participate in Relief Work or Employment Training in 1993 and 1994. Analogously, to be included in the RW-group the individuals must satisfy the following conditions: they became registered as participants in Relief Work during the first quarter of 1994; they did not participate in this labour market measure in 1993; and they did not participate in Employment Training or the Work Experience Scheme in 1993 and 1994.
When sampling into these groups, individuals who participated in a particular measure in 1993 are sorted out, because we would like to refine the impact of this specific measure. Moreover, we believe that it is difficult to compare individuals with different amounts of recent treatment, i.e. some may have taken several courses/periods, whereas others have no previous experience of this particular measure. This sampling procedure can be discussed as there are numerous possible alternatives between the extremes of (1) only sampling individuals who have obtained one measure and thereafter left HÄNDEL, or (2) not paying any attention to how many or which measures the individuals have experienced before and after the measure in question.

[9] Here, we refer to the inflow into different search categories. Inflows may concern transitions from other search categories or new registrations in HÄNDEL.

The Training Grants received by participants in ETR and WES match the level of the unemployment benefits. Participants in RW receive wages in accordance with the regular wage agreements between the trade unions and the employers' organisations. For all these three programmes, participants eligible for unemployment compensation re-qualify for a new period of unemployment benefits.

3.1.2 Geographical mobility

Geographical mobility is defined as contracted migration or commuting across local labour market borders (LA-region). Due to changes in commuting patterns, the number of labour market regions has varied over time. In this study, the number of regions amounts to 108 (Statistics Sweden 1991).

Figure 1 illustrates which combinations of place of residence and workplace are defined as geographical mobility at two points in time. Residence and work can be distributed along letters A to D in the figure. The broken hexagon represents the place of origin (i) according to the 1993 registration and the larger hexagon symbolises all possible destinations (j). The places of destination refer to the workplace (November 1995) according to information from Statistics Sweden's annual employment statistics (ÅRSYS, currently named RAMS) and the place of domicile (December 1995) according to the register of the total population (RTB).

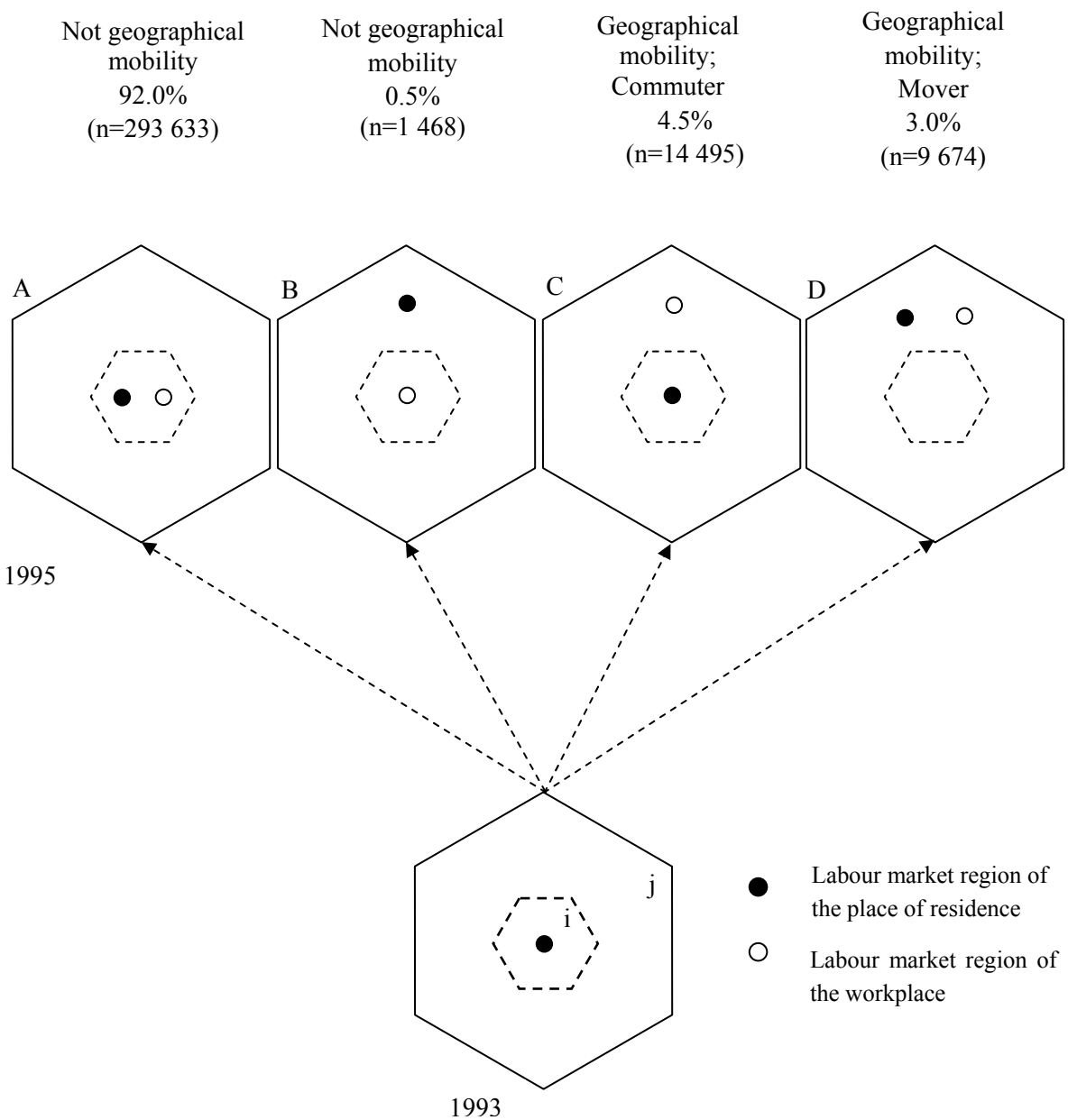

Figure 1: Geographical mobility.

Alternatives C and D are defined as geographical mobility; if the new workplace is located outside the home region, the person is a commuter and if the new workplace and the place of residence are located outside the 1993 home region, the person is a migrant. The proportion of commuters is higher than the proportion of migrants: 4.5% of all individuals in the sample are commuters and the corresponding figure for migrants is 3.0%. Alternative B could also be interpreted as geographical mobility because the individual has changed region of residence and obtained a job in the former home region. As the focus of the study is geographical aspects of labour supply we argue, however, that obtaining a job in the former home region indicates that the person still has ties to that particular region and that most of these moves are related to the "housing carrier". Besides, the proportion of individuals with this combination of place of residence and workplace is small (0.5%). As shown in the figure, combination A is the most common alternative.[10] In our total sample including 319 270 individuals, 49.6 per cent were not employed in 1995. Consequently, part of the stayers (A) does not have a job in that year.

3.1.3 Time of observation

In addition to the specification of geographical mobility, the time perspective of the analysis must be defined. We have chosen to compare the residence and work locations for the years 1993 and 1995. As previously mentioned, the sample consists of individuals who became registered as job searchers in the search categories representing Employment Training, Work Experience Scheme, Relief Work and Open Unemployment during the first quarter of 1994. The length of the ETR-courses varies between a couple of days to 40 weeks. An individual starting a long ETR-course at the end of the quarter will not finish her studies until December. However, any subsequent employment will not be registered because the employment variable is based on information collected in November. *Figure 2* illustrates how the quarter of entrance is related to information about region of residence and region of work (ROR and ROW).

[10] Individuals who died or emigrated during the period 1993 to 1995 are not included in the analysis.

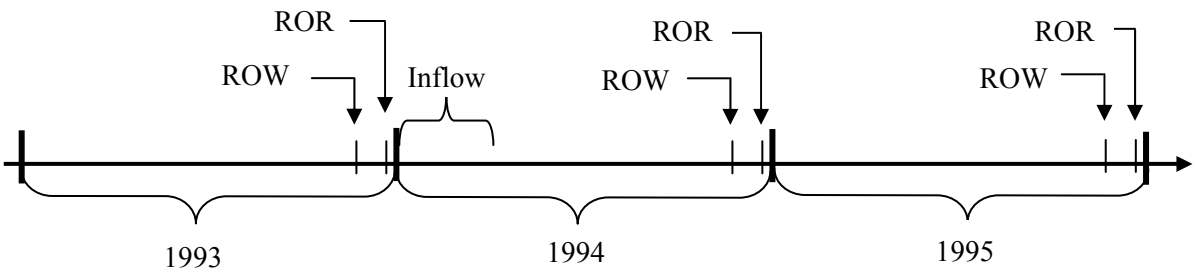

Figure 2: Points in time for inflow and registration of labour market region for workplace and place of residence.

The region of residence code is determined by where the individual is registered on December 31, which means that we know with fairly good accuracy where the individuals lived when they were registered in HÄNDEL. Some of them may have moved before the registration in the first quarter of 1994, but this is a source of error that we cannot come to grips with by means of accessible data.

Apart from the problem discussed above, there are problems related to time periods between completed courses, jobs and migration. After having completed an ETR-course, individuals need different amounts of time to look for and get a job (these differences are due to, for example, regional labour market conditions and the search intensity of the individual). When the individual gets a job offer, the household needs to consider a possible move.[11] All these considerations are time consuming and the time for job search and possible change of residence will be scarce (relative to December 31 in 1994) for an individual who has passed a long ETR-course, which speaks in favour of providing enough time between a completed course and the time of observation. By means of accessible data, the next possible point in time occurs at the end of 1995, which means that there is about one year and a half between the completed course and the time of observation. One obvious problem related to long following-up periods is that the effects of the ETR-course become blurred as

[11] It should be noticed that there are other reasons for migration than changes related to the labour market. The migration decision may also be triggered by, for example, education, family and social networks (Garvill *et al* 2000).

the individual, for example, goes through further education and acquires more extensive labour market experience. Thus, it is important to find a reasonable balance between short and long following-up periods. We have chosen to carry out the empirical analyses on observations of place of residence made in December 1993, and observations of workplace in November 1995 and place of residence in December 1995.

3.1.4 Variable definitions and description

Definitions of variables and descriptive statistics are provided in *Table 1*. Sample means are calculated for each of the four categories of job searchers in our sample. It shows that approximately 50 per cent of the sample were employed at the end of 1995.[12] Individuals in Employment Training and open unemployment did better in this respect than those in the Work Experience Scheme and Relief Work. As regards mobility, we find relatively higher mobility rates among participants in ETR and individuals in open unemployment. Moreover, commuting was more common than migration for all four categories. A larger portion of people in ETR commuted across borders of labour market regions than individuals in the other categories. We find the lowest rates of commuting and migration among participants in Relief Work.[13]

The average number of days as a registered job searcher during 1992 and 1993 is relatively lower among individuals in open unemployment as compared to individuals in the labour market programmes. In particular, participants in RW and in WES were registered as job searchers during a considerable part of that two-year period. The sample means for the variable *UNEMALL3* reveal

[12] The definition of employment used in our study is the same as the one applied in ÅRSYS (RAMS). To be counted as employed in a specific year, the individual must have been working at least four hour in November. Furthermore, it must be possible to relate the employment to a principal workplace during that month.

[13] The group differences are statistically significant ($p<0.01$).

Table 1: Variable definitions and sample means.

Variable	Definition	ETR	U	WES	RW
Y_1 (Employment)	Dummy variable = 1 if the individual according to ÅRSYS was employed in November 1995 (see footnote 12).	0.501	0.517	0.438	0.428
Y_2 (Commuter)	Dummy variable = 1 if the individual is a commuter according to the definition in *Figure 1*.	0.055	0.044	0.044	0.036
Y_3 (Mover)	Dummy variable = 1 if the individual has changed region of residence according to the definition in *Figure 1*.	0.024	0.034	0.019	0.016
Y_4 (Mobility)	Dummy variable = 1 if the individual is a commuter or a mover according to the definition in *Figure 1*.	0.079	0.078	0.063	0.053
ETR	Dummy variable = 1 if the individual participated in Employment Training.	1.000	0.000	0.000	0.000
UNEMDAY23	Number of days in unemployment during 1992-1993 (see footnote 14).	448.498	330.884	511.004	504.595
UNEMALL3	Dummy variable = 1 if the individual was unemployed 365 days in 1993 (see footnote 14).	0.438	0.264	0.568	0.512
UNEMZERO3	Dummy variable = 1 if the individual was not unemployed in 1993 (see footnote 14).	0.014	0.218	0.001	0.014
AGE	The age of the individual.	35.847	32.563	37.384	38.484
OVER45	Dummy variable = 1 if the age of individual > 45.	0.222	0.176	0.284	0.282
UNDER25	Dummy variable = 1 if the age of the individual < 25.	0.136	0.353	0.141	0.035
UPSEC1	Dummy variable = 1 if the individual's highest education is upper secondary education ≤ 2 years.	0.453	0.424	0.452	0.436
UPSEC2	Dummy variable = 1 if the individual's highest education is upper secondary education ≥ 3 years.	0.159	0.180	0.128	0.104
POSTSEC1	Dummy variable = 1 if the individual's highest education is post-secondary education < 3 years.	0.093	0.096	0.090	0.066
POSTSEC2	Dummy variable = 1 if the individual's highest education is post-secondary education ≥ 3 years or post-graduate education.	0.050	0.049	0.057	0.054
MALE	Dummy variable = 1 if the individual is male.	0.586	0.557	0.610	0.629
CHILD	Dummy variable = 1 if the individual has got at least one child under the age of 18 in 1994.	0.433	0.335	0.372	0.438
SCAND	Dummy variable = 1 if the individual is born in another Scandinavian country than Sweden.	0.050	0.042	0.052	0.063
EUROPE	Dummy variable = 1 if the individual is born in a European country outside Scandinavia.	0.144	0.100	0.084	0.164
WORLD	Dummy variable = 1 if the individual is born in a country outside Europe.	0.010	0.009	0.010	0.011
SINGLE	Dummy variable = 1 if the individual is single.	0.528	0.630	0.552	0.533
DISABLE	Dummy variable = 1 if the individual is unable to work due to handicap.	0.133	0.117	0.132	0.169
MIGEXP	Dummy variable = 1 if the individual migrated at least once during 1992-1993.	0.044	0.043	0.038	0.042
ACCESS(i)	Index for accessibility to neighbouring labour markets, see description in the text.	164.137	159.818	160.909	156.557
POP(i)	Population aged 18-64 in region (i), thousand.	244.222	338.351	278.615	289.630
RUNEM(i)	Unemployment rate in region (i) in 1994.	6.906	6.826	6.957	6.977
N		46 231	232 483	30 289	10 267

that more than 50 percent of the individuals in those two categories were unemployed in the whole year of 1993.[14]

By and large, sample means for the variables indicating individual attributes do not differ dramatically between the three categories in labour market programmes. Individuals in unemployment are, however, younger and their unemployment records for 1992 and 1993 as measured by the variables *UNEMDAY23, UNEMALL3,* and *UNEMZERO3* are better than the other three categories.

As regards accessibility between labour market regions, the sample means indicate no major differences across categories of job searchers. The spatial distribution of individuals in the four categories is such that no group gravitates relatively more to either densely or sparsely populated parts of the regional system. The gravity-type accessibility index *ACCESS(i)* measures the centrality of a region in terms of its proximity to all other regional labour markets:

$$A_i = \sum_{j \neq i} E_j \, / \, d_{ij}^2$$

where A_i is the accessibility of region (i), E_j the size of employment in region (j), and d_{ij}^2 the squared road travel time distance between the population centre of gravity of (i) and (j).

Although the sample means of the accessibility index demonstrate no major deviation across the job searching categories, the potential connection between mobility rates and the regional system must be taken into account. *Figure 3* shows the spatial distribution of migration rates among people participating in Employment Training. In general, no obvious relationship can be found between migration rates and the urban system (i.e. urban areas of different size and their spatial and functional relations). High rates of migration can be noted in sparsely as well as in densely populated areas. However, out-migration rates are fairly low in the three metropolitan areas (Stockholm, Gothenburg and

[14] The term unemployed refers, somewhat ambiguously, to individuals registered as being in search for work at the Public Employment Service, either as "openly" unemployed or participating in a labour market programme.

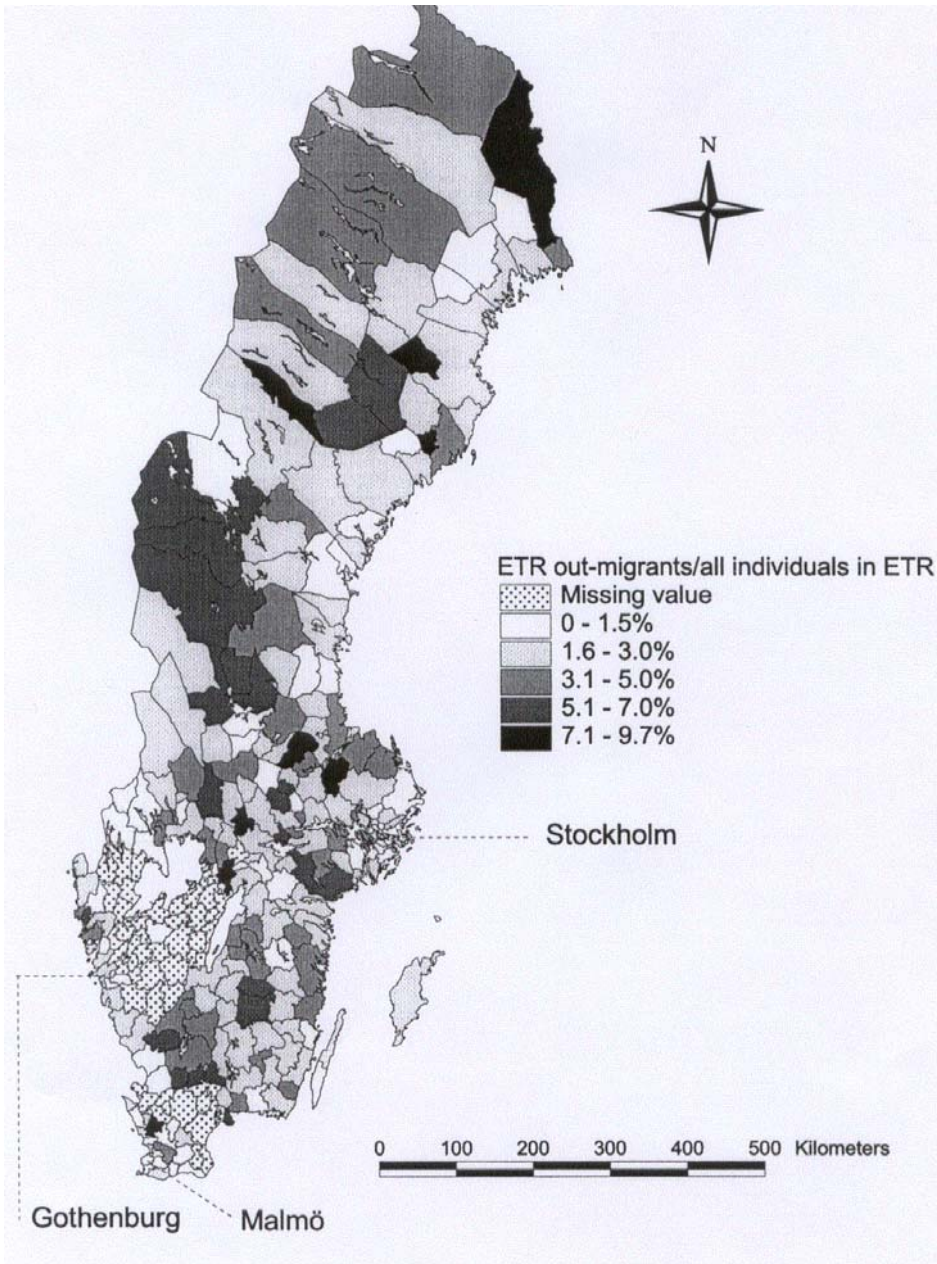

Figure 3: ETR migration.

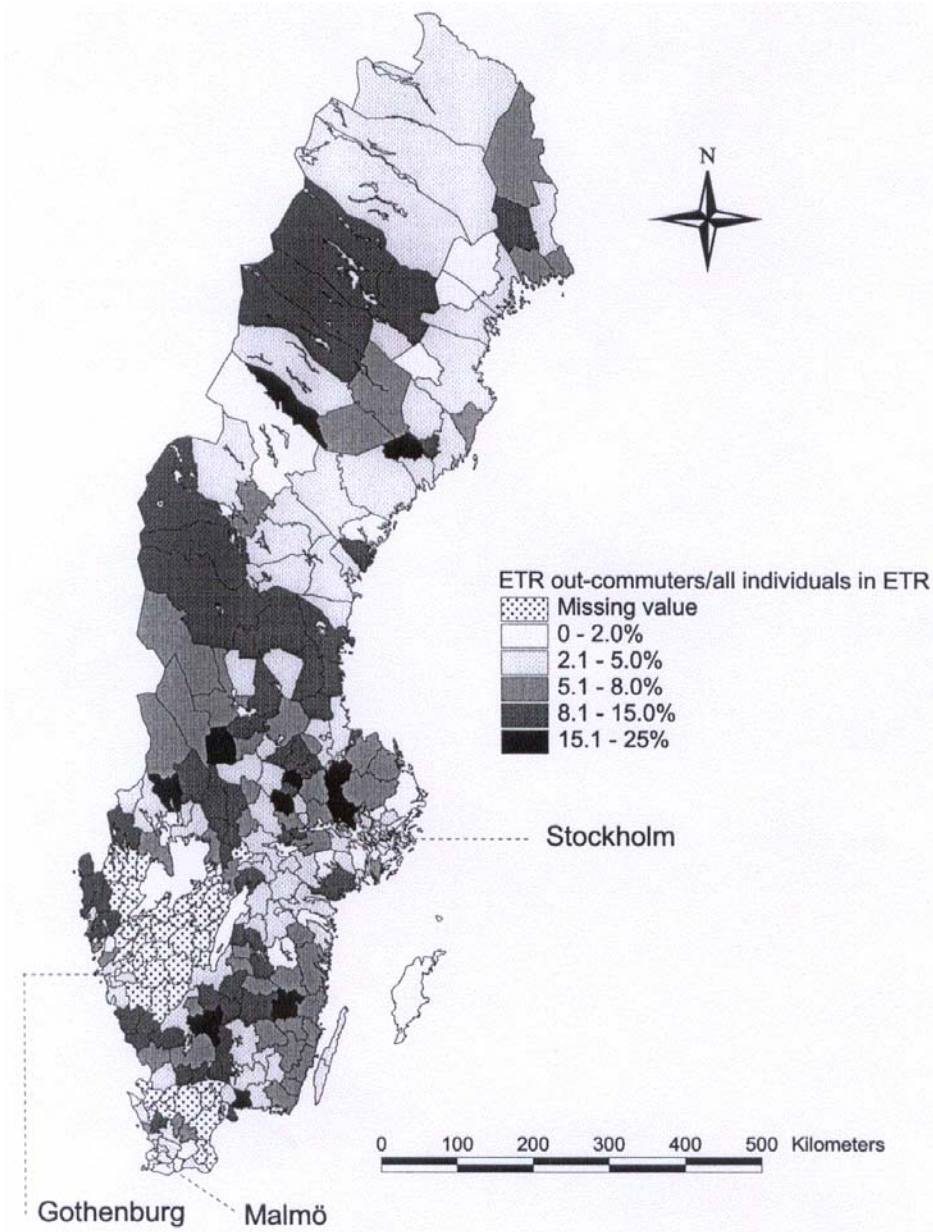

Figure 4: ETR commuting.

Malmö), which is an anticipated pattern considering their large and diverse labour markets. A similar pattern is shown in *Figure 4*, which displays commuting across municipality borders. Here, the metropolitan areas show low rates and as do several regional centres beyond the hinterland of the metropolitan areas (e.g. Luleå, Sundsvall, Örebro, Linköping and Jönköping). On the other hand, there are peripheral municipalities (even adjacent ones), with very low and very high rates. The overall picture of geographical mobility among people in Employment Training displays a pattern that gives no evidence of systematic regional differences.

3.1.5 Mobility rates by age and unemployment in previous periods

It is well known that the age of the individual is one of the key determinants of the probability of migration. The migration rate for the whole population in working ages typically increases from the age of 16, it peaks between 20-25, and decreases thereafter. Taking into account that a very small portion of our sample was younger than 20 years old, we find the expected pattern of migration rates by age (*Figure 5*). For individuals in open unemployment and in WES, the migration rates seem to peak at a slightly higher age. Apart from this, the migration rates decrease with age as expected. For almost all age classes, the migration rates are relatively higher among the openly unemployed, than for programme participants. The migration rates are generally higher among participants in ETR than for participants in the other two programmes.

Figure 6 illustrates commuting rates by age in 1995 for individuals registered as unemployed or as programme participants during the first quarter of 1994. The commuting rates are considerably higher than the migration rates, and the age profile of commuting is clearly different as compared to the age profile of migration. Overall, the commuting rates for virtually all age classes are higher among participants in ETR than for individuals in open unemployment and participants in the other two labour market programmes.

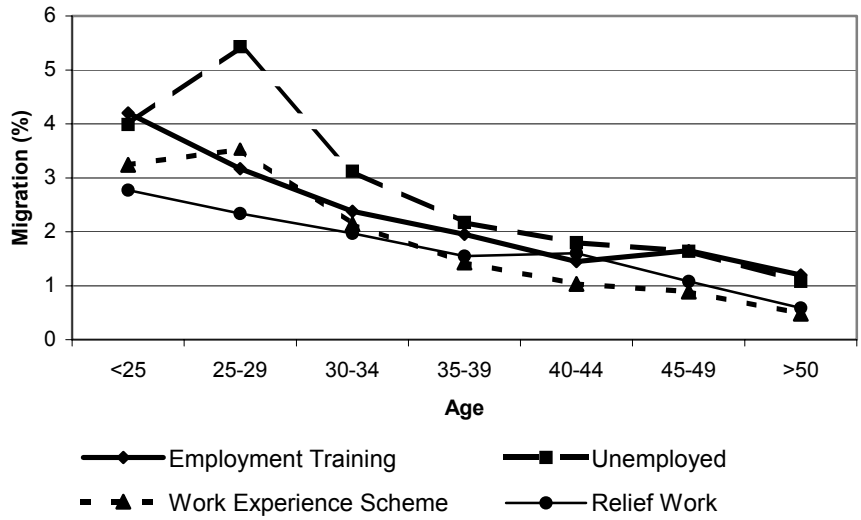

Figure 5: Migration rates 1994/1995 by age and job search category in 1994.

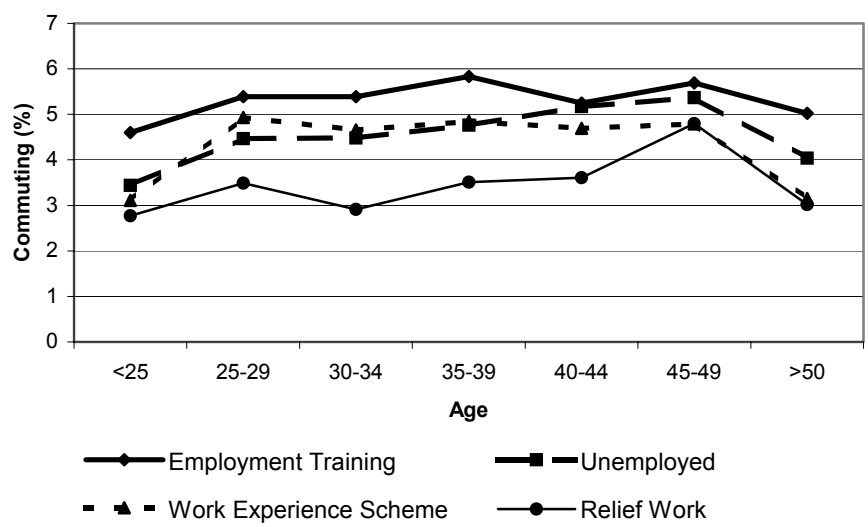

Figure 6: Commuting rates 1995 by age and job search category in 1994.

In comparison to the migration and commuting rates displayed in *Table 1*, *Figure 5* and *Figure 6* indicate a similar group-wise ranking of mobility rates for nearly all age classes. Still, there is a distinct negative relationship between age and migration rate. Differences in the average age or the age distribution of the four groups may explain at least part of the differences between groups in the average mobility rates indicated in *Table 1*.

Figure 7 shows the migration rates by the total number of days in unemployment in 1992 and 1993. In this case, we proxy unemployment as the number of days registered as a job searcher at the Public Unemployment Service (on the job search excluded).

The migration rate is generally higher among the openly unemployed than among programme participants. For the unemployed, the migration rate is decreasing with time in unemployment during 1992 and 1993.

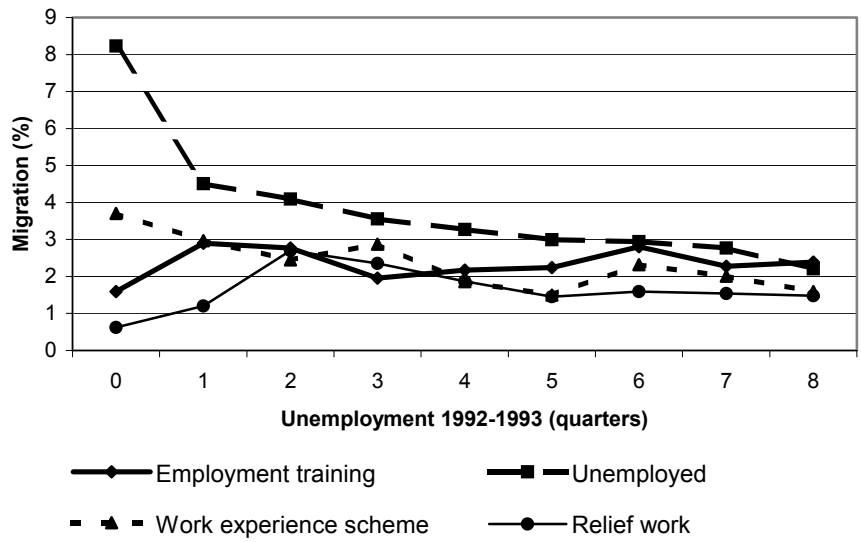

Figure 7: Migration rates by unemployment 1992-1993 and job search category in 1994.

Note: Unemployment pertains to the total number of days as a registered job searcher during 1992 and 1993, translated into three-month intervals, where 0 = 0 days, 1 = 1-91 days, 2 = 92-183 days, and so on.

The difference in migration rates between the unemployed and programme participants is also decreasing with unemployment in previous years. It should be noted that, relative to the other groups, the sample of unemployed contains a higher share of individuals with zero or just a few days in unemployment during 1992 and 1993.

Figure 8 presents the commuting rates by time spent in unemployment during 1992 and 1993. In comparison with the migration rates shown in *Figure 7*, we find that the commuting rates are, almost without exception, higher than the migration rates. Moreover, the commuting rates among participants in Employment Training are higher than in the other three groups for time in unemployment ranging from three quarters up to the maximum eight quarters. Relative to the openly unemployed, participants in Employment Training have higher commuting rates for all categories, except for individuals with no days in unemployment during 1992 and 1993.

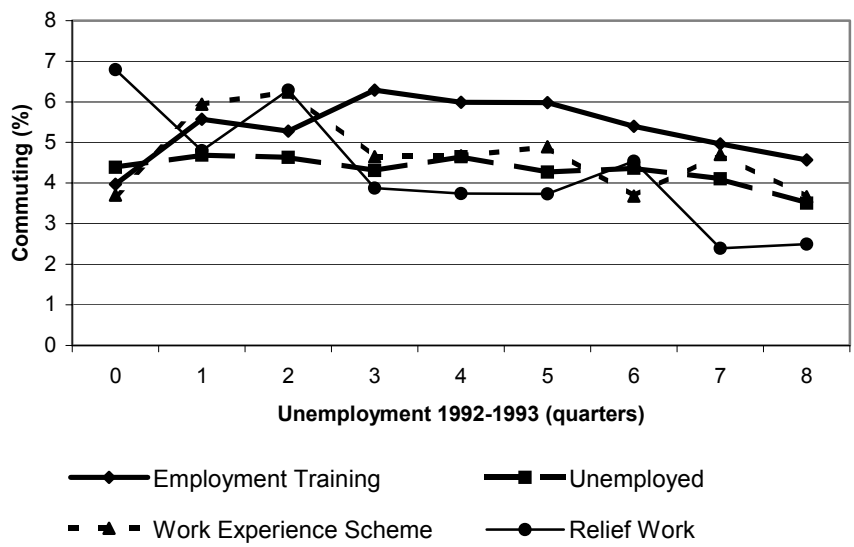

Figure 8: Commuting rates by unemployment 1992-1993 and job search category in 1994.

3.2 Empirical models

As mentioned in the introduction, we study contracted geographical mobility. For this reason, we are interested in potential differences in transition into employment as well as differences in mobility.[15]

We estimate four probit models corresponding to four probabilities; (1) the probability of being employed in November 1995; (2) the probability of being a commuter in November 1995; (3) the probability of migration between December 1993 and December 1995; (4) the probability of mobility, i.e. migration *or* commuting.

Each of the four regression models can be expressed as:

$$y^* = \alpha(ETR) + \beta' \boldsymbol{X} + \varepsilon$$

where y^* is an underlying (latent) index, *ETR* is a dummy variable taking the value of unity if the individual entered Employment Training in the first quarter in 1994, $\boldsymbol{X}$ is a vector of observable attributes, α and β are parameters to be estimated, and ε is a mean zero normally distributed error term. The index variable is unobservable y^* but related to the observable outcome, Y.[16]

Observations related to the dependent variable in the four different models are coded; $Y_1=1$ if the individual is employed in November 1995, otherwise $Y_1=0$; $Y_2=1$ if the individual is a commuter in November 1995, otherwise $Y_2=0$; $Y_3=1$ if the individual migrated between December 1993 and December 1995, otherwise $Y_3=0$; $Y_4=1$ if mobility is observed ($Y_2=1$ and/or $Y_3=1$), otherwise $Y_4=0$.

The independent variables in $\boldsymbol{X}$ are the same in all four models. They represent a mixture of control variables and explanatory variables that can be motivated from theory. For example, in the employment model, we include individual and regional characteristics that may be related to reservation wages and search intensity, the individual's ability to process information or the levels of wage offers. In the migration model, we include regressors with a potential influence on the economic profitability of migration. These include standard variables based on human capital theory such as, age, education, and previous mi-

[15] We also estimate mobility functions using only the observations of employed individuals. The results are presented in Appendix A.
[16] See e.g. Griffiths *et al* (1993).

gration experience (Greenwood 1995, Greenwood 1997, Stark 1991). The independent and dependent variables are defined in *Table 1*.

We estimate the four equations using observations of participants in Employment Training and individuals in *one* of the other three categories. Hence, we compare participants in ETR separately with one of the other three groups.[17] The parameter of main interest is α. An estimate of α significantly different from zero will be interpreted as an indication of a difference between the two groups when holding constant for heterogeneity captured by the variables in $\boldsymbol{X}$.

There are obviously potential problems with unobserved heterogeneity. For example, there may be certain unobserved characteristics making the "typical" individual in ETR more likely to be a participant in that category. The estimated parameters are inconsistent if the unobserved characteristics also affect the probability of employment and/or mobility.[18] It should also be noted that contracted mobility is only observed for individuals in employment in 1995. Hence, the potential problem with selectivity may, in this case, be related to at least two different sorting processes.

It is, however, plausible that at least some of the unobservable factors of interest are correlated with the individual's unemployment record. It seems reasonable to assume that unemployment in previous periods is correlated with individual idiosyncrasies such as motivation and ability. Generally, we expect the probability of employment and the probability of mobility to be decreasing as the number of days in unemployment in previous periods increases.

3.3 Results

The presentation of the estimation results is divided into three sections. In the first section, we compare Employment Training with Relief Work, while the second section presents a comparison between Employment Training and the Work Experience Scheme. In the third section, we compare Employment Training with open unemployment.

The comparison in each section pertains to the estimated parameters of the four models for employment, migration, commuting and mobility. In addition to the results presented in the tables, we also report how our main findings are affected by employing alternative specifications and alternative sampling pro-

[17] We have also estimated the four models including observations pertaining to all four groups: ETR, WES, RW and the openly unemployed (see footnote 21).
[18] See for example Maddala (1983).

cedures. Conditioning on employment, we have re-estimated the models for migration, commuting and mobility (results reported in Appendix A).

3.3.1 Employment Training versus Relief Work

The probit estimation results of the employment function in *Table 2* show that the estimated coefficient on the dummy variable indicating participation in ETR is positive and significant. Hence, holding constant for observed heterogeneity in various individual attributes, we find that participants in *ETR* are more likely to be employed in November 1995 as compared to participants in *RW*.

In accordance with á priori expectations, we find the probability of being employed in November 1995 to be generally increasing with the level of education and decreasing with age, the number of days in unemployment during 1992 and 1993 (*UNEMDAY23)*, and the level of the regional unemployment rate. Other expected findings are the negative parameter estimates on the dummy variables, indicating foreign citizenship and disability.

The estimated parameters in the commuting function are provided in the second column from the left in *Table 2*. In accordance with the descriptive statistics (provided in *Table 1*), the estimated parameter on *ETR* indicates a higher probability of interregional commuting among participants in Employment Training compared to individuals in Relief Work.

A negative impact of the number of unemployment days in 1992 and 1993 on the probability of commuting is indicated by the estimated coefficient on *UNEMDAY23*. As expected, the results indicate a positive relationship between accessibility to other regional labour markets ('external' access measured by $ACCESS_{(i)}$) and commuting, and a negative relationship between the size of the labour market at the initial place of residence ('internal' accessibility measured by $POP_{(i)}$) and commuting.

The third column in *Table 2* contains the estimated parameters in the migration function. The probability of migration to other labour market regions seems to be higher among participants in Employment Training than among individuals in Relief Work. The coefficient on *ETR* is positive and significant. The results also indicate that the probability of migration is unaffected by the number of days in unemployment in 1992 and 1993. Our results coincide with the findings in Harkman (1988a); using aggregate data, it is found that Employment Training seems to be associated with higher migration rates than Re-

Table 2: Probit estimation results, participants in Employment Training and Relief Work.

	EMPLOYMENT		COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	0.107107	7.46	0.164189	6.13	0.099052	2.80	0.158583	6.76
AGE	-0.006342	-5.64	-0.001691	-0.87	-0.015495	-5.74	-0.006860	-3.97
OVER45	-0.063026	-2.71	-0.000655	-0.02	0.040111	0.69	0.018252	0.51
UNDER25	0.003036	0.14	-0.048083	-1.33	0.020530	0.49	-0.000085	-0.00
UPSEC1	0.157351	11.54	0.078521	3.20	0.057211	1.69	0.077034	3.54
UPSEC2	0.173261	9.73	0.175326	5.60	0.185960	4.57	0.200402	7.34
POSTSEC1	0.302249	14.15	0.284447	8.11	0.318493	7.08	0.325835	10.60
POSTSEC2	0.295634	10.97	0.528016	11.92	0.547580	10.69	0.593107	15.81
MALE	0.237482	21.04	0.453666	21.38	0.041425	1.60	0.348773	19.39
CHILD	0.005824	0.40	0.002059	0.08	-0.185395	-5.11	-0.064735	-2.73
SCAND	-0.192563	-7.86	-0.019629	-0.47	0.061144	1.07	0.002572	0.07
EUROPE	-0.664657	-38.98	-0.607841	-15.27	-0.061195	-1.63	-0.424444	-14.23
WORLD	-0.371372	-6.84	-0.097137	-1.03	-0.005238	-0.04	-0.086317	-1.03
SINGLE	-0.207840	-14.39	-0.080254	-2.99	0.121935	3.44	-0.023531	-1.00
DISABLE	-0.382656	-23.73	-0.293119	-9.00	-0.134839	-3.32	-0.270522	-9.70
ACCESS(i)	-0.000513	-8.02	0.001025	10.16	-0.000456	-3.14	0.000630	6.90
POP(i)	-0.000081	-4.68	-0.000579	-14.60	-0.000107	-2.84	-0.000391	-13.12
RUNEM(i)	-0.032332	-5.53	0.005038	0.55	-0.048654	-3.78	-0.012314	-1.48
MIGEXP	-0.158639	-5.90	0.045606	1.00	0.544572	13.28	0.327465	9.45
UNEMDAY23	-0.000433	-12.19	-0.000203	-3.35	0.000077	0.97	-0.000127	-2.37
UNEMALL	0.015739	1.02	-0.002995	-0.11	-0.042306	-1.23	-0.019444	-0.83
UNEMZERO3	0.320500	6.38	-0.095299	-1.20	-0.050088	-0.42	-0.076387	-1.06
CONSTANT	0.635741	9.54	-2.006402	-17.89	-1.326705	-8.82	-1.470765	-14.81
LOG-L	-36 867.4		-10 635.3		-5 686.0		14 077.2	
N	56 498		56 498		56 498		56 498	

lief Work. Fredriksson & Johansson (2003) find no statistically significant differences in migration rates among participants in ETR as compared to participants in job-creation measures, however. We have not been able to find any other studies explicitly comparing different programmes in terms of their effects on mobility.[19]

The other parameter estimates indicate, by and large, anticipated relationships between the covariates and the probability of migration. Individuals with a higher level of education, singles, and individuals with a recent experience of migration are more likely to migrate. Individuals with children of school age and the disabled have a lower probability of migration. This also seems to be the case for those residing in regions with larger populations and a higher degree of access to other regional labour markets. An unanticipated result is the negative and significant coefficient of $RUNEM_{(i)}$, indicating migration to be less likely among individuals residing in regions with relatively high unemployment rates.

The estimates of the mobility function (fourth column in *Table 2*) indicate a higher overall mobility among participants in Employment Training, in accordance with the estimates of the commuting and the migration functions. In most cases, the other estimates indicate the anticipated effects of individual and regional attributes on mobility. According to the sample means provided in *Table 1*, mobility was relatively more frequent among participants in ETR. The estimation results presented in *Table 2* do not alter the general impression provided by the descriptive statistics in Section 3.1.

Restricting the sample to individuals employed in November 1995, we obtain similar results for the parameters of primary interest (*Table Aa* in Appendix A). Participants in ETR have a higher probability of mobility. The results indicate this mainly to be due to a higher probability of interregional commuting.

3.3.2 Employment Training versus Work Experience Scheme

We now turn to a comparison between participants in Employment Training and participants in the Work Experience Scheme. In *Table 3*, we can see that the participants in ETR have a higher probability of employment and higher

[19] Harkman (1988b) finds indications of negative effects of Employment Training and Relief Work on migration. However, the study does not contain a test of different effects of the two programmes.

Table 3: Probit estimation results, participants in Employment Training and Work Experience Scheme.

	EMPLOYMENT		COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	0.149471	15.38	0.104355	6.20	0.087513	3.89	0.114363	7.68
AGE	-0.010750	-11.12	-0.002689	-1.62	-0.020292	-8.45	-0.009264	-6.20
OVER45	-0.042775	-2.10	-0.007883	-0.23	0.081670	1.54	0.027906	0.88
UNDER25	-0.049998	-2.85	-0.117913	-3.90	-0.017787	-0.51	-0.063456	-2.49
UPSEC1	0.151710	12.84	0.099885	4.67	0.031223	1.05	0.081218	4.28
UPSEC2	0.163095	10.58	0.187407	6.89	0.169311	4.74	0.201954	8.48
POSTSEC1	0.320284	17.68	0.324719	10.95	0.334091	8.68	0.362753	13.91
POSTSEC2	0.356858	15.63	0.541080	14.60	0.493133	10.92	0.576605	18.00
MALE	0.230253	23.83	0.406273	22.64	0.045110	2.01	0.316609	20.59
CHILD	0.021505	1.68	-0.004981	-0.22	-0.134445	-4.18	-0.055150	-2.68
SCAND	-0.178955	-8.34	-0.068987	-1.81	-0.001507	-0.03	-0.057849	-1.70
EUROPE	-0.653714	-41.40	-0.570029	-15.95	-0.059971	-1.71	-0.410291	-14.96
WORLD	-0.359330	-7.58	-0.083175	-1.01	0.105255	1.02	-0.028452	-0.40
SINGLE	-0.201197	-16.11	-0.065530	-2.86	0.167710	5.32	-0.000201	-0.01
DISABLE	-0.396147	-27.71	-0.278061	-9.80	-0.195922	-5.09	-0.280328	-11.25
ACCESS(i)	-0.000382	-6.85	0.001041	11.77	-0.000364	-2.87	0.000684	8.53
POP(i)	-0.000031	-2.09	-0.000528	-16.47	-0.000107	-3.27	-0.000374	-14.93
RUNEM(i)	-0.040409	-8.04	-0.000275	-0.03	-0.057367	-5.07	-0.019217	-2.65
MIGEXP	-0.111526	-4.75	0.050493	1.30	0.566460	15.97	0.341470	11.41
UNEMDAY23	-0.000438	-13.97	-0.000143	-2.68	-0.000048	-0.68	-0.000947	-2.01
UNEMALL	-0.015068	-1.14	-0.030146	-1.32	-0.038958	-1.31	-0.038650	-1.93
UNEMZERO3	0.242299	4.56	-0.150020	-1.71	0.020492	0.17	-0.101099	-1.30
CONSTANT	0.783806	13.76	-1.877538	-19.74	-1.126606	-8.65	-1.303823	-15.39
LOG-L	-49 952.8		-14 318.7		-7 525.1		-18 837.9	
N	76 520		76 520		76 520		76 520	

probabilities of commuting and migration. A higher probability of mobility is also indicated when restricting the sample to individuals in employment (*Table Ab* in Appendix A). Once more, we find the number of days in unemployment during 1992 and 1993 to be negatively correlated with the probability of employment and mobility. All in all, the results are similar to our findings when comparing ETR with RW.

With respect to post-treatment employment there is, to the best of our knowledge, only one previous study explicitly comparing ETR with WES and RW. Studying the effect on employment within 30 days after ending a programme, Axelsson *et al* (1996) find no significant difference between the programmes: Employment Training, Relief Work and Work Experience Scheme. They use a similar econometric technique and a similar specification of the employment equation as our study. However, the sampling strategies differ and they use a shorter period between programme participation and observation of employment status.

3.3.3 Employment Training versus open unemployment

As regards the comparison between participants in Employment Training and individuals in open unemployment, we find no significant difference in employment probabilities between these two categories (*Table 4*).

The estimates of the mobility function indicate a higher overall mobility among participants in Employment Training. The relatively lower probability of migration seems to be predominated by a higher probability of commuting among participants in ETR. By and large, the other estimates indicate the anticipated effects of individual and regional attributes on employment, migration, commuting and total mobility. In general, the estimates do not deviate dramatically from the ones presented in *Table 2*. Conditioning on employment in 1995 yields the same results (*Table Ac* in Appendix A). The estimates indicate a higher probability of commuting, a lower probability of migration and a higher probability of overall mobility among participants in Employment Training, in comparison to individuals in open unemployment.

Previous studies of the effects of Employment Training on employment or unemployment duration show mixed results (see Calmfors *et al* 2002). Comparisons between Employment Training and open unemployment, based on data from the 1990's, can be found in Fredriksson & Johansson (2003), Harkman *et al* (1999), Richardsson and van den Berg, (2002), and Sianesi (2002). Harkman *et al* report a positive effect of Employment Training on employment

Table 4: Probit estimation results, participants in Employment Training and individuals in open unemployment.

	EMPLOYMENT		COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	-0.004044	-0.59	0.054859	4.76	-0.042369	-2.84	0.023266	2.31
AGE	-0.007584	-13.66	-0.000221	-0.23	-0.019394	-15.63	-0.008394	-9.98
OVER45	-0.040559	-3.38	-0.033442	-1.61	0.003182	0.11	-0.009044	-0.49
UNDER25	-0.128716	-14.90	-0.135439	-8.87	-0.157662	-9.50	-0.149908	-11.96
UPSEC1	0.224294	35.88	0.082567	7.07	0.071979	4.91	0.079195	7.90
UPSEC2	0.198709	25.54	0.152037	10.56	0.166462	9.90	0.171101	14.19
POSTSEC1	0.363620	38.65	0.279532	17.37	0.455484	25.55	0.402134	30.31
POSTSEC2	0.475347	38.42	0.515282	26.21	0.846513	42.24	0.768813	48.72
MALE	0.205225	40.88	0.389494	41.27	-0.041617	-4.10	0.233967	30.66
CHILD	-0.053731	-7.33	-0.026633	-1.96	-0.227885	-13.63	-0.126217	-10.89
SCAND	-0.189086	-15.62	-0.037614	-1.72	-0.009093	-0.33	-0.033345	-1.76
EUROPE	-0.662942	-77.82	-0.552009	-26.70	-0.139525	-7.67	-0.416601	-27.80
WORLD	-0.365268	-14.51	-0.159295	-3.31	-0.101661	-1.76	-0.167329	-4.09
SINGLE	-0.227476	-31.61	-0.091711	-6.81	0.118350	7.24	-0.024894	-2.18
DISABLE	-0.492429	-62.51	-0.339186	-20.52	-0.168246	-8.73	-0.312282	-22.67
ACCESS(i)	-0.000337	-11.29	0.001011	21.04	-0.000264	-4.43	0.059193	14.15
POP(i)	-0.000043	-6.09	-0.000559	-36.38	-0.000184	-13.24	-0.000405	-35.90
RUNEM(i)	-0.038544	-13.72	-0.005456	-1.20	-0.052186	-9.21	-0.025561	-6.46
MIGEXP	-0.176497	-14.55	0.016124	0.76	0.634426	38.59	0.432983	29.39
UNEMDAY23	-0.000440	-26.55	-0.000123	-4.18	-0.000137	-4.03	-0.000167	-6.77
UNEMALL	0.018617	2.43	-0.054302	-3.94	-0.040589	-2.50	-0.052646	-4.51
UNEMZERO3	-0.104503	-12.83	-0.057617	-4.03	0.039758	2.52	-0.023417	-1.98
CONSTANT	0.835829	26.60	-1.818978	-34.12	-0.883298	-13.69	-1.036702	-22.69
LOG-L	-182 701.6		-48 395.7		-35 878.9		-71 655.0	
N	278 714		278 714		278 714		278 714	

measured one year after the programme ended. Richardsson and van den Berg find a negative effect on unemployment duration in the short run when duration is measured from the end of the programme. No significant effects are found when measuring the unemployment duration from the beginning of the programme. Sianesi finds that participating in Employment Training, compared to remaining in open unemployment, has a negative effect on employment probability up to about 18 months from the programme start, and no significant effect thereafter. Our results coincide with the absence of long-run effects found in the two latter studies. Larsson (2000) reports that training programmes reduce employment for young participants. Fredriksson & Johansson (2003) find that participation in training programmes or job-creation programmes reduces the outflow to employment (by about 40 percent). They also report large negative effects on contracted migration of participation in training programmes and job-creation programmes.

A relatively higher portion of the unemployed was sampled from the inflow to the stock of registered job searchers, while most of the participants in ETR were drawn from the existing stock (see the discussion in Section 3.1.1). To make the two groups more comparable, the sample was confined to individuals registered as job searchers at least one day during 1993 and all equations were re-estimated. Using this sample, we find no substantial change in relation to the previously presented results.[20] In particular, the estimated coefficients on the variable *ETR* are significant and have the same sign in the equations for commuting, migration, and mobility. Similar to the previously presented results, the parameter estimate on *ETR* is not significant in the employment function.[21]

[20] The application of the corresponding sampling criteria for the ETR/RW and ETR/WES comparisons does not yield substantially different results than those in *Table 2* and *Table 3*. These estimates are not reported here, but are available upon request.

[21] We have also estimated the four models including observations pertaining to all four groups: ETR, WES, RW and the openly unemployed. Once more, geographical mobility is found to be higher among participants in ETR as compared to participants in RW and WES. Participants in ETR also have a higher probability of mobility than the openly unemployed due to a relatively higher probability of commuting. Moreover, the results indicate no significant difference between RW and WES as regards mobility. With respect to employment, we find no significant difference between participants in ETR as compared to the openly unemployed. Participants in WES and RW have significantly lower probabilities of employment than the openly unemployed. The comparison between WES and RW indicates relatively lower probability of employment among participants in WES.

4 Summary and discussion

In this paper, we use micro data to study contracted geographical mobility among participants in three different labour market programmes (Employment Training, the Work Experience Scheme and Relief Work) and individuals in open unemployment. We compare the mobility among participants in Employment Training relative to the mobility among individuals in the other three groups. The data pertains to individuals who became registered as a participant in any of the three labour market programmes, or as openly unemployed, in the first quarter in 1994. Mobility (migration and commuting) status is measured by using data on the locations of work and residence.

The results indicate higher geographical mobility among participants in Employment Training, as compared to individuals in Relief Work and participants in the Work Experience Scheme. Participants in Employment Training have a relatively higher probability of employment, migration, and commuting. Hence, the supply-orientated labour market policy measure Employment Training is associated with higher post-programme mobility than the two demand-orientated measures, a difference which may be related to the characteristics of the measures. Employment Training is generally less firm specific, relative to Work Experience Scheme and Relief Work, and results in improved qualifications needed by a broad number of employers, both locally and elsewhere.

Individuals in Employment Training also have a higher probability of mobility in comparison to the openly unemployed. In this case, this is due to a relatively higher probability of commuting that predominates a relatively lower probability of migration. Our results are in accordance with findings in previous studies of interregional migration based on aggregate data – participation in labour market programmes is associated with lower migration rates. In the case of Employment Training, however, our results indicate no negative effect on *total* geographical mobility when interregional commuting is taken into account. Restricting the sample to individuals who were employed in 1995, the estimation results still indicate a relatively higher probability of mobility among individuals in Employment Training than the other three groups.

A potential problem with the data used in this study is that a relatively higher portion of the unemployed were sampled from the inflow to the stock of registered job searchers, while most participants in Employment Training were drawn from the existing stock. Even if our main empirical findings seem to be

relatively insensitive to marginal changes in the sampling strategy, the comparison between Employment Training and the openly unemployed may still be an artefact of the chosen sampling procedure.

Another potential problem is unobserved heterogeneity that may affect the sorting process into the four different groups, the probability of employment, and mobility behaviour. Hopefully, this problem is substantially reduced by controlling for a large number of individual characteristics, including the individual's unemployment record in the past.

The results provide support for the notion that different labour market programmes are associated with different post-programme mobility rates. Further empirical research on the locking-in effects of labour programmes should therefore use models allowing the relationship between programme participation and mobility to differ with respect to the type of programme. Moreover, we find interregional commuting to be relatively more frequent than migration as a mobility mode and the probability of commuting to differ across groups of job searchers. There are substantial difficulties associated with defining and measuring the spatial distribution of labour supply and geographical mobility. Nevertheless, it seems obvious that research on the effects of labour market programmes on geographical mobility should consider the effects on commuting between regional labour markets.

Among other results reported in this study, we find the probability of geographical mobility to decrease with the individual's total number of days in unemployment in previous years. However, for those observed as employed in 1995, no systematic correlation between the individuals' previous unemployment history and geographical mobility is found.

Generally, the empirical results indicate the expected effects of individual attributes on migration and total geographical mobility. A relatively higher probability of migration and total mobility is indicated for the young, singles, empty nesters, and individuals with a higher education. Although the results pertaining to the commuting function are less clear-cut, we find the probability of interregional commuting to be relatively higher for married/cohabitants and for males.

With respect to the variables indicating regional attributes, the results indicate that individuals residing in populous regions have a lower probability of migration and commuting to other regions. Increased access to jobs in neighbouring labour markets decreases the probability of migration and in-

creases the probability of commuting. On balance, mobility is found to increase with accessibility.

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Appendix A: Probit estimations conditioning on employment

Table Aa: Probit estimation results, participants in Employment Training and participants in Relief Work, conditioned on employment.

	COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	0.141398	4.61	0.071780	1.78	0.136351	4.97
AGE	0.003862	1.72	-0.015291	-4.98	-0.002885	-1.42
OVER45	0.014039	0.31	0.067701	1.07	0.042640	1.03
UNDER25	-0.037204	-0.90	0.014359	0.30	0.008738	0.25
UPSEC1	0.040757	1.44	-0.014062	-0.36	0.020606	0.80
UPSEC2	0.153398	4.26	0.130387	2.80	0.167716	5.22
POSTSEC1	0.217581	5.46	0.227576	4.48	0.248490	6.97
POSTSEC2	0.515214	10.05	0.485562	8.24	0.589643	13.17
MALE	0.421744	17.45	-0.015963	-0.55	0.314182	14.99
CHILD	-0.005282	-0.17	-0.186493	-4.50	-0.074070	-2.66
SCAND	0.081890	1.65	0.147863	2.25	0.115893	2.58
EUROPE	-0.354433	-7.45	0.249615	5.55	-0.110336	-2.98
WORLD	0.054970	0.49	0.132396	0.91	0.082015	0.80
SINGLE	0.016638	0.53	0.215738	5.31	0.087886	3.17
DISABLE	-0.140838	-3.63	0.014552	0.30	-0.105386	-3.09
ACCESS(i)	0.001416	12.25	-0.000349	-2.14	0.001012	9.48
POP(i)	-0.000615	-14.10	-0.000086	-2.02	-0.000422	-12.47
RUNEM(i)	0.020626	2.01	-0.039475	-2.82	0.031085	0.33
MIGEXP	0.125598	2.37	0.726658	14.77	0.513603	11.90
UNEMDAY23	-0.000030	-0.43	0.000249	2.79	0.000073	1.17
UNEMALL	-0.006796	-0.22	-0.058165	-1.50	-0.030327	-1.11
UNEMZERO3	-0.219184	-2.60	-0.098908	-0.78	-0.193713	-2.50
CONSTANT	-2.121645	-16.54	-1.182580	-6.98	-1.504224	-13.01
LOG-L	-8 772.3		-4 757.4		-11 199.7	
N	27 540		27 540		27 540	

Table Ab: Probit estimation results, participants in Employment Training and participants in Work Experience Scheme, conditioned on employment.

	COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	0.050118	2.59	0.052077	2.05	0.062950	3.62
AGE	0.004579	2.36	-0.019743	-7.22	-0.003973	-2.24
OVER45	-0.002010	-0.05	0.116379	1.98	0.048118	1.31
UNDER25	-0.102921	-2.98	-0.013350	-0.33	-0.049764	-1.67
UPSEC1	0.061870	2.49	-0.047661	-1.40	0.022959	1.02
UPSEC2	0.163298	5.18	0.108812	2.66	0.167911	5.96
POSTSEC1	0.251033	7.41	0.233555	5.37	0.279297	9.19
POSTSEC2	0.492581	11.50	0.395438	7.68	0.528119	13.91
MALE	0.374228	18.18	-0.018104	-0.71	0.276889	15.38
CHILD	-0.025582	-0.95	-0.126048	-3.43	-0.071824	-2.96
SCAND	0.008499	0.19	0.074366	1.22	0.029310	0.72
EUROPE	-0.322638	-7.52	0.246796	5.87	-0.103247	-3.02
WORLD	0.059266	0.60	0.275162	2.26	0.150562	1.70
SINGLE	0.031577	1.18	0.270961	7.53	0.115967	4.82
DISABLE	-0.114646	-3.33	-0.044211	-0.97	-0.106769	-3.46
ACCESS(i)	0.001394	13.65	-0.000292	-2.04	0.001023	10.85
POP(i)	-0.000582	-16.39	-0.000108	-2.95	-0.000425	-14.96
RUNEM(i)	0.018100	2.00	-0.045722	-3.68	-0.001365	-0.16
MIGEXP	0.113423	2.48	0.726879	17.20	0.508733	13.71
UNEMDAY23	0.000034	0.56	0.000227	2.86	0.000112	2.05
UNEMALL	-0.021590	-0.83	-0.046593	-1.38	-0.037845	-1.62
UNEMZERO3	-0.254872	-2.72	-0.003513	-0.03	-0.194082	-2.30
CONSTANT	-2.027011	-18.52	-0.996717	-6.80	-1.357343	-13.70
LOG-L	-11 688.8		-6 296.8		-14 872.0	
N	36 396		36 396		36 396	

Table Ac: Probit estimation results, participants in Employment Training and individuals in open unemployment, conditioned on employment.

	COMMUTING		MIGRATION		MOBILITY	
Variable	Coefficient	*t*	Coefficient	*t*	Coefficient	*t*
ETR	0.063584	4.88	-0.048224	-2.89	0.027586	2.37
AGE	0.005888	5.31	-0.020415	-14.53	-0.005383	-5.48
OVER45	-0.040283	-1.74	0.038082	1.21	0.002971	0.14
UNDER25	-0.086163	-5.01	-0.140800	-7.57	-0.113807	-7.87
UPSEC1	0.018866	1.40	-0.037933	-2.25	-0.016141	-1.37
UPSEC2	0.116729	7.06	0.081580	4.22	0.111198	7.83
POSTSEC1	0.200886	11.04	0.342354	16.90	0.308526	20.00
POSTSEC2	0.425208	19.26	0.730313	32.17	0.692852	37.69
MALE	0.360031	33.98	-0.092519	-8.13	0.196537	22.37
CHILD	-0.024879	-1.61	-0.197641	-10.39	-0.116959	-8.66
SCAND	0.045204	1.77	0.079062	2.51	0.064670	2.87
EUROPE	-0.310573	-12.66	0.164433	7.52	-0.114077	-6.15
WORLD	-0.037653	-0.67	0.028447	0.43	-0.026811	-0.55
SINGLE	0.005096	0.33	0.215441	11.59	0.089381	6.67
DISABLE	-0.148341	-7.48	0.051617	2.24	-0.090453	-5.31
ACCESS(i)	0.001313	24.11	-0.000177	-2.63	0.000887	18.27
POP(i)	-0.000591	-35.45	-0.000205	-13.27	-0.000455	-35.85
RUNEM(i)	0.009525	1.89	-0.042654	-6.84	-0.011242	-2.50
MIGEXP	0.101337	4.12	0.842649	42.39	0.666279	36.02
UNEMDAY23	0.000056	1.68	-0.000007	-0.19	-0.000012	0.43
UNEMALL	-0.060786	-3.90	-0.062637	-3.42	-0.071092	-5.26
UNEMZERO3	-0.021004	-1.32	0.074802	4.25	0.018498	1.37
CONSTANT	-1.941519	-32.09	-0.687643	-9.48	-1.011203	-19.11
LOG-L	-40 660.6		-30 164.2		-57 659.0	
N	143 356		143 356		143 356	

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