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R E L A Z I O N E   F I N A L E

EVALUATION OF THE EFFECTS OF TWO CLASSES OF ACTIVE LABOUR MARKET POLICIES FOR WELFARE RECIPIENTS: A DANISH STUDY CASE

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To my parents

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Chapter 1

Introduction

Helping the unemployed to become competitive in the labour market is preferable to providing them with income support only: instead of just giving cash benefits, it is more desirable to help individuals to go back to work by improving their skills and competencies. This general and widely accepted principle is the basic rationale for Active Labour Market Policies (ALMPs), contrary to passive labour market policies which try to alleviate unemployment problems by guaranteed cash benefits. If carefully designed and tightly managed, these policies have been shown to help the unemployed overcome difficulties in finding a job, and to improve the functioning of the labour market more generally. Yet in the great majority of OECD countries much more is spent on passive income support than on ALMPs, and many governments have found it difficult in recent years to accommodate a faster rise in spending on ALMPs or a switch of funds from passive to active measures[1].

Action to combat unemployment is a central element of the Danish labour market policy. Indeed, since the birth of ALMPs in 1978 Denmark is one of the countries that applies it the most. From that time on, ALMPs in Denmark have changed a lot, concerning the instruments adopted and the efficiency of its programmes. There are, in particular, two features which characterize the present programmes (or measures or policies) and distinguish them from the programmes

[1]Source: OECD website.

used in the 1970s and the 1980s:

- the principle that rights must be accompanied by duties (*right and duty principle*);
- decentralization: much more than before, it is now up to responsibility of regional and local authorities to decide which measures should be taken at regional and local level.

The results of these reforms in the implementation of ALMPs are undoubtedly encouraging, if broadly (and roughly) judged from the dynamics of unemployment: from 1993 to 1999, unemployment has fallen by approximately 60%, *i.e.* by 200,000 people, and long-term unemployment has fallen from about 145,000 people to approximately 40,000[2]. In the light of this positive development, a number of adjustments to the measures combatting unemployment have been introduced, with a view to making them better targeted on getting the unemployed - including the long-term unemployed - back into ordinary employment.

In Denmark, an unemployed person will in a fairly short time end up in an ALMP. Actually this happens , *e.g.* for young people in less than one year. Thus, it is difficult, if not impossible, to find unemployed people who have never participated in a programme. This lack of a standard control group in some ways puts a shadow on the real aim of an evaluation, given that our interest is on the impact of a programme (the difference between a treated group and a non-treated group, entirely similar to the treated one except for not having been treated). As a consequence, I will focus on the relative efficiency of different programmes. Such an evaluation exercise, however, is by no means useless: comparing the impacts of two programmes can help the policy maker in allocating resources efficiently. Given the fact that the unemployed have to partecipate in a programme, it is useful to know which programme reaches its goal in the best way. Besides, this approach also has an advantage: we only have to include participants in the empirical analysis.

Among all the ALMPs, private sector programmes (PRPs) have always been pointed to as the most successful programmes to help the unemployed to go back

[2]The Danish Ministry of Employment.

to work. But they have never been compared to only public sector programmes (PRPs). Graversen and Jensen (2004) compare PRPs to all the other ALMPs, but not private- to public sector programmes. Questions like "Are private sector programmes really better than the public sector programmes?" and, if so, "Why are PRPs better?" have never been answered. Just looking at the raw data[3] may be misleading since there might be some deeper reasons why PRPs are so successful: is it because of the type programme or have PRP participants got different characteristics which make them more likely to get a job after completion of the programme? To answer all these questions, I use an empirical model originally formulated by Aakvik et al. (2000): the model consists of a first equation selecting individuals into private- or public sector programmes and two other equations to model the probability of being employed after the end of the two programmes, respectively.

In Denmark, there are two different administrative systems referring to two different groups of unemployed people:

- the first group comprises unemployed people who are insured against unemployment and who qualify for unemployment benefits[4]. Measures in relation to this group are regulated by the Act on an active labour market policy, which falls under the competence of the Ministry of Labour;

- the second group comprises unemployed people who either are not insured against unemployment or do not meet the conditions for qualifying for unemployment benefits, but are entitled to social assistance. The rules concerning this group are laid down in the Act on an active social policy, which falls under the competence of the Ministry of Social Affairs.

I will concentrate my attention on welfare benefit claimants (non-insured workers), since evaluations for unemployment benefits claimants have been numerous

[3]The dataset used is a register-based dataset constructed by The Danish National Institute of Social Research in collaboration with Statistics Denmark. See Chapter 5 for details.

[4]In Denmark, it's not compulsory to be insured against unemployment and only those who are insured can receive unemployment insurance benefits (UI benefits) provided that they meet the necessary requirements.

and detailed, while there has been much less interest in the unemployed on social assistance (this is the case in Denmark and in other countries too[5]).

For both groups, the decision to assign unemployed workers to any specific available active labour market policy is done by caseworkers, at local level. The most common method is to have the unemployed person meet a caseworker, to discuss the different possibilities and to agree on the most suitable programme together with the caseworker's evaluation of individual skills and the availability of local programmes. This is done because in the policy maker's opinion the "optimal" assignment requires knowledge of the individual - observable - characteristics of the unemployed person and the local labour market, combined with the presumed professional experience of the caseworker[6]. However, in some cases selection might be based on unobservable characteristics as well: caseworkers may not gain all the necessary information from the interview so that some relevant characteristics could remain hidden. Obviously, these hidden characteristics (individual, but also regional), if not accounted for, may lead to possible bias in the results. To avoid this, in the empirical model I will take both observable and unobservable characteristics into consideration.

A third special trait of the model used here is the possibility to control for possible heterogeneity in the way participants respond to programmes. Usually, researchers implicitly think that different individuals all react in the same manner to a programme. Because of "the fundamental problem of policy evaluation" (Holland, 1986), *i.e.* the impossibility of an observable outcome for both the treated and non-treated state for every individual (if a participant is treated (s)he can not be non-treated as well), to calculate the impact of a specific programme one usually refers to an average impact, which is assessed using population averages. However, in some cases (depending on the model specification) it is possible to calculate other parameters of interest. The model used in this dissertation allows the treatment effect to vary among observationally identical individuals so that it

[5]Graversen and Jensen (2004).

[6]Anyway, Lechner and Smith (2003) show that most of the times caseworkers do about as well as a random assignment of the unemployed person to programmes. In some way, they neither add nor subtract value to the assignment.

is possible to calculate the distribution of the treatment effect.

Hence, the model I use to investigate whether PRPs are really better than PUPs, or whether indeed PRP participants are different to PUP participants, is as follows:

- a latent variable structure, made by three discrete outcome equations: the first for selection of individuals into the two programmes and the latter two for employment outcomes;
- selection on observable characteristics and on unobservables as well (using a one normal factor structure on the three equations errors);
- the possibility of the treatment effect to vary among individuals.

This structure is convenient since it will be possible to see if results are sensitive to the selection of the unobservables and to estimate mean as well as distributional parameters.

I will only look at the employment effect of the programmes, since it is the main purpose of ALMPs. There might be other effects, *e.g.* occupational choice and subsequent earnings, but these are beyond the aim of this study. I will also consider three different time horizons for the employment outcome, namely 6, 12 and 24 months, to check whether there is a trend over time on the employment effect of the programmes.

Results are really surprising: the difference between PRPs and PUPs is mainly due to the selection process, since individuals selected in private sector programmes have pretty different characteristics from public sector participants. Besides, controlling for unobservable characteristics is necessary since in this case results are much different from the ones obtained only by selecting individuals on the observables. The relative impact on a randomly selected individual is positive but small, while, on the contrary, an actual participant in a PRP does not gain from participation (on average). With time, these results are likely to get better, as if participants in PRPs could improve their employability skills as time passes. Estimates show a great amount of heterogeneity among individuals and a perverse selection process where participants least likely to take a PRP are those most likely to benefit from it. For the majority of individuals there is nothing to be gained by participating in a PRP rather than a PUP[7].

The remainder of the dissertation is organized as follows. In Chapter 2 I introduce the Danish Welfare System and its functioning, some basic features of the Danish labour market, the birth and the subsequent development of ALMPs, the different systems for insured and non-insured unemployed. Chapter 3 briefly outlines the evaluation problem and accounts for previous studies in this field. Chapter 4 and Chapter 5 are the model and the data chapters, respectively. In Chapter 6 I then report and discuss results from the empirical analysis (all the tables are attached in Appendix D), while the last chapter concludes.

[7]These results are basically the same as in Graversen and Jensen (2004).

Chapter 2

Institutional settings

The principle behind the Danish welfare model (but one can refer to a more general Scandinavian welfare model, since among the Scandinavian countries there are little structural differences) is that benefits should be given to all citizens who fulfil the conditions, without regard to employment or family situation. The system covers everyone; it is universal. And the benefits are given to the individual, so that *e.g.* married women have rights independently of their husbands.

In the field of unemployment the right to benefits is, however, always dependent on former employment and at times on the payment of contributions, and, possibly, also on being a member of a trade union (new graduates and newly educated people obtain entitlement to benefits one month after completion of the education/training). However, the largest share of the financial burden is still carried by the State and financed from general taxation, not in the main from earmarked contributions.

In Denmark the State is involved in financing and organizing the welfare benefits available to the citizens to a far greater extent than in other European countries. For that reason the welfare model is accompanied by a taxation system which has both a broad basis of taxation and a high taxation burden. The pattern of organization is also far simpler and immediately comprehensible than is the case of other European countries.

In Denmark most of the social welfare tasks are undertaken by the State or local authorities, and only to a limited extent by individuals, families, churches or non-governmental welfare organizations.

A further characteristic is the fact that, in addition to cash benefits, citizens are entitled to a wide range of service benefits: these are either free or subsidized. In the social field the organization and financing of both transfer payments and service benefits take place within the same unified system.

After the Second World War an important part of the Danish welfare model sought to ensure full employment to all citizens. However, this has not been possible since the middle of the 1970s, when unemployment became an urgent problem.

However, the welfare state has never been an unchallenged system, and in recent years it has reached crisis point. The crisis consists of many elements and is largely due to the fact that the present welfare arrangements originated and developed in the 1960s and 1970s at a time of high economic growth and low unemployment. At that time, it was not anticipated that so many people would receive unemployment benefits or cash benefits or that they would receive them for so long as has been the case in recent years[1].

The financing of the welfare state has thus become a problem, and as it has not been politically possible to increase taxes, which are already very high, Denmark (like the other Scandinavian countries) has accrued a very large national debt which long term could represent a threat to the welfare system[2]. The question is therefore whether the national compromise can be maintained in the future.

In all the Scandinavian countries a supplementary welfare system has developed in recent years, giving greater benefits to those who are in the labour market. This is a clear deviation from the equality principle which is at the heart of the Scandinavian welfare model. The breach has occurred partly because better arrangements have been reached (through collective agreements) between employers and employees: these are benefits paid out to the vast majority of employees, who are included in such agreements, but not to all citizens.

[1] The Danish Ministry of Employment.

[2] Source: OECD website.

2.1 Labour market and employment

Of the Danish population of 5.4 million (2003), the labour force, *i.e.* those in employment and the unemployed, consists of approximately 2.9 million. Of the remaining 2.5 million Danes, almost half are children and students without work, and over 40% are pensioners (including people on early retirement). The remaining 10% consists of husbands or wives at home and those receiving State support but unconnected to the labour market.

Between 1940 and 2002, the population in Denmark rose by approximately 1.5 million, while the labour force rose by approximately 1 million during the same period. The labour force proportion of the population thus increased during this period from 51% to 54%. This is partly because a larger proportion of the population is of working age (16-66), and partly because more people in this age group are active in the labour market.

Of the working age population group, the labour force makes up 78%. This participation rate is one of the highest in the world, which is largely due to the very high proportion of economically active women in Denmark: 74% of women in this age group are in the labour force (2002), a figure only exceeded by Sweden.

The growth of the labour force 1940-2002 is divided among 0.3 million men and 0.7 million women. The male increase in the labour force was concentrated in the period 1940-1960, resulting from the growth in population, whereas the increase of women started around 1960 and derived especially from changes in the participation pattern (and associated changes in living arrangements). Trends in the 1990s suggest that the participation rate of women of all age groups will reach only a couple of percentage points below that of men. A particular Danish (and in part Scandinavian) characteristic is that women retain their links with the labour market after having children.

A more recent trend consists of a decline in the participation rate of the younger and older age groups, both men and women. In the youngest age groups the reason is a longer period of education for a large proportion of the group. In the older age groups the reason is earlier withdrawal from the labour market (pensions and early retirement benefits).

Although the work force has grown by almost 50% since 1940, the number of hours worked has not increased correspondingly. Holiday entitlement has been extended from three to five weeks a year, and the working week has dropped from 48 to 37 hours. Besides, many groups of employed in the private sector have had their holiday entitlement extended to six weeks. Finally, the proportion of part-time employees has grown, although the trend has been reversed in recent years. Therefore, the overall number of hours worked in 2001 recorded a decline of 10% as compared to 1940.

The level of education of the work force rose between 1940 and 2001, as is seen partly in the fact that the proportion of salaried employees and skilled workers has risen at the cost of self-employed people and unskilled workers. This in turn is also connected with a shift in recent years in employment in different industries. Since the 1970s, the number of employed has grown by 7%, primarily on account of increased employment in the public sector. On the other hand, employment in agriculture and manufacturing has fallen. For the remaining industries taken together, employment is unchanged.

Coming to unemployment, while in the 1960s and early 1970s it was under 3%, which in practice meant there was full employment, since 1973 it has risen considerably; it peaked in 1993, at 11% for men and 14% for women. By 2001 it had fallen to 5% for men, and 6% for women. Measured in terms of the average unemployment rate on a monthly basis, this meant just under 150,000 unemployed. At the same time it meant that just under 550,000 - or one out of five of the labour force - was unemployed for a shorter or longer period within a year.

The growing rate of unemployment at the beginning of the 1970s was seen as a passing phase that would have been solved by ensuring that the unemployed did not suffer financially until they could find work again. At the same time the economy was being stimulated through a financial policy aimed at creating more jobs.

At the end of the 1970s an attempt was made to reduce unemployment by limiting the labour force by encouraging older members to leave the labour market and take early retirement benefits or pensions. At the same time emphasis was placed on a more active labour market policy (training and job offers), in which the qualifications of the unemployed were maintained or improved.

2.2 Birth and developments of ALMPs in Denmark

The birth of the active labour market policy dates back to 1978 (first Job Offer Act (ATB), based on offers for the long-term unemployed) and since then Denmark has a tradition of active policies, *i.e.* policies aimed at bringing the unemployed back to work and conditional on the unemployed not being passive. The objective of this tradition is to avoid marginalization and exclusion, and to preserve the productive skills of the labour force. The Job Offer Act contained Active Labour Market Policies (as a part of Employability Enhancement Programmes, EEPs).

In 1985 the Job Offer Act was reorganized and directed towards upgrading qualifications so that, instead of the second job offer, the unemployed were offered up to eighteen months' training with a training allowance or an enterprise allowance.

Since 1988, focus has been directed more and more on targeted initiative to raise personal skills and stricter availability requirements for unemployed people receiving unemployment benefits.

In 1994, the Labour Market Reform entered into force. It represented a marked shift towards decentralization, individualization, and targeted programmes. Until then, ALMPs were offered at fixed dates during a period of unemployment, and participation in a programme provided a new period of unemployment benefits. Besides, these programmes were used to help young people without unemployment insurance[3]. However, experience showed that this could lead to inefficient solutions, because standardized programmes did not take account of the qualifications of the individual or the needs of the labour market. A good framework for solving past problems was established, through a set of changes:

- decentralization;

[3]This is the reason why in the dataset used in this dissertation there is no information on programme periods that ended before 1994, because the legislation was different. See Chapter 4.

- improved possibilities basing programmes on the needs of both the individual and the local labour market;
- withdrawal of the right to re-qualify for a period of daily cash benefits during an ALMP;
- duty for all the unemployed (young or not, insured or not) to partecipate in such programmes if they want to retain eligibility in the future.

In order to further target the initiatives to upgrade the qualifications of the unemployed, with the Finance Act of 1995 the right and duty principle to full-time EEPs after four years' unemployment was introduced. This principle states that all unemployed workers (either insured or not) have the right to receive assistance by the competent organization under the form of an ALMP-offer; but at the same time they have the duty to accept the offer made, otherwise they loose eligibility of benefits in the future.

The 1996 Finance Act brought EEPs' right and duty unemployment period forward, introduced youth initiatives, and tightened employment availability requirements for unemployment benefits, as well as the requirements to re-qualify for unemployment benefits. The primary objective of the 1996 Finance Act was to ensure the reduction in the number of long-term unemployed and make periods of passive support from benefits as short as possible. Furthermore, the Act was to encourage training initiatives.

In the 1997 Finance Act, pilot projects with subsidies for the adult apprenticeship scheme were made permanent.

Availability rules were again adjusted in the 1998 Financial Act, in order to support the increasing demand for labour and to secure a basis for continued employment growth without shortages of labour which could lead to wage pressure. Moreover, the rules for unemployed training leave were adjusted; training lasting more than four weeks had to be approved by the Public Employment Service (PES).

In 1999, the requirements of labour market policies were further tightened. EEPs' Right and duty was brought forward to apply after just one year. Youth initiatives were extended to include everyone under 25. From 2000 more flexibility was added to the initiatives and a new EEPs instrument was introduced: work practice. Finally, there was a new offer for long-term unemployed people over 48: service jobs (*i.e.* jobs useful for the community, otherwise not performed).

To sum up, active labour market policy has developed considerably, in line with the increasing unemployment which has occurred since the mid 1970s. Employability Enhancement Programmes have been developed and gradually brought forward, while a number of new initiatives were introduced during this period. In particular, the Labour Market Reform of 1994 provided a change from very regulated initiatives, typically with offers made at fixed times, to a more flexible system which focuses on decentralization, individualization and targeting of initiatives on the basis of the individual's wishes and qualifications on the one hand, and the needs of the labour market on the other.

2.3 The Act on an active labour market policy (insured workers)

2.3.1 Several features

The aim of the Act on an active labour market policy is to contribute to ensuring a well-functioning labour market through an active labour market policy targeted on jobseekers and people (both unemployed and employed people) who want to undergo education/training to find a new job as well as private and public employers.

In relation to employees and enterprises, the action taken is mainly in the form of placement activities and information and guidance about labour market policy offers. In addition, guidance is offered on support possibilities in relation to further and continued training activities for the employees of the enterprises.

People under the age of 25 who qualify for unemployment benefits have a right and duty to an activation offer if they have been unemployed for at least six months out of a nine months period (the benefit period for young people) within the framework of ordinary youth education or training programmes or other publicly supported vocational guidance and job-oriented activities[4] (for instance Production Schools, which are self-governing institutions established by local or regional authorities, or Day High Schools, which came into existence at the beginning of the 1980s and offer teaching in general subjects for adults.). If a young person refuses to accept a reasonable offer, (s)he will forfeit the right to receive unemployment benefits.

The over 30s receiving unemployment benefits have a right to a four-year support period, which is divided into a benefit period of one year and an activation period of three years. During the first year - the benefit period - the unemployed person has a higher degree of responsibility for finding a job: the aim is to bring the unemployed person back to work as quickly as possible. If the unemployed person does not get a job during the benefit period, (s)he goes into the activation period which has a duration of three years. Generally, the unemployed in this group have greater difficulty in getting back into ordinary employment and therefore they have a right and duty to offers during the entire period[5]. If the unemployed has not obtained a job after this total period of four years, it is the task of the local authorities to make him enter the social assistance system.

At a central level, the active labour market is managed and administered by the Ministry of Labour with the advisory assistance of the National Labour Market Council (regional labour market councils have been set up at regional level).

2.3.2 Measures in relation to unemployed people qualifying for unemployment benefits

Measures in relation to unemployed people qualifying for unemployment benefits are a central element of the active labour market policy.
The following instruments can be used, either separately or in a combination:

[4] The allowance paid in connection with participation varies from one programme to another.

[5] In both periods, the unemployed have a number of duties. Besides, if the unemployed refuses an offer (s)he will be barred from payment of unemployment benefits for a certain time or, in special cases, (s)he will forfeit the entitlement to unemployment benefits.

- *Placement activities in connection with ordinary work.* The overall aim of the measures is to bring the unemployed back to the ordinary labour market in a non-subsidised job.

- *Information and guidance.* The unemployed are informed about their training and employment opportunities in the labour market.

- The drawing up of an *individual action plan* which forms the basis for measures in relation to the individual unemployed person.

- *Job training* both with public and private employers. Pay and other working conditions are laid down by collective agreements or those normally applying to the type of work concerned. However, a maximum hourly wage has been fixed for public job training. A wage subsidy is paid to employers who recruit unemployed people in job training.

- *Individual job training* for people who have difficulties in finding a job or job training on ordinary pay and working conditions. The wage may be lower than in job training and is subject to agreement with the organizations, which have the right to negotiate in the occupational field concerned.

- *Practical workplace training* is an offer of 2-4 weeks practical training in an enterprise with a view to subsequent employment.

- *Education/training*, either in the ordinary educational/training system or as an element of social tailor-made programmes (during participation in such education the unemployed person may receive a training allowance).

- *Job rotation* is an important labour market instrument which can be used to replace temporarily existing employees during sabbatical leave, parental leave and training leave by unemployed people. Job rotation is seen as a possible solution to three significant challenges: help unemployed individuals, increase employees' motivation and fill skill gaps.

2.4 The Act on an active social policy (non-insured workers)

2.4.1 Several features

The aim of the Act on an active social policy - which should be seen in the context of the Act on an active labour market policy - is to create offers of employment, education/training, and other activation measures for people receiving social assistance. Therefore, the target group is people receiving social assistance, *i.e.* unemployed individuals who are not insured against unemployment or who are non eligible for unemployment insurance benefits (when certain conditions related to the overall income and wealth of the household are not met).

For people under the age of 30 whose major problem is unemployment, the offer - combined with any possible part-time work - must amount to at least 30 hours per week. If the person has any problems in addition to unemployment, the local authority lays down the weekly number of hours[6]. These people have to receive an offer not later than three months after the first day on social assistance. If they do not succeed to become self-supporting after the end of a programme, they have to receive a new offer three months after the end of the previous programme at the latest[7].

For people above the age of 30 years, the weekly number of hours and the duration of the offer may be laid down with due consideration to the person's needs and qualification, regardless of the reason why this person is in on social assistance. They should partecipate in a programme after twelve months at the latest. They only have the right to receive one offer during the social assistance

[6] This is mainly because, for people with other problems in addition to unemployment, participation in a programme should primarily improve everyday life. The hope is that the improvement in everyday life will bring these people closer to the labour market and to a situation where they can be self-supporting.

[7] Hence, people on social assistance under the age of 30 years are subject to a more or less continuous treatment in programmes while on welfare.

period[8,9].

The administration of the social system is the responsibility of the Ministry of Social Affairs and it is decentralized and run by the municipalities (in contrast with the labour market system, which is quite centralized). The costs of activation of people on social assistance are paid by the local authorities. The State offers refunds/subsidies to the local authorities in connection with the costs of activation of people on social assistance.

2.4.2 The instruments under the Act on an active social policy

The instruments which local authorities may use under the Act on an active social policy may comprise one or more of the following measures:

- *guidance and introduction programme*,
- *job training*,
- *individual job training*,
- *participation in voluntary and unpaid activities*,
- *adult vocational training or continued training*,
- *job rotation*,
- *special tailor-made training activities*,
- *other special tailor-made activation activities.*

[8] However, most municipalities choose to give a new offer if the first programme was not successful in bringing the unemployed from social assistance to a self-supporting situation.

[9] Before mid-1998 the limit age dividing the two groups - under/over 30 - was 25. Besides, another difference compared with the present rules is that the municipalities were not obliged to give offers to young people under 25 with problems in addition to unemployment. However, a large part of the municipalities chose to offer programmes to this group as well, even if they were not required to do so.

In addition to these activation offers, the local authority may also offer other forms of employment promoting measures, under other legislation.

Guidance and introduction programme The purpose of offering short-term guidance and introduction programmes is to identify the wishes and possibilities of the person on social assistance in relation to further activation measures. The programme must contain guidance on employment and educational possibilities and provide the person with the possibility of testing different types of jobs.

Job training People on social assistance may be given an offer of employment in private or public job training with a wage subsidy. Employment takes place on contractual pay and working condition. However, the local authority lays down the working hours in co-operation with the employer. Job training offers must be planned with due consideration to the nature of the workplace and the qualifications of the individual person.

Individual job training Individual job training may be planned for unemployed people on social assistance who have difficulties in finding a job on ordinary pay and working conditions in the ordinary labour market. Individual job training may be either private or public, including projects.

Voluntary and unpaid activities People on social assistance may - at their own request - participate in voluntary and unpaid activities which are beneficial to society. The local authority decides which activities can be approved. The activities must fall within the framework of a well-defined project, an organization or an association.

Adult vocational training or continued training People on social assistance over the age of 25 may - at their own request - participate in adult vocational and continued training courses listed on a special list on training leave. Participation is conditional upon the person having received social assistance for 6 months and the adult vocational or continued training course forms part of a written plan for the activation programme. Furthermore, it is a requirement that the person has no prospects of obtaining a stable, non-subsidised job within the training period.

Job rotation As part of the activation measures the local authorities may use schemes such as the job rotation scheme, where an unemployed person replaces an employed one. In this way, a person on social assistance may be employed in job training with a wage subsidy as a replacement for an employed person who is on leave with an allowance under the Act on support for adult vocational training or who is on leave under the Act on leave or the Act on conscription leave.

Special tailor-made training activities People on social assistance may be given offers of participation in special tailor-made training activities, *e.g.* education in Day High Schools and Production Schools, primary school education at higher grades, higher preparatory examination courses, etc.. The special tailor-made training activities may for example, be combined with offers of individual job training.

Special tailor-made activation activities The special tailor-made activation programmes are offers that do not fall under other offers, but which are combined and composed to target on special groups. Such offers aim at improving a person's quality of life, *e.g.* through supporting the handling of everyday activities and the creation of a basic network. All people on social assistance have a duty to accept activation offers. The initiation and implementation of measures in relation to people on social assistance fall under the competence of the individual local authority.

Chapter 3

The evaluation problem: a brief outline

As explained in Chapter 1, my aim in this dissertation is to compare private sector programme participants with public sector programme participants. This procedure is not standard in social policies evaluations, since one is usually interested in estimating the difference between participants and not participants in some kind of programme. However, in Denmark every individual will eventually enter an Employability Enhancement Programme, so that it is almost impossible to find individuals who have never participated in or have never been influenced by any kind of programme; hence, it is almost impossible to construct a standard control group. This does not mean there cannot be an evaluation of these programmes. Instead of a comparison between treated and untreated, it is possible to compare participants from two different types of programmes, in a way that it should be possible to evaluate which of the two policies is the most successful as far as some dimension of interest (*e.g.* employment) is concerned. Hence, throughout the rest of this dissertation when I use treatment effect (or its distribution) I intend "differential treatment effect from participating in a PRP instead of a PUP" (I will stress the differential nature of the treatment effect only for the most important cases). In some senses, given that one "has to" participate in some programme, it is useful to know which is the most efficient. The same approach was used, for example, by Carling and Richardson (2001) where they estimate the relative efficiency of eight Swedish labour market programmes in reducing the unemployment duration for participants, and by Sianesi (2002) where she evaluates the differential performance of six main types of Swedish programmes that were available to adult unemployed workers entitled to unemployment benefits during the 1990s.

In this dissertation, I will evaluate the differential employment effect of private sector programmes relative to public sector programmes. There might be other effects due to participation in the programmes, but I will not look at them, primarily because the main aim of ALMPs is to bring the unemployed back to work[1]. Examples of previous papers evaluating employment effects are Andrén and Andrén (2002), who examine employment effects of Swedish training programmes, and Gerfin and Lechner (2002), who evaluate the effects of ALMPs on individual employment probability in Switzerland.

The central problem in evaluating social programmes is to compare comparable people. That is, one needs to be sure that possible differences between the effect of the two programme types are actually imputable to the programmes themselves and not to individuals participating to programmes. I need to control for possible heterogeneity in the two comparison groups, otherwise this could lead to biased results. To do this, I use a three equations model with discrete outcomes: the first equation is used to account for the selection of individuals into PRP or PUP of programme, the second and the third equation are the employment outcome equations for PRPs and PUPs participants, respectively. In this way I will be able to detect if private sector programmes are really more successful in bringing the unemployed back to work than public sector programmes (as literature often reports); besides, it will be possible to infer which characteristics affect the outcomes, and to what extent.

In addition to characteristics observable by the caseworker (who is in charge

[1]Possible additional differential effects might be *e.g.* occupational choice and subsequent earnings: it is by no means possible to exclude that a PRP participant will have a broader choice opportunity in the job market or will experience a higher income after completion of the programme compared to a PUP participant. This will simply not be taken into consideration by the model used here.

of allocating individuals in the most efficient way[2]), the unemployed may differ in characteristics which are not observable by the caseworker, but which might influence the treatment effect as well[3]. To account for these unobserved characteristics I added a one factor structure on the error terms from the three equations; the factor is assumed to be normally distributed. This one factor structure has been introduced by Heckman in 1981 and guarantees, together with the normality assumption, flexibility and simple calculations.

Most evaluations estimate mean effects assuming implicitly that all the participants respond in the same way to programmes. But this of course may be not true. With time, increasing emphasis has been put on models allowing for treatment effects to vary among observationally identical individuals[4]. The model developed in this study has a latent variable structure (motivated by economics): one of its advantages is that it can be used to generate mean treatment parameters and distributions of treatment parameters from a common set of structural parameters. Thanks to this feature, it will be possible to answer questions like "What is the overall effect of PRPs relative to PUPs on employment probabilities?" or "Which groups of individuals benefit most from participation in PRPs instead of PUPs?" and to gain a deeper understanding on the functioning of ALMPs. This model was first introduced by Aakvik et al. (2000) to analyze the impact of interventions on discrete outcomes of Norwegian vocational rehabilitation programmes; it was later used by Andrén and Andrén (2002) and Aakvik et al. (2003), among others.

I run the model for three different time horizons, *i.e.* 6, 12 and 24 months after the end of the programme. In this way, I try to construct a sort of "discrete trend" of the probabilities of being employed after the end of the programme, in order to follow the development with time of skills and opportunities given by the programme. It will then be possible to assess not only if one programme is more successful than another, but also if this advantage will change with time or not.

Finally, the results obtained may depend on some assumptions made in the study. Hence, I perform further regressions to test whether the additional vari-

[2]A discussion on caseworkers' added value can be found in Lechner and Smith (2003).

[3]Unobserved characteristics may be either individual and regional characteristics.

[4]See *e.g.* Heckman (2001).

able in the selection equation is a valid instrument and if its use really improves the empirical identification of the model, and a robustness analysis for the factor normality assumption following the procedure suggested by Heckman and Singer (1984).

Chapter 4

The econometric model

To estimate the employment effect of private sector programmes relative to public sector programmes I use the latent variable model of Aakvik et al. (2000). This model uses simple latent variable structures to take into account the observed characteristics affecting the selection rule into PRP and the potential employment equation for both PRP and PUP participants[1], and a one-factor model for the unobserved characteristics, under the assumption of correct specification. With this simple structure it is possible to eliminate the bias produced by not taking into consideration the individuals unobserved characteristics and to estimate mean treatment effects as well as their distributions (since the model allows the treatment effect to vary among participants).

The fundamental issue of the evaluation problem is that it is not possible to have people in two different employment states[2] (*unemployed*, *employed*). So for each person i one assumes two potential outcomes (Y_{0i},Y_{1i}) corresponding to the potential employment outcomes if the person participated in a public sector programme or in a private sector programme. Let D_i be a dummy variable that

[1]Even though I use the same regressors (except for an additional instrumental variable in the selection equation, not formally required, but left to improve the empirical identification of the model), I decided to use three separate equations instead of just one to see how variables influence each outcome.

[2]For each person participating in a PRP there is a hypothetical state of how (s)he would have done if participating in a public sector programme, and viceversa.

equals 1 if the individual i participated in a private sector programme and 0 if the individual participated in a public sector programme, respectively. Putting together these few elements it is possible to write the observed employment state as

$$Y_i = D_i Y_{1i} + (1 - D_i) Y_{0i} \,. \tag{4.1}$$

For the participation equation the model assumes a latent variable structure:

$$\begin{aligned} D_i^* &= Z_i \beta_D - U_{Di} \\ D_i &= 1 \quad \text{if} \quad D_i^* \geq 0 \\ D_i &= 0 \quad \text{if} \quad D_i^* < 0 \,, \end{aligned} \tag{4.2}$$

where Z_i is a vector of observed variables and U_{Di} is an unobserved random variable. In this framework, D_i^* can be thought of as the net utility to the caseworker from choosing to assign the individual i to the private sector programme instead of a public sector programme. So if the caseworker's net utility is positive the claimant is assigned to a private sector programme, to a public sector programme otherwise.

The potential employment state has a latent index structure, with a linear specification in the parameters and additive separation between the observed and unobserved components:

$$\text{for private sector's participants :} \qquad \begin{cases} Y_{1i}^* = X_i \beta_1 - U_{1i} \\ Y_{1i} = 1 \quad \text{if} \quad Y_{1i}^* \geq 0 \\ Y_{1i} = 0 \quad \text{if} \quad Y_{1i}^* < 0 \end{cases} \tag{4.3}$$

$$\text{for public sector's participants :} \qquad \begin{cases} Y_{0i}^* = X_i \beta_0 - U_{0i} \\ Y_{0i} = 1 \quad \text{if} \quad Y_{0i}^* \geq 0 \\ Y_{0i} = 0 \quad \text{if} \quad Y_{0i}^* < 0 \,, \end{cases} \tag{4.4}$$

where X_i is a vector of observed variables and (U_{1i}, U_{0i}) are unobserved random variables. Y_{ji}^* , $j = 0, 1$, is a latent index capturing claimant's ability and desire to find employment as well as job market conditions.

Henceforth, the following assumptions are taken throughout the rest of the dissertation:

1. (Y_{1i}, Y_{0i}) are defined $\forall\, i$;

2. there is no interaction among agents;

3. $Z\beta_D$ is a nondegenerate random variable conditional on $X = x$;

4. (U_D,U_1) and (U_D,U_0) are absolutely continuous with respect to Lebesgue measure on $\Re^2$;

5. (U_D,U_1) and (U_D,U_0) are independent of (Z,X);

6. Y_1 and Y_0 have finite first moments;

7. $0 < \Pr[\, D = 1 \,|\, X \,] < 1$.

Assumption (3) implies the existence of an instrumental variable[3] (a variable that determines the participation decision but not directly the employment state: it is basically an exclusion restriction on the two employment equations). Assumption (7), instead, is a standard requirement: it says that it is needed to observe people in both kind of programmes.

4.0.3 Individual treatment effects

Before writing all the parameters of interest, I need to explain one of the main features of this model, *i.e.* the possibility for the treatment effect to vary among individuals (that is, why I can estimate also distributional parameters).

First, let define the individual differential treatment effect $\triangle_i$ in the following way:

$$\triangle_i = Y_{1i} - Y_{0i} = \mathbf{1}(X_i\beta_1 \geq U_{1i}) - \mathbf{1}(X_i\beta_0 \geq U_{0i})\,,$$

so that $\triangle_i$ measures for all individuals the difference between the employment state in case of participation in a PRP and the state in case of participation in a PUP. It is straightforward to see that $\triangle_i$ can attain three values: -1, 0, 1. But if the effect of the unobserved variables U_{1i} and U_{0i} is the same in the two potential

[3]See *e.g.* Heckman (1990) for details.

states ($U_{1i} = U_{0i}$) $\triangle_i$ can only attain two different values for individuals with a given value of X. That is, if we denote with U_i the common value of U_{1i} and U_{0i}:

if $X_i\beta_1 > X_i\beta_0$:

$$\triangle_i = -1 \text{ if } \left.\begin{matrix} X_i\beta_1 < U_i \\ X_i\beta_0 \geq U_i \end{matrix}\right\} \Rightarrow \mathit{Impossible}$$

$$\triangle_i = 0 \quad \text{if } \left.\begin{matrix} X_i\beta_1 \geq U_i \\ X_i\beta_0 \geq U_i \end{matrix}\right\} \Rightarrow X_i\beta_0 \geq U_i$$

$$\left.\begin{matrix} X_i\beta_1 < U_i \\ X_i\beta_0 < U_i \end{matrix}\right\} \Rightarrow X_i\beta_1 < U_i$$

$$\triangle_i = 1 \quad \text{if } \left.\begin{matrix} X_i\beta_1 \geq U_i \\ X_i\beta_0 < U_i \end{matrix}\right\} \Rightarrow X_i\beta_0 \leq U_i \leq X_i\beta_1$$

if $X_i\beta_1 = X_i\beta_0$:

$$\triangle_i = -1 \text{ if } \left.\begin{matrix} X_i\beta_1 < U_i \\ X_i\beta_0 \geq U_i \end{matrix}\right\} \Rightarrow \mathit{Impossible}$$

$$\triangle_i = 0 \quad \text{if } \left.\begin{matrix} X_i\beta_1 \geq U_i \\ X_i\beta_0 \geq U_i \end{matrix}\right\} \Rightarrow \mathit{Always}$$

$$\left.\begin{matrix} X_i\beta_1 < U_i \\ X_i\beta_0 < U_i \end{matrix}\right\} \Rightarrow \mathit{Always}$$

$$\triangle_i = 1 \quad \text{if } \left.\begin{matrix} X_i\beta_1 \geq U_i \\ Xi\beta_0 < U_i \end{matrix}\right\} \Rightarrow \mathit{Impossible}$$

if $X_i\beta_1 < X_i\beta_0$:

$$\triangle_i = -1 \text{ if } \left.\begin{matrix} X_i\beta_1 < U_i \\ X_i\beta_0 \geq U_i \end{matrix}\right\} \Rightarrow X_i\beta_1 \leq U_i \leq X_i\beta_0$$

$$\triangle_i = 0 \quad \text{if} \quad \left.\begin{array}{l} X_i\beta_1 \geq U_i \\ X_i\beta_0 \geq U_i \end{array}\right\} \Rightarrow X_i\beta_1 \geq U_i$$

$$\left.\begin{array}{l} X_i\beta_1 < U_i \\ X_i\beta_0 < U_i \end{array}\right\} \Rightarrow X_i\beta_0 < U_i$$

$$\triangle_i = 1 \quad \text{if} \quad \left.\begin{array}{l} X_i\beta_1 \geq U_i \\ X_i\beta_0 < U_i \end{array}\right\} \Rightarrow Impossible\,.$$

Thus, it has been shown that differently from a model with continuous outcomes, $\triangle_i$ can vary even if the unobserved characteristics (the residuals of the two employment equations) are equal: this means that some people may have some "hidden" characteristics that make her/him more or less likely to find a job, no matter which programme (s)he participated to.

Besides this source of heterogeneity given by the discrete outcome variables, I add another heterogeneity component by letting U_{1i} be different from U_{0i}: in this framework, I allow individuals differ from each other either on observed and/or unobserved characteristics, so that all the three values of $\triangle_i$ may be experienced.

For ease of exposition and to simplify the notation, throughout the rest of the paper I suppress the i subscript without lost of generality.

4.1 Treatment parameters

One of the advantages of the latent variable model developed above is that it can be used to generate mean treatment parameters as well as distributional treatment parameters from a common set of structural parameters.

4.1.1 Mean treatment parameters

Let $\triangle$ denote the treatment effect for a given individual, where $\triangle = Y_1 - Y_0$. This difference cannot be formed for anyone since Y_1 or Y_0 is missing (this is "the fundamental problem of causal inference", Holland (1986)). The statistical approach to this problem is to replace the missing data on people using group means (or other group statistics). Here I examine three different mean parameters:

- the average differential treatment effect (ATE), which answers the question of how much a randomly chosen individual would gain from participating in a private sector programme instead of a public sector programme,

- the average differential treatment effect on the treated (ATT), which measures how much gained a person who participated in a PRP from participating in it,

- and the marginal differential treatment effect[4] (MTE), which identifies the effect of participating in a PRP on those individuals who are indifferent between participation in a PRP or PUP for a given value of $U_D = u$.

The first parameter I consider is the average effect of treatment of a person selected randomly from the population. Given the value of X, the average treatment effect is equal to

$$\triangle^{ATE}(x) \equiv \mathrm{E}[\triangle \,|\, X = x]\,. \tag{4.5}$$

The second mean parameter of interest, the most commonly estimated parameter, is the mean treatment effect on the treated:

$$\begin{aligned} \triangle^{ATT}(x, z, D = 1) &\equiv \mathrm{E}[\triangle \,|\, X = x,\, Z = z,\, D = 1] \\ &= \mathrm{E}[\triangle \,|\, X = x, Z\beta_D \geq U_D] \end{aligned} \tag{4.6}$$

The third parameter is the marginal treatment effect parameter introduced by Heckman (1997). The MTE parameter is defined as

$$\triangle^{MTE}(x, u) \equiv \mathrm{E}[\triangle \,|\, X = x\,, U_D = u\,]\,. \tag{4.7}$$

$\triangle^{MTE}(x, u)$ is the average of the effect of those individuals who are indifferent to participate or not (those who are on the border) if the instrument is externally set so that $Z\beta_D = u$. For small values of u, $\triangle^{MTE}(x, u)$ is the average effect of those who have characteristics that make them most likely to participate on a private sector programme, while for large values of u, $\triangle^{MTE}(x, u)$ is the average effect of

[4]For further connections between $\triangle^{ATE}$ and $\triangle^{ATT}$ with $\triangle^{MTE}$ see Heckman, Vytlacil (2002).

those who are least likely to participate in a private sector programme because of their characteristics.

If U_D is independent from (U_1, U_0) then the three mean parameters above are equal for $X = x$. This will not be the case in this paper, because participants in private sector programmes are selected on the basis of unobserved characteristics affecting the employment outcome in the PRP or PUP state.

In this special case, with the outcome variable being dichotomous, the mean parameters above take the following form:

$$\begin{aligned}
\triangle^{ATE}(x) &= \Pr[Y_1 = 1 \,|\, X = x] - \Pr[Y_0 = 1 \,|\, X = x] \\
&= F_{U_1}(x\beta_1) - F_{U_0}(x\beta_0)
\end{aligned}$$

$$\begin{aligned}
\triangle^{ATT}(x, z, D = 1) &= \Pr[Y_1 = 1 \,|\, X = x, Z = z, D = 1] - \ldots \\
&\quad \ldots - \Pr[Y_0 = 1 \,|\, X = x, Z = z, D = 1] \\
&= F_{U_D}(z\beta_D)^{-1}[F_{U_D,U_1}(z\beta_D, x\beta_1) - F_{U_D,U_0}(z\beta_D, x\beta_0)]
\end{aligned}$$

$$\begin{aligned}
\triangle^{MTE}(x, u) &= \Pr[Y_1 = 1 \,|\, X = x, U_D = u] - \ldots \\
&\quad \ldots - \Pr[Y_0 = 1 \,|\, X = x, U_D = u] \\
&= F_{U_1 \,|\, U_D}(x\beta_1 \,|\, u) - F_{U_0 \,|\, U_D}(x\beta_0 \,|\, u)
\end{aligned}$$

where $F_{U_j \,|\, U_D}(t_j \,|\, t_D) = \Pr[U_j \leq t_j \,|\, U_D = t_D]$ for $j = 0, 1$.

4.1.2 Distributional treatment parameters

For many questions, knowledge of distributional parameters is required. Does anybody benefit from the programme? Among those treated, what fraction is helped by the programme and what fraction is hurt by it? I now consider differential treatment parameters for the distribution of differential treatment effects.

In this special case, where the outcome variable is dichotomous and is generated by an underlying linear latent index, with

$$\triangle = Y_1 - Y_0 = \mathbf{1}(X\beta_1 \geq U_1) - \mathbf{1}(X\beta_0 \geq U_0),$$

and where $U_1 \neq U_0$, $\triangle$ can take three values:

1. $\triangle = 1$ if the individual would have a successful outcome if treated (*i.e.*, be employed if (s)he participates in a PRP) and an unsuccessful outcome otherwise $(Y_0 = 0, Y_1 = 1)$;

2. $\triangle = 0$ if the individual would have a successful outcome in either state $(Y_0 = 1, Y_1 = 1)$, or the individual would have an unsuccessful outcome in either state $(Y_0 = 0, Y_1 = 0)$;

3. $\triangle = -1$ if the individual would have a successful outcome if not treated (*i.e.*, be employed if participation in a PUP) and an unsuccessful outcome if treated $(Y_0 = 1, Y_1 = 0)$.

Consider, for example, $\triangle = 1$, so that $Y_0 = 0, Y_1 = 1$. In this case:

$$\begin{aligned} E[\triangle = 1 \,|\, X = x] &= \Pr[Y_1 = 1, Y_0 = 0 \,|\, X = x] \\ &= \Pr[Y_1 = 1 \,|\, X = x] - \ldots \\ &\quad \ldots - \Pr[Y_1 = 1, Y_0 = 1 \,|\, X = x] \\ &= F_{U_1}(x\beta_1) - F_{U_0,U_1}(x\beta_0, x\beta_1) \end{aligned}$$

$$\begin{aligned} E[\triangle = 1 \,|\, X = x, Z = z, D = 1] &= \Pr[Y_1 = 1, Y_0 = 0 \,|\, X = x, Z = z, D = 1] \\ &= \Pr[D = 1 \,|\, Z = z]^{-1} \cdot \ldots \\ &\quad \ldots \cdot \Pr[Y_1 = 1, Y_0 = 0, D = 1 \,|\, X = x, Z = z] \\ &= \Pr[D = 1 \,|\, Z = z]^{-1} \cdot \ldots \\ &\quad \ldots \cdot \Big[\Pr[Y_1 = 1, D = 1 \,|\, X = x, Z = z] - \ldots \\ &\quad \ldots - \Pr[Y_1 = 1, Y_0 = 1, D = 1 \,|\, X = x, Z = z]\Big] \\ &= F_{U_D}(z\beta_D)^{-1} \Big[F_{U_D,U_1}(z\beta_D, x\beta_1) - \ldots \\ &\quad \ldots - F_{U_D,U_0,U_1}(z\beta_D, x\beta_0, x\beta_1)\Big] \end{aligned}$$

$$\begin{aligned} E[\triangle = 1 \mid X = x, U_D = u] &= \Pr[Y_1 = 1, Y_0 = 0 \mid X = x, U_D = u] \\ &= \Pr[Y_1 = 1 \mid X = x, U_D = u] - \ldots \\ &\quad \ldots - \Pr[Y_1 = 1, Y_0 = 1 \mid X = x, U_D = u] \\ &= F_{U_1|U_D}(x\beta_1|u) - F_{U_0,U_1|D}(x\beta_0, x\beta_1|u) \end{aligned}$$

The corresponding parameters for $\triangle = 0$ and $\triangle = -1$ are defined by straightforward modification of the previous expressions[5]. Notice that

$$\mathrm{E}[Y_1 - Y_0|X = x] = \mathrm{E}[\triangle = 1|X = x] - \mathrm{E}[\triangle = -1|X = x]$$

so that the average treatment effect is the difference between two corresponding distributional parameters: the probability of being successful (employed) when participating in a PRP minus the probability of being unsuccessful when participating in a PRP. The distributional parameters offer a finer level of detail on the effectiveness of the programme.

There is a close connection between the mean treatment effect, the distribution of the treatment effect and the joint distribution of (Y_1, Y_0, D). Once the joint distribution is known, it is straightforward to calculate distributional parameters and from these the mean treatment effect. The inverse path is not generally possible. Identification of the distributional treatment parameters is anyway more difficult than identification of the mean treatment effect. Indeed, to identify the mean treatment effects, knowledge on the bivariate distributions F_{U_D,U_1} and F_{U_D,U_0} is only needed, as it has been shown in the expressions above. On the contrary, identification of the distributional treatment parameters requires knowledge of the full trivariate distribution F_{U_D,U_0,U_1}. Since Y_0 and Y_1 are never jointly observed, this trivariate distribution is not identified nonparametrically even when treatment is exogenous.

However, the distribution of treatment effect can be identified if additional assumptions are made. I now discuss the assumption of a normal factor structure.

[5]See Appendix A for all the expressions.

4.2 Factor structure model

In this empirical analysis I estimate a three equation model consisting of an equation for the decision rule, an outcome equation for the treated state, and an outcome equation for the non-treated state. The selection outcome and the employment outcomes are discrete. In this paper I specify a discrete-choice, latent-index framework where the unobservables are generated by a normal factor structure.

As before, the selection rule for treatment is (restoring the i subscripts):

$$\begin{aligned} D_i^* &= Z_i\beta_D - U_{Di} \\ D_i &= 1 \quad \text{if} \quad D_i^* \geq 0 \\ D_i &= 0 \quad \text{if} \quad D_i^* < 0 \,. \end{aligned} \tag{4.8}$$

The following is the employment outcome equation for the treated state:

$$\begin{aligned} Y_{1i}^* &= X_i\beta_1 - U_{1i} \\ Y_{1i} &= 1 \quad \text{if} \quad Y_{1i}^* \geq 0 \\ Y_{1i} &= 0 \quad \text{if} \quad Y_{1i}^* < 0 \,, \end{aligned} \tag{4.9}$$

and the following is the employment outcome in the non-treated state:

$$\begin{aligned} Y_{0i}^* &= X_i\beta_0 - U_{1i} \\ Y_{0i} &= 1 \quad \text{if} \quad Y_{0i}^* \geq 0 \\ Y_{0i} &= 0 \quad \text{if} \quad Y_{0i}^* < 0 \,. \end{aligned} \tag{4.10}$$

It is assumed that the error terms in (4.8) - (4.10) are governed by the following factor structure:

$$\begin{aligned} U_{Di} &= -\alpha_D\theta + \epsilon_{Di} \\ U_{1i} &= -\alpha_1\theta + \epsilon_{1i} \\ U_{0i} &= -\alpha_0\theta + \epsilon_{0i} \,. \end{aligned} \tag{4.11}$$

where I need to set $\alpha_D = 1$ to reach identification of the model[6]. I assume i.i.d. observations; besides the following normality assumption is taken:

$$\begin{pmatrix} \theta \\ \epsilon_D \\ \epsilon_1 \\ \epsilon_0 \end{pmatrix} \sim N(0, I)$$

where I is the identity matrix (where I have imposed the normalization Var(θ)= 1, Var(ϵ_j)= 1 for $j = D, 1, 0$) which implies that $(U_D, U_1, U_0) \sim N(0, \sum)$, with:

$$\sum = \begin{bmatrix} \sigma_D^2 & \sigma_{D1} & \sigma_{D0} \\ & \sigma_1^2 & \sigma_{10} \\ & & \sigma_0^2 \end{bmatrix} = \begin{bmatrix} 1+\alpha_D^2 & \alpha_D\alpha_1 & \alpha_D\alpha_0 \\ & 1+\alpha_1^2 & \alpha_1\alpha_0 \\ & & 1+\alpha_0^2 \end{bmatrix}$$

The assumption of a one factor structure is crucial to the identification of distributional treatment effect parameters. The one factor structure implies that:

$$\begin{aligned} \mathrm{Cov}(U_D, U_0) &= \alpha_0 \;^{7} \\ \mathrm{Cov}(U_D, U_1) &= \alpha_1 \;^{7} \\ \mathrm{Cov}(U_1, U_0) &= \alpha_1\alpha_0 \end{aligned}$$

(recall we have scaled the variances of $\epsilon_D, \epsilon_1, \epsilon_0$ and θ all to be one, so that the normalizing constants are known). Thus, identification of α_0 and α_1 immediately imply identification of $\mathrm{Cov}(U_0, U_1) = \alpha_1\alpha_0$. Given joint normality, this implies that the joint distribution U_D, U_1, U_0 is known: no exclusion restrictions are required and assumption (3) could be relaxed.

As it will be shown in the next chapters, I decided to run two specification of this model: one with selection *only on observables* characteristics and one with selection *also on unobservables*. The former is obtained setting α_1 and α_0 to 0, while in the latter the two factor loadings are set free. The exclusion restriction

[6]The factor structure assumption for discrete choice models produces a flexible yet parsimonious specification, which yields convenient and easily interpretable expressions for the parameters of interest and at the same time enables us to estimate the model in a tractable fashion.

[7]This is because α_D is set to 1.

can be relaxed only in the model with selection also on unobservables (but I keep it to improve the empirical identification of the model), while it is necessary to get convergence in the specification with selection only on observables.

Let Φ denote the standard normal CDF and let ϕ denote the standard normal probability density function. The following expressions for the mean treatment parameters in the case of a normal factor model are easily verified:

$$\triangle^{ATE}(x) = \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d\theta$$

$$\begin{aligned}
\triangle^{ATT}(x, z, D = 1) &= [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d(\theta|x, z, D = 1) \\
&= \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d(\theta|z, D = 1) \\
&= \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)\frac{\Phi(z\beta_D + \theta)}{\Phi(z\beta_D/\sigma_D)}d\theta \\
&= \Phi(z\beta_D/\sqrt{2})^{-1} \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)] \cdot \ldots \\
&\quad \ldots \cdot \Phi(z\beta_D + \theta)\phi(\theta)d\theta
\end{aligned}$$

$$\begin{aligned}
\triangle^{MTE}(x, u) &= \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d(\theta|x, Z\beta_D = u) \\
&= \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)\frac{\phi(u + \theta)}{\sigma_D^{-1}\phi(u/\sigma_D)}d\theta \\
&= \frac{\sqrt{2}}{\phi(u/\sqrt{2})} \int [\Phi(x\beta_1 + \alpha_1\theta) - \Phi(x\beta_0 + \alpha_0\theta)]\phi(u + \theta)\phi(\theta)d\theta
\end{aligned}$$

where to explicate the conditional distribution of θ I used the Bayes' rule. Observe that if $\alpha_1 = \alpha_0$, a common treatment effect (conditional on X) for the indices of (4.9) and (4.10) is to obtain.

The expressions for the distributional treatment parameters are easily derived. For example, the distributional parameters in this case for the event $\triangle = 1$ (which is equivalent to $(Y_0 = 0, Y_1 = 1)$) are:

$$E[\triangle = 1 \,|\, X = x] = \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta))]\phi(\theta)d\theta$$

$$E[\triangle = 1 \,|\, X = x, Z = z, D = 1] = \Phi(z\beta_D/\sqrt{2})^{-1} \cdot \ldots \qquad \text{(continue)}$$

$$\dots \cdot \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta))\Phi(z\beta_D + \theta)]\phi(\theta)d\theta$$

$$E[\triangle = 1 \,|\, X = x, U_D = u] = \sqrt{2} \cdot \phi(u/\sqrt{2})^{-1} \cdot \dots$$

$$\dots \cdot \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta)]\phi(u + \theta)\phi(\theta)d\theta$$

4.3 Estimating the Mixture Model

Conditioning on θ, and restoring the i subscript, the likelihood function for the factor model has the form:

$$\prod_{i=1}^{N} \Pr[D_i, Y_i | X_i, Z_i, \theta_i]$$

where

$$\Pr[D_i, Y_i | X_i, Z_i, \theta_i] = \Pr[D_i | Z_i, \theta_i] \Pr[Y_i | D_i, X_i, \theta_i] \,,$$

and

$$\Pr[D_i = 1 | Z_i, \theta_i] = \Phi(Z_i\beta_D + \theta_i)$$

$$\begin{aligned} \Pr[Y_i = 1 | D_i = 1, X_i, \theta_i] &= \Pr[Y_{1i} = 1 | D_i = 1, X_i, \theta_i] \\ &= \Pr[Y_{1i} = 1 | X_i, \theta_i] \\ &= \Phi(X_i\beta_1 + \alpha_1\theta_i) \end{aligned}$$

$$\begin{aligned} \Pr[Y_i = 1 | D_i = 0, X_i, \theta_i] &= \Pr[Y_{0i} = 1 | D_i = 0, X_i, \theta_i] \\ &= \Pr[Y_{0i} = 1 | X_i, \theta_i] \\ &= \Phi(X_i\beta_0 + \alpha_0\theta_i) \,. \end{aligned}$$

Since θ is unobserved I need to integrate over its domain to account for its existence, assuming that $\theta \perp (X, Z)$. Since the probabilities in the likelihood function are conditioned on θ, an unobserved factor essential for the selection into programmes, I have $(Y_1, Y_0) \perp (D|X, Z, \theta)$ which implies that $\Pr[Y_{ji}|D_{ji}, X_i, \theta_i] = \Pr[Y_{ji}|X_i, \theta_i]$. This means that both the selection probabilities and the outcome probabilities are unconditional probabilities in the likelihood function.

The likelihood function integrating out θ has the form:

$$L = \prod_{i=1}^{N} \int \Pr[D_i, Y_i|X_i, Z_i, \theta_i] \phi(\theta) d\theta \, .$$

Identification of the parameters of the model, $(\beta_D, \beta_1, \beta_0)$ and (α_1, α_0), is assured by the joint normality assumption for $\epsilon_D, \epsilon_1, \epsilon_0$ and θ. Parameters are estimated by maximum likelihood, where I use a Gaussian quadrature to approximate the integrated likelihood[8].

Given identification of the parameters of the model, all mean and distributional treatment effect parameters are identified and standard errors for the treatment parameters follow from the delta method (see *e.g.* Ruud (2000)). I integrate these estimated treatment parameters against the empirical distribution of X and Z to estimate the corresponding treatment parameters integrated over the distribution of X and Z. For example, I estimate $\triangle^{ATE}$ by $\frac{1}{N}\sum_{i=1}^{N}[F_{U_1}(X_i\beta_1) - F_{U_0}(X_i\beta_0)]$, where N is the sample size.

4.3.1 Heckman-Singer procedure

If the analyst knew θ, then the matching conditions of Rosenbaum and Rubin (1983) would be satisfied:

$$(Y_0, Y_1) \perp D|X, Z, \theta$$

and

$$0 < \Pr[D = 1|X, Z, \theta] < 1 \, ,$$

where the latter assumption follows from the assumption that $\mathrm{Var}(\epsilon_D) = 1$ and normality. Thus given θ, it would be possible to use simple propensity score matching or other standard matching methods to estimate ATT and ATE. However, matching does not identify MTE or the distributional parameters.

[8]See next subsection and Appendix B.

Given that I do not observe θ, this strategy is not available. Accordingly, I integrate out θ assuming that

$$\theta \perp (X, Z)\,.$$

Another approach to the problem of missing conditioning variable is to assume different values of the missing θ value and to perform a sensitivity analysis. Several methods exist where a distributional shape for the fixed effect is assumed, and then the effect is integrated out of the likelihood function. Heckman and Singer (1984) propose a procedure that abstracts from the assumption of a specific parametric representation of the distribution of the fixed effect by allowing for a partial parametric specification. This specification allows the unknown distribution to be represented non-parametrically by a step function. In this manner the probability density function is approximated by a discrete distribution with a finite number of points of support, and estimates are made for the location and density of each point. The exact number of points of support is determined by beginning with one support (*i.e.* no heterogeneity) and working upward until the likelihood fails to improve significantly.

In this model I use three points. Let v_1, v_2 and v_3 be the three points of support (with $v_1 < v_2 < v_3$) and p_1, p_2 and p_3 the associated probabilities (with $p_1 + p_2 + p_3 = 1$). To make calculations easier, I put $v_2 = 0$, so that

$$\begin{aligned} v_1 &= -\sqrt{\frac{p_3}{p_1(1-p_2)}} \\ v_3 &= v_1 - \frac{1}{p_1 v_1} \end{aligned}$$

Since it is possible to derive p_3 as a difference of probabilities, the only additional parameters to calculate (if compared to the model with the normally distributed common factor) are p_1 and p_2.

Although the distribution of the fixed effect is not likely to be well characterized by the step function, Heckman and Singer (1984) have shown that the coefficients of the explanatory variables can be estimated with great precision.

Following the notes above, it is now possible to rewrite the likelihood function as

$$L = \prod_{i=1}^{N} \sum_{j=1}^{3} \Pr[D_i, Y_i | X_i, Z_i, v_{ij}] \cdot p_j \,.$$

The correspondent expressions for the characterizing probabilities are:

$$\Pr[D_i, Y_i | X_i, Z_i, v_{ij}] = \Pr[D_i | Z_i, v_{ij}] \Pr[Y_i | D_i, X_i, v_{ij}] \,,$$

and

$$\Pr[D_i = 1 | Z_i, v_{ij}] = \Phi(Z_i \beta_D + v_{ij})$$

$$\begin{aligned}
\Pr[Y_i = 1 | D_i = 1, X_i, v_{ij}] &= \Pr[Y_{1i} = 1 | D_i = 1, X_i, v_{ij}] \\
&= \Pr[Y_{1i} = 1 | X_i, v_{ij}] \\
&= \Phi(X_i \beta_1 + \alpha_1 v_{ij})
\end{aligned}$$

$$\begin{aligned}
\Pr[Y_i = 1 | D_i = 0, X_i, v_{ij}] &= \Pr[Y_{0i} = 1 | D_i = 0, X_i, v_{ij}] \\
&= \Pr[Y_{0i} = 1 | X_i, v_{ij}] \\
&= \Phi(X_i \beta_0 + \alpha_0 v_{ij}) \,.
\end{aligned}$$

Chapter 5

The data

The data used in this dissertation are taken from the dataset *The register for Analyses relating to the Social Responsibility of Enterprises*. This is a large panel dataset constructed by The Danish National Institute of Social Research in collaboration with Statistics Denmark, through the merging of several administrative registers (the merging variable is the civil registration number[1]). It contains a 10% random sample representative of the Danish population in the 17-66 age group; hence immigrants and refugees are only included in the dataset from the moment they register at the National Civil Register. The dataset is updated every year and at present it is possible to follow the individuals in the sample for the period 1984-2000.

I did not use the entire sample to run my analyses since there were a number of conditions to be met first[2].

The first requirement was that an unemployed worker had to finish the ALMP

[1]The civil registration number - CPR number - is a personal identification code given to all citizens or guests with a valid residence permit, after registering at the National Civil Register. Because of this, Denmark has a very transparent and efficient public system. The National Civil Register automatically supplies other public units with information, *e.g.* your change of address, and it is linked to the police, social services, the tax office and public health services. In practice, a person needs to have a CPR number to be covered by the Danish health insurance, to obtain a library card, to sign up for an evening class, to pay taxes and open a bank account.

[2]The final sample I use was manipulated by Brian Krogh Graversen and Peter Jensen in their previous studies, so all the restrictions mentioned below were made by them.

programme in the period 1994-1998: the low bound is due to a change in the regulation in 1994, while the second is necessary to allow observation of the employment state of participants after programme completion. Besides, even if individuals may have taken part in more than one programme I will take into consideration only the first one (otherwise, a multiple spell duration model would be needed, to shape the length of each spell). Moreover, there are two further issues: individuals categorized as participants in job training programmes and overlapping periods programmes.

- A large fraction of about 2% of the welfare recipients participating in job training programmes in the public sector have been erroneously registered in programmes arranged by the public employment service (maybe due to an oversight of some municipality). Given that the number of these misreported records is really small, I decided to exclude them from the sample.

- Some programmes are cut up into smaller sub-periods with intervening periods where the programme participants do not take part in the programme, while other programmes overlap. To solve this problem, the two different programmes are counted as one if the time between them is less than one week or overlapping and the type of programme is the same; if this is not the case, then only the first programme according to time is chosen[3].

As a second restriction I focus my attention on men aged 18-59, excluding immigrants and refugees from countries outside EU and North-America, who are likely to have remarkably different personal characteristics and behaviour. I only keep men for reasons of simplicity: it would be far more complicated to model women, possibly because of hidden interactions with household composition and behaviour.

Finally, a number of other restrictions are made to guarantee all necessary information for my purposes; in particular, I keep only the information for PRPs and PUPs participants, so that throughout the rest of the paper when I use ALMPs

[3] To determine whether two programmes are of the same type Graversen and Jensen used a finer categorization than the one used in the text.

Restrictions	Observations
Individuals who ended an ALMP during 1994-1998	20,105
Restricted to ALMP starting in 1993 or later	20,060
Restricted to ALMP with length between 2 weeks and 5 years	18,454
Individuals with missing basic information excluded	18,339
Restricted to men	9,193
Immigrants and refugees excluded	7,841
Restricted to age 18-59 when starting ALMP	7,181
Restricted to individuals with information for all years include 1 year before and after the programme period	6,987
Individuals in public sector employment programmes with missing data excluded	6,822
Individuals from municipalities with less than 10 ALMP participants excluded	6,613
To keep private and public sector programmes participants	2,651

Table 5.1: Dataset's restrictions.

I intend only PRPs and PUPs. Table (5.1) reports all the detailed restrictions. The final sample is made up of 2,651 observations, 1,391 of which are private sector programmes participants ($\approx 52\%$) and 1,260 are public sector programmes participants ($\approx 48\%$).

In the original dataset there is no information about the monthly employment state of individuals, but there is information on almost all the income-compensating benefits paid to them (including welfare, unemployment benefits, leave scheme benefits, rehabilitation benefits, benefits received while in an ALMP, disability pension, early-retirement pay). Therefore, the employment history of the sample can be deduced through the benefits received.

5.1 Variables

The model used in this study is a discrete choice model with one equation selecting individuals for participation in a private or a public programme and two employment state equations, one for each type of programme.

The dependent variable for the first equation is a dummy which equals 1 if the individual participated in a private programme and 0 if the individual participated in a public programme. For both the employment state equations, the dependent variables are dummies with value 1 if the individual is employed and 0 otherwise. I decided to use three different time horizons for this variable, namely 6, 12 and 24 months after the end of the programme. This means that we can check whether there are differences over a period of time in the impact of the programme (in some senses, I try to construct a sort of "discrete trend").

The regressors used in the three equations are the same, except from an additional instrument added in the selection equation[4], and are divided into two main groups: individual and municipality characteristics.

- The former include: marital state, year when the programme started, presence of children, age, level of education, years of work experience, fraction of time spent by the individual in different employment states during the 12 months before and during the period 12-36 months preceding the programme;

- in the latter I include: the number of residents in the municipality in which the individual lives and a measure of the regional unemployment rate relative to the countrywide unemployment rate. The size of the municipality is important because it can act as a proxy for numerous unobserved characteristics. It is reasonable to think that the smaller the city, the smaller the group of programmes to choose from or that even caseworkers may be influenced by the size of the municipality when assigning individuals to different programmes or again that the problems of welfare recipients in big cities may be different from the problems of recipients in smaller cities. The regional unemployment rate relative to the countrywide counterpart is used to account

[4] I discussed identification problems in Chapter 4.

for differences in local labour markets (some regions may have a higher unemployment rate than others, rather than the ratio vacant jobs/potential applicants[5]).

As anticipated on Chapter 4, I introduce an additional instrument in the selection equation, *i.e.* the use of PRP programmes in each municipality relative to the countrywide use of this type of programme. Let me define the local treatment intensity as :

$$W_{it} \equiv \frac{N_{it}^{PRP}/N_{it}^{(ALMP)}}{N_{t}^{PRP}/N_{t}^{(ALMP)}}$$

where N_{it}^{PRP} is the number of individuals participating in a PRP programme in the municipality where individual i lives in year t, $N_{it}^{(ALMP)}$ is the number of participants starting a PRP or a PUP programme in the same municipality in the same year, N_{t}^{PRP} is the number of PRP participants in the whole country in year t and $N_{t}^{(ALMP)}$ is the number of participants starting a PRP or a PUP programme in the country in year t. Obviously, W_{it} takes the same value for individuals living in the same municipality.
To be a valid instrument the local treatment intensity should have a direct effect on the selection process but no direct influence on the employment outcome after the programme: the only effect on the employment outcome should be via participation to the programme itself. As I made clear in Section 4.2, there is no need to introduce an additional instrument to reach identification in the model specification with selection on both observable and unobservable characteristics, but I decided to use it to improve the identification power of the model (hence to decrease standard errors); on the other hand, the additional instrument is necessary in the specification with selection only on observables.

[5]The labour market regions used in this study are identical to the commuting areas defined by the Ministry of Environment and Energy (2001). These commuting areas are formed in such a way that a relatively large fraction of the residents in a given region work within the region. During the sample period there were 275 municipality in Denmark grouped into 45 commuting areas. The unemployment rate for each region is calculated on an annual basis.

However, there would be a problem of endogeneity, if I included the variable as defined above in the model. If individual i participates in a programme (it does not matter if a PRP or PUP) during year t, this fact will have an impact on W_{it} (since the numerator and/or denominator of the variable would change). This is a problem since I use this variable to explain individual's i choice of the programme during year t.
To solve this endogeneity problem I decided to use $W_{i(t+2)}$ instead of W_{it}. In this way if individual i starts a programme during year t, this does not have any impact on $W_{i(t+2)}$ since this variable refers to two years later[6]. Of course, to be a good instrument W should have some degree of correlation over time. It is reasonable to assume that municipalities with a high proportion of PRP programmes in one year should have a high proportion of the same programmes in the surrounding years.
A more obvious method would have been to lag the variable W_{it}, *e.g.* by one period. But the data used to form the instrumental variable are available only from 1995, so if I take a one period lagged version of it I can construct the variable only for individuals starting a programme in the period 1996-1998, hence facing a missing data problem for period 1993-1995.

Finally, a brief explanation of the last restriction imposed to the sample in Table (5.1). In some municipalities very few individuals participate in ALMPs. This could be because of the very small size of the city or because there are few ALMP programmes in that city or again because of very little use of active programmes by the caseworkers when assigning individuals. Anyway, I decided to exclude these individuals from such municipalities because W may not be a good measure of the probability of being assigned in an ALMP programme.

[6]I do not use $W_{i(t+1)}$ because the average duration of a programme is about 6 months (Graversen, 2004), so an individual starting a programme in the second semester of year t may also affect $W_{i(t+1)}$.

5.2 Descriptive statistics

The final sample size is 2,651 individuals: 1,391 participated in a private sector programme while 1,260 in a public sector programme. The sample size for both groups, besides being almost equal, is big enough to make reliable results.

I run the model using three different time horizons for the employment state outcome: 6, 12 and 24 months after the end of the programme. Looking at the raw data, the proportion of employed individuals among those participating in a private sector programme is always more than 50%, decreasing as time elapses. This is because some individuals turn from employment to unemployment or other states (out of labour force, training, classroom training, etc.). On the other hand, only approximately one third of the public sector participants are employed after the end of the programme: 34% after 6 months, more than 37% after 12 months and slightly less than 37% after 2 years. So PRP participants face a decrease in their employment probability, while PUP participants see their proportion of employed slightly increase as time passes.

For the unobservables, in both categories more than three quarters of the sample are single, the PUPs percentage being higher, while PRPs have a higher fraction of individuals married or cohabitating. This could be part of the reason why most private sector participants are parents (13% vs. 8%).
Age and education composition of the individuals from both groups are the same. More than a half are young people within the age 17-24, a small part are between 50-66, while the remaining is almost equally divided into the other age classes. The same trend is seen in the education composition: almost 60% completed primary or lower secondary school, while a trifling percentage have a high level of education.
The majority of the individuals in the sample has a very short work experience (under 2 years), 52% of the PRP participants and 64% of the PUP participants; but still a significant proportion has more than 10 years, in both categories. Looking at the employment state preceding the programme period, PRP participants seem to have spent more time in employment than PUP participants (on average[7]),

[7] On average because the values taken from this variable are proportions.

specially in the period 12-36 months previous to the programme start (this may indicate a more constant working life for those participating in PRPs). During the year preceding the programme in both groups a large fraction of individuals was unemployed, when just less than one fifth in ordinary education. This composition slightly changes in the two year period starting 3 years before the programme[8]: PRP participants are almost equally divided into employed and unemployed, while in PUP takers there were more unemployed than employed. The proportion of programme participants who were in ordinary education is almost the same, around 10%.

Looking at the municipality size, the percentages of people living in cities and towns with less than 40,000 inhabitants are the same for private and public sector participants. In municipalities with more than 40,000 inhabitants, it seems that PUP programmes are more used in cities with more than 100,000 citizens than in the class 40,000-100,000: a possible explanation for this is that the bigger the city, the bigger the number of public organizations.

From the variable measuring the regional unemployment rate relative to the countrywide rate, both categories of programme participants have a higher unemployment rate than the countrywide average (on average[7]). This difference is three times bigger for individuals taking part in public sector programmes than for those participating in private sector one. Again, this may be because PUP participants are more likely to live in very big cities, where the unemployment rate is likely to be higher.

Finally an overview on the instrument used in the selection equation. As shown in the first table, in those municipalities where PRP participants come from, there is (on average[7]) a 22% use of PRP programmes more than the country average; however the standard deviation for this value is pretty big and its distribution is positively skewed, meaning that in some municipalities this proportion is much bigger, or equivalently, a lot of PRPs are used contrary to very few PUPs. For public sector participants (second table), the local treatment intensity is even higher than the countrywide rate, but in this case the value is smaller (+8%).

[8]For around 30% of the sample there is no information available for this variable.

Local Treatment Intensity for PRP participants

	Percentiles	Smallest		
1%	.138598	0		
5%	.3561862	0		
10%	.4801511	0	Obs	1391
25%	.7656333	0	Sum of Wgt.	1391
50%	1.140944		Mean	1.221794
		Largest	Std. Dev.	.6682782
75%	1.564143	3.887946		
90%	2.045732	3.887946	Variance	.4465958
95%	2.400755	3.951519	Skewness	1.328568
99%	3.867712	4.301393	Kurtosis	6.065143

Local Treatment Intensity for PUP participants

	Percentiles	Smallest		
1%	0	0		
5%	.2501574	0		
10%	.3561862	0	Obs	1260
25%	.6731681	0	Sum of Wgt.	1260
50%	.9940348		Mean	1.078865
		Largest	Std. Dev.	.5942874
75%	1.359559	3.291703		
90%	1.887783	3.331726	Variance	.3531775
95%	2.17182	4.909912	Skewness	.9765608
99%	2.82146	4.915878	Kurtosis	5.83666

Once again the standard deviation is quite big and the distribution positively skewed.

If the mean value for PRPs is not unexpected, what the PUPs value reveals is a broad use of PRPs even in those municipalities where the PUP participants live[9].

[9] It would have been interesting to see the proportion of PUPs relative to the countrywide rate but it was not possible to construct this information from the original dataset.

Chapter 6

Results

As already pointed out, the aim of this study is to estimate the differential treatment effect of private sector (PRP) and public sector programmes (PUP) aimed at welfare recipients, respectively, and to ascertain whether there exist some difference between the effects of the two programmes.
To do this I use the latent variable model of Aakvik et al. (2000), characterized by three equations - one selecting people into the two programme types and the other two predicting the employment state after the end of both programmes - with discrete outcomes to take selection on observable characteristics and a common factor structure on the equations errors to take selection on unobservable characteristics. I specify two versions of the model:

- one version *with selection only on observables*, *i.e.* with the two factor loadings relative to the employment equations set to 0 and

- a version *with selection also on unobservables*, *i.e.* with the two factor loadings free to vary[1].

For each version, the effects of the two programme types have been calculated for three time horizons, *i.e.* 6, 12 and 24 months after the end of the programme. Thus, it is possible to see how the treatment varies over time, if *e.g.* private sector

[1] For both versions, the factor loading relative to the selection equation is set to 1 because of identification issues.

programmes are more efficient than public sector programmes in helping people to find a job and, if so, whether there is a development over time for the effectiveness of this programme.

Another characteristic of this study is the possibility for the treatment effects to vary among individuals. Hence, in addition to the coefficient estimates, I report three mean treatment effects - *i.e.* the average treatment effect (ATE), the treatment effect on the treated (ATT) and the marginal treatment effect (MTE) - and their distribution. In the specifications where there is allowance for selection on the unobservables, the additional instrument is externally set so that $Z\beta = u$ can gain three different values and MTE can be calculated concentrating each time on those individuals more or less likely to be selected into PRPs (See Chapter 4). Additional information on the treatment heterogeneity can be gained from the marginal effects on the mean treatment effects. Full results for the various models are reported in Appendix D Tables A.1-A.7 to F.1-F.7.

The most satisfactory model is the one also with selection on unobservables, since it allows for a more flexible structure of the error terms across equations. Based on this specification, I run two tests of hypothesis: the additional instrument's validity and the common factor's normality test.

To be a valid instrument, the use of PRPs relative to the countrywide average has to correlate with the assignment into programme categories: this is shown again in Tables A.1-A.7 to F.1-F.7 as the coefficient of the relevant variable in the selection equation. A second requirement is that it should not correlate directly with the employment state outcome: to test this, I run the model with the instrumental variable also in the two outcome equations (again for each time horizon) and its coefficient should not be significantly different from zero. The results are reported in Tables G.1-G.3 to I.1-I.3.

As explained in Chapter 4, it is not necessary to add an additional instrument in presence of a normal factor structure (which I added anyway to improve the identification of the model). Tables J.1-J.3 to L.1-L.3 display the estimates of the model without the additional instrument.

Finally, a robustness test on the common factor's normality hypothesis has been performed. Tables M.1-M.7 to O.1-O.7 report the results for the model with the Heckman-Singer discrete distribution.

6.1 Coefficient estimates

The estimated parameters of the selection equation show clearly that participants in the two programmes are significantly different with respect to observable characteristics[2] (see Tables A.1, B.1, C.1, D.1, E.1, F.1). Hence caseworkers assign individuals to different programmes basing their decisions on several attributes. People married or cohabitating, with more than 2 years of work experience, living in municipalities where PRPs are more important and those who spent a large fraction of time in employment during the two years period starting three years before the programme, have a higher probability of being assigned into private sector programmes, while individuals with a higher education degree and living in regions where the unemployment rate is higher have more probability to be assigned to public sector programmes.

Besides, the estimates of the programme starting year dummies show a decreasing trend in the probability of being assigned into a private sector programme, since they diminish from 1993 to 1998: at the same time the probability of being assigned into PRPs for claimants starting the programme during 1993 was almost twice as much as the probability of being assigned into PUPs, in 1998 this relative chance was reversed and was twice as less.

Looking at the employment equations, I now decide to focus basically on the model which allows for selection on the unobservables (Tables B.2-B.3, D.2-D.3, F.2-F.3; anyway, I will comment some differences with respect to the non-selection version). Some characteristics have an impact on both the PRP and PUP employment outcomes and, apart from a few cases, all of these significant variables maintain their influence with time. Younger people, people with higher educational degrees, people with more work experience and people who spent less time in unemployment have a significantly higher probability of being employed after the end

[2] This is obviously true for all the three time horizon specifications, irrespective whether there is selection on the unobservables or not.

of the programme. This is consistent with the results obtained by Graversen and Jensen (2004) in a recent study where they use the same model to investigate the impact of private sector programmes relative to all other types of ALMP. From the estimates, it is seen that the older the person the lower the probability of being employed and the more work experience the higher the probability of being employed. Furthermore, living in big cities, in regions with little unemployment rate and having children are characteristics positively influencing the probability of finding a job after the end of the programme.

Considering the three different time horizons, there seems to be some difference with time, in the sense that for each time, apart from some characteristics influencing constantly, there are different variables having an influence on the probability to get a job. But the 12 month version has a further difference with the other two time horizons, specially in the public sector employment equation (Table D.3): only four estimates are statistically different from zero, and just at a 10% level.

Comparing the selection-on-unobservables version of the model with the version without selection allowance (Tables A.2-A.3, C.2-C.3, E.2-E.3), the coefficient estimates are very similar: this is in accordance with the fact that the loadings of the common factor in the model with selection are not significantly different from zero. This means that controlling for unobservables allows for a more flexible structure, but does not change appreciably the coefficient estimation results. However, it does increase the estimated standard errors in the public programme employment outcome: this is the main reason why several variables fail to be significant when controlling for selection on unobservables.

6.2 Mean treatment effects

Based on the coefficient estimates presented above, I calculate the differential treatment effects using the formulas given in Appendix A. I start with the differential average treatment effect (ATE):

$\triangle^{ATE}$	Without selection on unobservables		With selection on unobservables
6 months	.171	***	.021
12 months	.127	***	.057
24 months	.115	***	.119

Looking at the raw data (see Appendix C), PRP participants have a 20.35 percentage points higher employment rate than PUP participants, when their employment state is compared 6 months after the end of the programme. This advantage falls to 15.9 and 14.36 percentage points, respectively, 12 and 24 months after the end of the programme.

When controlling for the observable characteristics, the negative trend does not change, even though values are smaller. After 6 months, a randomly selected PRP participant has 17.1 percentage points higher employment rate than a PUP participants and this difference is significantly different from zero; the difference decreases to 12.7 and 11.5 respectively 12 and 24 months after, although always strongly significant.

If I further control for selection on unobservables, then this difference is much smaller for the 6 and 12 months, while it basically does not change for the 24 months. But, more important, the differential effect fail to be significant. So the first evidence is the importance of controlling also for unobservable characteristics: the average treatment effect is smaller and the trend is inverted if compared with the model without selection on unobservables. On average, the probability of being employed after the end of the programme for private sector participants is higher than for public sector participants and there is an increase of this probability over time.

The results for the treated (ATT) are even more surprising:

$\triangle^{ATT}$	Without selection on unobservables		With selection on unobservables
6 months	.179	***	-.049
12 months	.137	***	-.149
24 months	.124	***	.017

In the version where only control on the observables is performed, PRPs advantage persists: estimates are fairly bigger (meaning that the treated benefit more from participating), they differ significantly from zero and follow a negative trend with time. This casts new light on the efficiency of the caseworkers allocation. When I control for the unobservables results change completely: the mean treatment effect on the treated becomes negative for the 6 and 12 month versions and positive (but really close to zero) for the 24 month version, though not statistically significant. The smaller estimates suggest that those treated are not those (on average) expected to gain more from the programme, but those expected to gain less (specially 12 months after the end of the programme) and, moreover, they are penalized. The big difference between the mean raw effect and the $\triangle^{ATT}$ shows the importance of controlling for observed and unobserved characteristics, even if the factor loadings estimates are not significant (the reason of this non-significance is the standard errors size, not the small estimate). This result is similar to the results obtained by Graversen and Jensen (2004) and other studies based on the same model[3].

The results above highlights the importance of controlling also for the unobservable characteristics. Now, in the model with allowance for selection on unobservables, the calculations of the mean marginal treatment effect (MTE) for different values of $Z\beta = u$ allow a better understanding of the role of the unobservables. This index reports the treatment effect for those people on the border between being assigned into a private or a public sector programme (a value of $Z\beta$ slightly bigger than u would make individual i to be selected into a PRP, while a value slightly smaller would make her/him to be selected into a PUP); so, setting different values of u it is possible to investigate how the treatment varies for people more or less likely to be selected into a private sector programme, the smaller the value of u the more likely the participation in a PRP programme. I calculate the $\triangle^{MTE}$ parameters for three values of u:

[3]See *e.g.* Andrén and Andrén (2002) or Aakvik et al. (2003).

$\triangle^{MTE}$	$U_D = -2$	$U_D = 0$	$U_D = 2$
6 months	-.126	.023	.166
12 months	-.344	.056	.46
24 months	-.089	.122	.324

The estimation results (even though not significant) reveal an increasing trend of the $\triangle^{MTE}$ in U_D: individuals most likely to be selected into private sector programmes are penalized from participating, while individuals with characteristics which make them least likely to be selected benefit the most from participating. This difference persists with time and becomes bigger after 12 months.

Hence, the mean MTE agrees with what is suggested by the ATE and ATT mean effects since they also reported that a randomly selected individual would be better off than an actual participant in PRPs.

6.3 Distributional treatment effect

As described in Chapter 4, the model used in this study allows the impact to vary among individuals, hence accounting for possible heterogeneity in the population.

Tables B.4, D.4 and F.4 report the distributional impacts for randomly selected participants obtained using the specification which allows selection on the unobservables after 6, 12 and 24 months, respectively. For the first two time horizons, almost the same fraction of individuals will benefit and will be hurt from participating in PRP programmes, while around half of the population will not be affected by the type of programme since they will be employed or not regardless of which type of programme they participate in. On the contrary, 24 months after the end of the programme, participants benefiting will be almost twice as many as those being hurt by it. Differently from the $\triangle^{ATE}$, all these probabilities are significantly different from zero.

Looking at the treatment effect on the treated, the story does not change so much. The majority of the population will be unaffected by the type of the programme, while the others will be equally divided into those who benefit and those hurt by participating in PRPs. As before, there is one time horizon different from the others, but in this case is the 12 months: those being hurt are twice as many as those who benefit from PRPs. In any case, only the estimates for those not affected are significant at a 1% level.

As for the mean treatment effects, the last parameters I consider are those for the marginal treatment effect: it is possible to see who benefits the most from participating just comparing the parameters for different values of $U_D = u$. The distributional treatment effects for individuals with a value of unobservable characteristics that make them most likely to participate in PRPs (low u-values) give the same information of the ATT parameters. As the u-values increase, *i.e.* for individuals less and less likely to take private sector programmes, the probability of benefitting from participating increases, the probability of getting hurt by the programme decreases while the fraction of people unaffected by the programme remains substantially constant. Differences among the population seem to be bigger for the 12 months employment state: for individuals most likely to get a PRP, almost half of them will be hurt by the participation, at the same time less than 10% will benefit. On the contrary, for individuals least likely to participate, more than half will benefit from it and only 7.6% will be hurt. As well as for ATE and ATT distributional parameters, the majority of people have no advantage from participating in a private sector programme instead of a public sector programme (this can be seen looking at the estimates of $\Pr^{MTE}_{\triangle}(0, x, u) = \Pr^{MTE}_{Y_1,Y_0}(0, 0, x, u) + \Pr^{MTE}_{Y_1,Y_0}(1, 1, x, u)$, which, besides, are the only ones always significantly different from zero).

Thanks to the model specification, it has been shown that there is a considerable amount of heterogeneity in the impact of the programmes; besides, it is now clear that the mean treatment effects, namely those most commonly estimated, hide all this heterogeneity in the individual responses.

6.4 Selection on observables and unobservables

Looking at the mean and distributional differential effects parameters, there is a considerable amount of heterogeneity in the population with respect to the response to the programmes. A less sophisticated index for this heterogeneity could be the empirical standard deviation of the mean treatment effects:

	$\triangle^{ATE}$	$\sigma_{\triangle}^{ATE}$	$\triangle^{ATT}$	$\sigma_{\triangle}^{ATT}$
6 months	.021	.104	-.049	.11
12 months	.057	.097	-.149	.091
24 months	.119	.097	.017	.106

Regardless of the time horizon, the empirical standard deviation of the mean treatment effect and the mean treatment effect on the treated are quite big; they show that the impact of participating in a private sector programme can vary considerably, for both a randomly selected individual and a treated person.

Once proved that there is a certain amount of heterogeneity in treatment effects, it would be interesting to know which individual or municipality characteristics influence the treatment: this can be seen looking at the marginal effects of each regressor on the mean treatment effects, which are defined as $\mathrm{E}_X[\frac{\partial\triangle^{ATE}}{\partial x}]$ and $\mathrm{E}_Z[\frac{\partial\triangle^{ATT}}{\partial z}]$, respectively. There seem to be no constant influence with time, in the sense that some variables have a different impact on the $\triangle$ treatments in different time horizons[4]. For the 6 month unemployment state model, being older than 24 and living in a city with more than 100,000 citizens are associated with much bigger $\triangle$ treatment effects, while having children, having more than 10 years of work experience, having spent the largest part of the last 12 months in ordinary education and having started the programme in 1997 are connected with very small $\triangle$ treatment effects. The effect 12 months after the end of the programme is differently influenced by these variables: now, individuals who worked for more than 5 years, who started the programme during 1995, 1996 but above all in 1998, and who live in big cities, benefit more by the programme; while, living in a region where there is a high unemployment rate is associated with a much smaller treatment effect. Finally, the 24 months employment state seems to be influenced in the same way as the 6 months state: older and better educated individuals, starting the programme in 1998 and living in regions with a higher unemployment rate, gain more from the programme than individuals married or cohabitating, with more than 2 years of work experience and who were not employed in the years before the

[4]See Tables B.7, D.7 and F.7 for all the estimates.

programme. So, even though some characteristics influence the treatment effects varies with time, if these traits were taken into consideration by caseworkers when allocating individuals in different programmes, such programmes would be much more efficient by having the highest effects on individuals most likely to gain from them.

To gain further knowledge on which extent observable and unobservable characteristics for selection and employment outcome are connected, I calculated some correlations. The factor structure model and the assumption that (U_D, U_1) and (U_D, U_0) are independent of (Z, X) imply very simple formulas to calculate correlations among unobservable characteristics. Given the normalizations introduced in Chapter 4:

$$\begin{aligned}
\text{Corr}(U_0, U_1) &= \frac{\alpha_0 \alpha_1}{\sqrt{1+\alpha_0^2}\sqrt{1+\alpha_1^2}} \\
\text{Corr}(U_D, U_0) &= \frac{\alpha_0}{\sqrt{2}\sqrt{1+\alpha_0^2}} \\
\text{Corr}(U_D, U_1) &= \frac{\alpha_1}{\sqrt{2}\sqrt{1+\alpha_1^2}}
\end{aligned}$$

For the 6 months employment state these correlations are:

$$\begin{aligned}
\text{Corr}_{6\ months}(U_0, U_1) &= 0.078 \\
\text{Corr}_{6\ months}(U_D, U_0) &= 0.382 \\
\text{Corr}_{6\ months}(U_D, U_1) &= 0.102
\end{aligned}$$

From the first correlation, unobservable characteristics determining employment in PRP takers are not correlated with unobservable characteristics determining employment in PUP takers: the estimate is positive but close to zero. From the latter two correlations, the unobservables determining selection into private sector programmes are positively correlated with unobservables determining employment in both kinds of programme participants, $\text{Corr}_{6\ months}(U_D, U_0)$ being almost four times as big as $\text{Corr}_{6\ months}(U_D, U_1)$: individuals with high values of U_D (thus those least likely to participate in a private sector programme) are likely to have unobserved characteristics negatively influencing their employment state after the programme, regardless of which programme they participate in, but less likely to be unemployed if they are PRP participants (given the values of X and Z). For the 12 months version, things are slightly different:

$$\begin{aligned} \text{Corr}_{12\ months}(U_0, U_1) &= -0.261 \\ \text{Corr}_{12\ months}(U_D, U_0) &= 0.461 \\ \text{Corr}_{12\ months}(U_D, U_1) &= -0.283 \end{aligned}$$

The correlation between U_0 and U_1 is negative, meaning that individuals with unobservables which make them more likely to be employed if participating in a private sector programme have unobservables which make them less likely to get a job if they participate in a public sector programme: this difference between selected and non-selected individuals with respect to the employment state after the end of the programme makes clear once again that it is necessary to control for both unobservable and observable characteristics. Secondly, correlations between unobservables promoting selection into PRPs and each employment outcome have opposite signs: individuals least likely to be selected into PRPs are those least likely to be employed after a public sector programme and most likely to employed after a private sector programme. This shows a perverse selection on unobservables: people assigned to a certain type of programme are those benefiting the least from that type of programme.
The same conclusions can be derived from the correlation on the 24 months specification:

$$\begin{aligned} \text{Corr}_{24\ months}(U_0, U_1) &= -0.074 \\ \text{Corr}_{24\ months}(U_D, U_0) &= 0.177 \\ \text{Corr}_{24\ months}(U_D, U_1) &= -0.21 \end{aligned}$$

Here, even though values are smaller than before, estimates show the same distorted selection rule.

After having considered how unobservable characteristics affect the selection and employment outcomes, it may be useful to know if observables have the same impact. Again, I examine the dependence among $Z\beta_D$, $X\beta_0$ and $X\beta_1$ using correlations[5]. Unlike before, indices are all positively correlated to each other:

$$\begin{aligned} \text{Corr}_{6\ months}(X\beta_0, X\beta_1) &= 0.829 \\ \text{Corr}_{6\ months}(Z\beta_D, X\beta_0) &= 0.413 \\ \text{Corr}_{6\ months}(Z\beta_D, X\beta_1) &= 0.433 \end{aligned}$$

$$\begin{aligned} \text{Corr}_{12\ months}(X\beta_0, X\beta_1) &= 0.797 \\ \text{Corr}_{12\ months}(Z\beta_D, X\beta_0) &= 0.501 \\ \text{Corr}_{12\ months}(Z\beta_D, X\beta_1) &= 0.265 \end{aligned}$$

$$\begin{aligned} \text{Corr}_{24\ months}(X\beta_0, X\beta_1) &= 0.778 \\ \text{Corr}_{24\ months}(Z\beta_D, X\beta_0) &= 0.315 \\ \text{Corr}_{24\ months}(Z\beta_D, X\beta_1) &= 0.259 \end{aligned}$$

Thus, unlike what arises in the analysis of unobservables, a higher index for participation is associated with higher employment outcomes in both the private and public sector programmes. Note that correlation between $X\beta_0$ and $X\beta_1$ is strong, but they are not perfectly correlated, meaning that employment after one type of programme does not imply certain employment even after the second type of programme. Besides, correlation between $Z\beta_D$ and $X\beta_0$ is higher than correlation between $Z\beta_D$ and $X\beta_1$ (except for the 6 month version, which is equal) : this can be seen again as a proof of the "wrong" selection process.

Correlations in the observables induce very similar correlations in the fitted probabilities:

$$\begin{aligned} \text{Corr}_{6\ months}(\Pr(Y_1 = 1|X), \Pr(Y_0 = 1|X)) &= 0.823 \\ \text{Corr}_{6\ months}(\Pr(D = 1|Z), \Pr(Y_0 = 1|X)) &= 0.399 \\ \text{Corr}_{6\ months}(\Pr(D = 1|Z), \Pr(Y_1 = 1|X)) &= 0.424 \end{aligned}$$

[5] While it is straightforward to determine the effect of $X\beta_0$ and $X\beta_1$ on $\triangle$, it is hard to settle the influence of $Z\beta_D$ on it. The most obvious way would be to estimate the model non-parametrically, determining the relationship between objects like $\triangle^{ATE}$ and $\triangle^{ATT}$ on $Z\beta_D$.

$$\begin{aligned}
\text{Corr}_{12\ months}(\Pr(Y_1 = 1|X), \Pr(Y_0 = 1|X)) &= 0.798 \\
\text{Corr}_{12\ months}(\Pr(D = 1|Z), \Pr(Y_0 = 1|X)) &= 0.49 \\
\text{Corr}_{12\ months}(\Pr(D = 1|Z), \Pr(Y_1 = 1|X)) &= 0.251
\end{aligned}$$

$$\begin{aligned}
\text{Corr}_{24\ months}(\Pr(Y_1 = 1|X), \Pr(Y_0 = 1|X)) &= 0.781 \\
\text{Corr}_{24\ months}(\Pr(D = 1|Z), \Pr(Y_0 = 1|X)) &= 0.307 \\
\text{Corr}_{24\ months}(\Pr(D = 1|Z), \Pr(Y_1 = 1|X)) &= 0.244
\end{aligned}$$

This analysis on the correlations between different parameters is consistent with the evidence from the mean treatment effects: parameters without unobservables selection allowance are much different from those selection-corrected and they are misleading. Correlations, probabilities and impacts based only on observable characteristics are too optimistic, while those based on unobservables are reporting worse and sometimes negative effects from participating in private sector programmes. In particular, individuals most likely to enter a PRP are those most likely to be employed anyway and least likely to benefit from participating. This is true for both observed and unobserved characteristics:

$$\begin{aligned}
\text{Corr}_{6\ months}(U_D, U_1 - U_0) &= -0.234 \\
\text{Corr}_{6\ months}(Z\beta_D, X(\beta_1 - \beta_0)) &= -0.182
\end{aligned}$$

$$\begin{aligned}
\text{Corr}_{12\ months}(U_D, U_1 - U_0) &= -0.478 \\
\text{Corr}_{12\ months}(Z\beta_D, X(\beta_1 - \beta_0)) &= -0.524
\end{aligned}$$

$$\begin{aligned}
\text{Corr}_{24\ months}(U_D, U_1 - U_0) &= -0.264 \\
\text{Corr}_{24\ months}(Z\beta_D, X(\beta_1 - \beta_0)) &= -0.125
\end{aligned}$$

So I found that characteristics associated with better labour market outcomes are negatively correlated with training effects, *i.e.* individuals with characteristics which make them more likely to get a job after programme participation are those with worse treatment effects. To improve the overall effectiveness of these programmes a change in the allocation process made by caseworkers is required: selecting for each type of programme those individuals more likely to gain from participating in such a programme.

6.5 Sensitivity analyses

In the model presented in this study I introduce an additional instrumental variable, namely the rate of use of private sector programmes relative to the country-wide rate, in the equation that accounts for selection into programmes. Given the normal factor structure used to model the unobservables, it was not required to add this variable; as explained in Chapter 4, I decided to append the instrument to improve the identification of the model. I have also estimated the model without the additional instrument to show the difference in the estimates (Tables J.1-J.3 to L.1-L.3). Results are basically the same, with differences on the estimates at the third decimal point; however, in the version without the additional instrument there is an increase in the estimates' standard errors. This confirms that the instrument improves the identification of the model.

A second crucial issue related to the instrumental variable is whether this variable is a valid instrument or not. To be a valid instrument for the selection equation, it has to correlate with the selection outcome variable but not directly with the two employment outcomes. The first requirement is satisfied: the coefficient of the instrument in the model is significantly different from zero, with a p-value smaller than 0.01. To check if also the second requirement is satisfied I run a version of the model with the instrument as a regressor even in the two employment equations (Tables G.1-G.3 to I.1-I.3): if its coefficient estimate is significantly different from zero, than it is possible to infer that the instrument has no direct effect on the employment outcomes. Only in the 12 months specification the instrument does not affect the two employment outcomes, while for the 6 and 24 month versions there seem to be some problems: in the 6 month time horizon I reject the null hypothesis of a zero parameter for the relative use of PRPs variable in the public programme employment equation, while in the 24 months I reject it for the private programme employment equation.

Finally, the last assumption taken in this study is the common factor's normality. To test whether this hypothesis influences my results, I estimate the model with another assumption for the common factor, namely that it follows a discrete distribution with a fixed number of points of support (this is the so called

Heckman-Singer procedure). I use three points of support since the improvement in the likelihood failed to be significant any more[6]. All results are reported in Tables M.1-M.7 to O.1-O.7. Coefficient estimates are very similar to the ones obtained from the model with the assumption of a normal distributed factor, but mean and distributional parameter estimates are slightly different: they are qualitatively similar but vary considerably in size.

[6] See Section 4.3.1 for details.

Chapter 7

Conclusions

Some words of caution are in order, about these conclusions. First, I focused my attention on the employment effects only of the programmes. This is because the main purpose of these programmes is to facilitate unemployed workers return to work. Even though there might be some additional possibly interesting effects (*e.g.*, occupational choice, subsequent earnings, etc.), which are beyond the scope of this study.

Second, all the results presented here are employment effects of private sector programmes relative to public sector programmes. In some senses, this type of differential treatment effect analysis should be done as a second stage analyses, in order to choose the most effective programme for any given category of individuals, after a first stage analyses has ascertained finding out if a programme has a positive treatment effect if compared with no participation.

Third, it should be kept in mind that the results depend on the assumptions made, specification and distributional assumptions. The simple one factor assumption could be relaxed, and a more flexible structure may lead to different results. The normality assumption for the common factor allows simple manipulation and calculation of the probabilities induced by the model, but it is clearly restrictive. It is worth noting, however, that a more flexible specification of the unobserved component, by means of the Heckman and Singer (1984) procedure, showed that results are robust with respect to the distributional assumption.

Programmes involving unemployed workers in private firm's have always been considered the most successful in helping unemployed individuals to go back to work. In this dissertation, I take a new look on the employment effects of private sector programmes: I do this by comparing individuals who participated in a PRP with individuals participating in a PUP. The reason for looking at these differential effects is twofold: in Denmark there is no unemployed individual who does not participate in any Employment Enhancement Programme (otherwise stated, there is not a control group of non-treated individuals); given that, the interest is in determining whether public sector programmes can be as efficient as the private sector programmes in helping unemployed individuals to go back to employment.

The model used is a discrete outcomes model within a latent variable framework, with one equation selecting individuals into PRPs or PUPs, two employment equations - one for each type of programme individuals participate in - and a normal factor structure for errors. This framework enables the treatment effect to vary among observationally identical people, thus allowing for heterogeneous treatment effects and distributional parameters on different sub-populations.

The raw data suggest a large employment effect of private sector programmes and a smaller success for public sector programmes. Besides, the probability of being employed for PRPs participants (slightly) decreases with time, while it (slightly) increases for PUPs participants.

Results from the model based analyses can be summarized in three points.
If I take into account the selection on observable characteristics only, the results do not change that much: PRP programmes still have a higher employment effect, but smaller in size, and the negative trend persists. When considering also the selection on unobservables, the story is completely different: mean parameters fail to be statistically significant (values are negative or close to zero) and the trend becomes positive, as if PRPs were more helpful in bringing people back to work as time passes. While a randomly selected individual would gain (on average) from participating in a PRP instead of a PUP programme in each of the time horizons, an actual PRP participant will benefit from it (on average) only 2 years after the end of the programme.

A second main result is the variability of the treatment effect. Thanks to the model structure, it is possible to see to what extent the relative impact of the PRPs varies among individuals: the empirical variance of the mean treatment effects is fairly big, $\triangle^{ATE}$ and $\triangle^{ATT}$ are much different from each other, the former being larger than the latter, and the distributional parameters show that the majority of the participants are not affected by the programme they are exposed to (if they were employed/unemployed after a PRP they would be employed/unemployed after a PUP as well, respectively), while some individuals are hurt and others benefit from participation.

A third result is about the characteristics that make people more or less likely to benefit from a programme. The MTE distributional parameters clarify the perverse selection process, according to which individuals most likely to participate in a PRP programme are those who are likely to benefit less from it, or even to be penalized from it (this conclusion is in accordance with ATE and ATT parameters).

These results summarized above suggest that there is room for improvement in the allocation process made by caseworkers: if individuals benefiting the most from a private sector programme were allocated to it, there would be an overall improvement in the treatment effect. This conclusion is based on the model where selection on the unobservables is allowed; so, if the allocation to different types of programmes was based not only on observable characteristics but on unobservables as well, there would be better results. Obviously, caseworkers need to know this and, for example, they might try to gain it directly from individuals during an interview or by basing their decisions on previous evaluations.

Appendix A

Formulas

I report here the formulas implied by the model specified in Chapter 4. The formulas have a relatively straightforward expression implied by all the assumptions made throughout the dissertation:

- an equation with discrete outcome selecting individuals into private sector ($D = 1$) or public sector programmes ($D = 0$);
- two equations with discrete outcomes determining employment state for PRPs (Y_1) and PUPs (Y_0) participants, respectively;
- (Y_{1i}, Y_{0i}) are defined $\forall\, i$;
- there is no interaction among agents;
- $Z\beta_D$ is a nondegenerate random variable conditional on $X = x$;
- (U_D, U_1) and (U_D, U_0) are absolutely continuous with respect to Lebesgue measure on $\Re^2$;
- (U_D, U_1) and (U_D, U_0) are independent of (Z, X);
- Y_1 and Y_0 have finite first moments;
- $0 < \Pr[\, D = 1 \,|\, X \,] < 1$;

- a one factor structure for the three equations errors, with $(\theta, \epsilon_D, \epsilon_1, \epsilon_0)^T \sim N(0, I)$, where I is the identity matrix, observations are supposed to be i.i.d. and α_D is set to 1.

ATE formulas

For the individuals with observed characteristics x these are the ATE formulas, namely the probabilities characterizing a randomly selected individual from the population.

Define $\Pr^{ATE}_{Y_1,Y_0}(j_1, j_0, x) \equiv \mathrm{E}[Y_1 = j_1, Y_0 = j_0 | X = x]$:

$$\begin{aligned}
\Pr^{ATE}_{Y_1,Y_0}(1,0,x) &= \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta))]\phi(\theta)d\theta \\
\Pr^{ATE}_{Y_1,Y_0}(0,1,x) &= \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))\Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d\theta \\
\Pr^{ATE}_{Y_1,Y_0}(1,1,x) &= \int [\Phi(x\beta_1 + \alpha_1\theta)\Phi(x\beta_0 + \alpha_0\theta)]\phi(\theta)d\theta \\
\Pr^{ATE}_{Y_1,Y_0}(0,0,x) &= \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))(1 - \Phi(x\beta_0 + \alpha_0\theta))]\phi(\theta)d\theta
\end{aligned}$$

Define $\Pr^{ATE}_{\triangle}(j, x) \equiv \mathrm{E}[\triangle = j | X = x]$:

$$\begin{aligned}
\Pr^{ATE}_{\triangle}(1,x) &= \Pr^{ATE}_{Y_1,Y_0}(1,0,x) \\
\Pr^{ATE}_{\triangle}(0,x) &= \Pr^{ATE}_{Y_1,Y_0}(0,0,x) + \Pr^{ATE}_{Y_1,Y_0}(1,1,x) \\
\Pr^{ATE}_{\triangle}(-1,x) &= \Pr^{ATE}_{Y_1,Y_0}(0,1,x)
\end{aligned}$$

It is now possible to write the differential average treatment effect:

$$\begin{aligned}
\triangle^{ATE}(x) &= \mathrm{E}[\triangle | X = x] \\
&= \Pr^{ATE}_{Y_1,Y_0}(1,0,x) - \Pr^{ATE}_{Y_1,Y_0}(0,1,x) \\
&= \Pr^{ATE}_{\triangle}(1,x) - \Pr^{ATE}_{\triangle}(-1,x)
\end{aligned}$$

ATT formulas

Below are reported the expressions of the probabilities characterizing the joint distribution of the selection and outcomes equations for individuals with observed characteristics x and z.

Define $\Pr^{ATT}_{Y_1,Y_0}(j_1, j_0, x, z) \equiv \mathrm{E}[Y_1 = j_1, Y_0 = j_0 | X = x, Z = z, D = 1]$:

$$\begin{aligned}
\Pr^{ATT}_{Y_1,Y_0}(1,0,x,z) &= \frac{1}{\Phi(\frac{z\beta_D}{\sqrt{2}})} \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta))] \cdot \ldots \\
&\quad \ldots \cdot \Phi(z\beta_D + \theta)\phi(\theta)d\theta \\
\Pr^{ATT}_{Y_1,Y_0}(0,1,x,z) &= \frac{1}{\Phi(\frac{z\beta_D}{\sqrt{2}})} \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))\Phi(x\beta_0 + \alpha_0\theta)] \cdot \ldots \\
&\quad \ldots \cdot \Phi(z\beta_D + \theta)\phi(\theta)d\theta \\
\Pr^{ATT}_{Y_1,Y_0}(1,1,x,z) &= \frac{1}{\Phi(\frac{z\beta_D}{\sqrt{2}})} \int [\Phi(x\beta_1 + \alpha_1\theta)\Phi(x\beta_0 + \alpha_0\theta)] \cdot \ldots \\
&\quad \ldots \cdot \Phi(z\beta_D + \theta)\phi(\theta)d\theta \\
\Pr^{ATT}_{Y_1,Y_0}(0,0,x,z) &= \frac{1}{\Phi(\frac{z\beta_D}{\sqrt{2}})} \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))(1 - \Phi(x\beta_0 + \alpha_0\theta))] \cdot \ldots \\
&\quad \ldots \cdot \Phi(z\beta_D + \theta)\phi(\theta)d\theta
\end{aligned}$$

Define $\Pr^{ATT}_{\triangle}(j, x, z) \equiv \mathrm{E}[\triangle = j | X = x, Z = z, D = 1]$:

$$\begin{aligned}
\Pr^{ATT}_{\triangle}(1,x,z) &= \Pr^{ATT}_{Y_1,Y_0}(1,0,x,z) \\
\Pr^{ATT}_{\triangle}(0,x,z) &= \Pr^{ATT}_{Y_1,Y_0}(0,0,x,z) + \Pr^{ATT}_{Y_1,Y_0}(1,1,x,z) \\
\Pr^{ATT}_{\triangle}(-1,x,z) &= \Pr^{ATT}_{Y_1,Y_0}(0,1,x,z)
\end{aligned}$$

From the expressions above we can now derive the differential average treatment effect on the treated:

$$\triangle^{ATT}(x) = \mathrm{E}[\triangle | X = x, Z = z, D = 1] \qquad \text{(continue)}$$

$$= \Pr^{ATT}_{Y_1,Y_0}(1,0,x,z) - \Pr^{ATT}_{Y_1,Y_0}(0,1,x,z)$$
$$= \Pr^{ATT}_{\triangle}(1,x,z) - \Pr^{ATT}_{\triangle}(-1,x,z)$$

MTE formulas

Finally, these are the formulas when I take into consideration if individuals have unobserved characteristics more or less likely to make them selected into private or public programmes, *i.e.* $\mathrm{U}_D = u$.

Define $\Pr^{MTE}_{Y_1,Y_0}(j_1,j_0,x,u) \equiv \mathrm{E}[Y_1 = j_1, Y_0 = j_0 | X = x, \mathrm{U}_D = u]$:

$$\begin{aligned}
\Pr^{MTE}_{Y_1,Y_0}(1,0,x,u) &= \frac{\sqrt{2}}{\phi(\frac{u}{\sqrt{2}})} \int [\Phi(x\beta_1 + \alpha_1\theta)(1 - \Phi(x\beta_0 + \alpha_0\theta))] \cdot \ldots \\
&\quad \ldots \cdot \phi(u+\theta)\phi(\theta)d\theta \\
\Pr^{MTE}_{Y_1,Y_0}(0,1,x,u) &= \frac{\sqrt{2}}{\phi(\frac{u}{\sqrt{2}})} \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))\Phi(x\beta_0 + \alpha_0\theta)] \cdot \ldots \\
&\quad \ldots \cdot \phi(u+\theta)\phi(\theta)d\theta \\
\Pr^{MTE}_{Y_1,Y_0}(1,1,x,u) &= \frac{\sqrt{2}}{\phi(\frac{u}{\sqrt{2}})} \int [\Phi(x\beta_1 + \alpha_1\theta)\Phi(x\beta_0 + \alpha_0\theta)] \cdot \ldots \\
&\quad \ldots \cdot \phi(u+\theta)\phi(\theta)d\theta \\
\Pr^{MTE}_{Y_1,Y_0}(0,0,x,u) &= \frac{\sqrt{2}}{\phi(\frac{u}{\sqrt{2}})} \int [(1 - \Phi(x\beta_1 + \alpha_1\theta))(1 - \Phi(x\beta_0 + \alpha_0\theta))] \cdot \ldots \\
&\quad \ldots \cdot \phi(u+\theta)\phi(\theta)d\theta
\end{aligned}$$

Define $\Pr^{MTE}_{\triangle}(j,x,u) \equiv \mathrm{E}[\triangle = j | X = x, \mathrm{U}_D = u]$:

$$\begin{aligned}
\Pr^{MTE}_{\triangle}(1,x,u) &= \Pr^{MTE}_{Y_1,Y_0}(1,0,x,u) \\
\Pr^{MTE}_{\triangle}(0,x,u) &= \Pr^{MTE}_{Y_1,Y_0}(0,0,x,u) + \Pr^{MTE}_{Y_1,Y_0}(1,1,x,u) \\
\Pr^{MTE}_{\triangle}(-1,x,u) &= \Pr^{MTE}_{Y_1,Y_0}(0,1,x,u)
\end{aligned}$$

Using the probabilities above, it is now straightforward to calculate the marginal differential treatment effect:

$$
\begin{aligned}
\triangle^{MTE}(x,u) &= \mathrm{E}[\triangle|X=x,\mathrm{U}_D=u] \\
&= \mathrm{Pr}^{MTE}_{Y_1,Y_0}(1,0,x,u) - \mathrm{Pr}^{MTE}_{Y_1,Y_0}(0,1,x,u) \\
&= \mathrm{Pr}^{MTE}_{\triangle}(1,x,u) - \mathrm{Pr}^{MTE}_{\triangle}(-1,x,u)
\end{aligned}
$$

Appendix B

Gauss-Hermite quadrature rule

The estimation of the model presented in Chapter 5 involves numerical integration. I decided to use a Gaussian approach basically because its aim is to find points and weights as to make the approximation of the integral of interest a ”good” one.

In order to accomplish this, we need to define a ”good” criterion for the quadrature. The criterion used in Gaussian formulas is *exact integration* for a finite-dimensional collection of functions. More specifically, weights and nodes have to be chosen so that the approximation is exactly correct when the integrand is a low-order polynomial. The remarkable feature of Gaussian quadrature is that it accomplishes this for spaces of degree $2n-1$ polynomials using only n nodes and n weights.

In this paper I use in particular a Gauss-Hermite quadrature rule. To evaluate the general form $\int_{-\infty}^{\infty} f(x)e^{-x^2}dx$ using n points, the this rule is defined by

$$\int_{-\infty}^{\infty} f(x)e^{-x^2}dx = \sum_{i=1}^{n} w_i f(x_i) + \frac{n!\sqrt{\pi}}{2n} \cdot \frac{f^{(2n)}(\xi)}{(2n)!}$$

for some $\xi \in (-\infty, \infty)$. It is possible to find nodes and weights for different values on n reported in tables or using online calculators such as www.efunda.com.

Gauss-Hermite quadrature will be used in connection with Normal random variables. If Y is distributed $N(\mu, \sigma^2)$, then

$$\mathrm{E}[f(Y)] = (2\pi\sigma^2)^{-1/2} \int_{-\infty}^{\infty} f(y)e^{-(y-\mu)^2/2\sigma^2}dy\,.$$

However, it is to remark that to use Gauss-Hermite quadrature to compute such expectations, it is necessary to use a linear change of variables, $x = (y-\mu)/\sigma\sqrt{2}$, and use the identity

$$\int_{-\infty}^{\infty} f(y)e^{-(y-\mu)^2/2\sigma^2}dy = \int_{-\infty}^{\infty} f(x\sigma\sqrt{2}+\mu)e^{-x^2}\sigma\sqrt{2}dx\,.$$

Hence the general Gauss-Hermite quadrature rule for expectations of functions of a normal random variable is

$$\begin{aligned}\mathrm{E}[f(Y)] &= (2\pi\sigma^2)^{-1/2}\int_{-\infty}^{\infty} f(y)e^{-(y-\mu)^2/2\sigma^2}dy \\ &\doteq \pi^{-1/2}\sum_{i=1}^{n} w_i f(x\sigma\sqrt{2}+\mu)\,,\end{aligned}$$

where the w_i and x_i are the Gauss-Hermite quadrature weights and nodes over $[-\infty,\infty]$[1].

In the model used here the Normal random variable is the common factor explaining the unobserved individual characteristics, θ, and the integral to be approximated is

$$\begin{aligned}L_i &= \int_{-\infty}^{\infty} L_i(\theta_i)\phi(\theta_i)d\theta_i \\ &= \int_{-\infty}^{\infty} L_i(\theta)\frac{1}{\sqrt{2\pi}}e^{-\frac{1}{2}\theta^2}d\theta\,, \end{aligned} \tag{B.1}$$

where L_i is the likelihood function known except for a finite number of parameters $(\beta_D, \beta_1, \beta_0, \alpha_1, \alpha_0)$.

As seen above, I need a change of variable and I use the linear change $x = (1/\sqrt{2})\theta$ so that equation (B.1) can be rewritten as

$$\begin{aligned}L_i &= \int_{-\infty}^{\infty} L_i(x\sqrt{2})\frac{1}{\sqrt{2\pi}}e^{-x^2}\sqrt{2}\,dx \\ &= \frac{1}{\sqrt{\pi}}\int_{-\infty}^{\infty} L_i(x\sqrt{2})e^{-x^2}\,dx\,. \end{aligned} \tag{B.2}$$

Now this integral can be approximated by

$$L_i \approx \frac{1}{\sqrt{\pi}}\sum_{k=1}^{K} w_k L_i(x_k\sqrt{2})\,, \tag{B.3}$$

[1]Source: Judd (2000).

where K is the number of evaluation points used for the approximation and w_k is the weight associated with the evaluation point x_k ($k = 1, \ldots, K$). When K increases the accuracy of the approximation in (B.3) is improved.

In this paper I use 5 evaluation points:

	x_k	w_k
$k = 1$	-2.02018287046	0.019953242059
$k = 2$	-0.958572464614	0.393619323152
$k = 3$	0	0.945308720483
$k = 4$	0.958572464614	0.393619323152
$k = 5$	2.02018287046	0.019953242059

I stopped at 5 points because the accuracy that 2 or more further points guaranteed was not significant.

Appendix C

Descriptive statistics

Below some descriptive statistics are reported, for private (PRP) and public (PUP) programmes participants, respectively.

	PRP participants	**PUP participants**
Number of observations	1391	1260
	(52.47%)	(47.53%)
Outcome variables		
Proportion of employed:		
6 months after end of programme	54.64%	34.29%
12 months after end of programme	53.2%	37.3%
24 months after end of programme	51.19%	36.83%
Individual characteristics		
Marital state:		
Single	76.42%	84.13%
Married	6.9%	4.21%
Cohabitating	16.68%	11.67%

	PRP participants	PUP participants
Year when programme started:		
1993	20.06%	5.95%
1994	38.17%	31.35%
1995	20.56%	23.1%
1996	10.14%	18.73%
1997	7.12%	12.22%
1998	3.95%	8.65%
Has children	13.37%	8.41%
Age:		
17-24	55.79%	60%
25-29	14.16%	10.56%
30-39	17.47%	16.35%
40-49	9.56%	10.32%
50-66	3.02%	2.78%
Completed education:		
Primary or lower secondary school	57.87%	58.65%
Upper secondary school	20.92%	24.92%
Vocational education	19.12%	12.78%
Further or higher education	2.08%	3.65%
Work experience:		
0-2 years	51.19%	64.44%
2-5 years	20.7%	13.73%
5-10 years	15.74%	11.67%
10+ years	12.37%	10.16%

	PRP participants	PUP participants
Time spent in different states during the 12 months preceding programme period:		
Employment	37%	36.1%
Unemployment	47.49%	45.61%
Ordinary education	15.51%	18.29%
Time spent in different states during a 2 years period starting 3 years and ending 1 year before the programme period:		
Employment	30.74%	22.38%
Unemployment	31.98%	33.17%
Ordinary education	9.25%	11.28%
No available information:	28.03%	33.17%
Municipalities		
Residents in municipality, 1996:		
<20,000	27.39%	26.82%
20,000-40,000	18.26%	18.17%
40,000-100,000	29.98%	24.52%
>100,000	24.37%	30.48%
Regional unemployment rate relative to countrywide rate	101.28%	103.87%
Proportion of programme participants in PRPs relative to countrywide importance of PRPs	122.17%	107.88%

Appendix D

Parameter estimates

This appendix reports the parameter estimates of the three equations of the model: the first determining the selection into private or public programmes, while the second and the third are the employment state equations for the private sector and the public sector participants, respectively, for the various model specifications. Results were obtained using Gauss 4[1].

The organization of the tables is as follows. Each table is characterized by a letter and a number, the former being the model specification, while the latter represents which parameters are reported. See the two tables on the next page for a quick reference. Model specifications A to F are the core model used to evaluate the differential treatment effect of private sector programmes relative to public sector programmes. I report for each time horizon both cases - with and without selection on unobservable characteristics - to show the difference implied by taking into consideration also the selection on unobservables process with respect to the case when there is only selection on observable characteristics. I then decided to concentrate my attention in the model with selection on the unobservables since it is the most satisfactory model and it allows a more flexible structure of the error terms across equations. Tables G.1-G.3 to I.1-I.3 are the results of the specification used to test if the further instrument introduced in the first equation of the model is

[1]In the tables, "Coeff.", "Std.", "Sgl." and "Marg." mean "Coefficient", "Standard error", "Significance level" and "Marginal effect [of the regressor on the outcome]", respectively, while one, two or three asterisks mean a 10, 5 or 1 per cent level of significance, respectively.

Letter	**Specification**
A	Model without selection on the unobservables, 6 months
B	Model with selection on the unobservables, 6 months
C	Model without selection on the unobservables, 12 months
D	Model with selection on the unobservables, 12 months
E	Model without selection on the unobservables, 24 months
F	Model with selection on the unobservables, 24 months
G	Test further instrument, 6 months
H	Test further instrument, 12 months
I	Test further instrument, 24 months
J	Model without the additional instrument, 6 months
K	Model without the additional instrument, 12 months
L	Model without the additional instrument, 24 months
M	Heckman-Singer procedure, 6 months
N	Heckman-Singer procedure, 12 months
O	Heckman-Singer procedure, 24 months

Number	**Parameters estimated**
1	Selection equation
2	employment state for PRP participants
3	employment state for PUP participants
4	ATE parameters
5	ATT parameters
6	MTE parameters
7	Marginal effects of explanatory variables on $\triangle^{ATE}$ and $\triangle^{ATT}$

valid or not. Tables J.1-J.3 to L.1-L.3 report the model without the additional instrument, so testing if it improve the empirical identification of the model. Finally, tables M.1-M.7 to O.1-O.7 include the results of the estimation I run to test the common factor's normality hypothesis, the so called Singer-Heckman procedure.

Table A.1

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 6 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.798	.354	**	.201
Age (r.g.: 17-24)				
25-29	.106	.146		.027
30-39	-.075	.156		-.019
40-49	-.254	.191		-.064
50-66	-.146	.264		-.037
Marital state (r.g.: Single)				
Married	.343	.201	*	.087
Cohabitating	.334	.124	***	.084
Has children	.107	.16		.027
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.128	.111		-.032
Vocational education	.169	.116		.043
Further or higher education	-.514	.222	**	-.13
Work experience (r.g.: 0-2 years)				
2-5 years	.597	.125	***	.151
5-10 years	.471	.159	***	.119
10+ years	.458	.19	***	.116

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.14	.149		.035
Ordinary education	.16	.161		.04
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.63	.17	***	-.159
Ordinary education	-.372	.209	*	-.094
No available information	-.259	.142	*	-.065
Year when programme started (r.g.: 1994)				
1993	.803	.13	***	.203
1995	-.311	.099	***	-.078
1996	-.762	.117	***	-.192
1997	-.715	.133	***	-.181
1998	-.902	.157	***	-.228
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.048	.114		-.012
40,000-100,000	.072	.102		.018
>100,000	-.081	.103		-.02
Relative unemployment level	-.839	.304	***	-.212
Relative importance of PRP programmes	.307	.06	***	.077
Common unobserved factor	1.000			

Table A.2

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.83	.361	**	.304
Age (r.g.: 17-24)				
25-29	.123	.133		.045
30-39	-.228	.15		-.083
40-49	-.591	.184	***	-.216
50-66	-.336	.253		-.123
Marital state (r.g.: Single)				
Married	.02	.181		.007
Cohabitating	-.015	.115		-.005
Has children	.06	.148		.022
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.297	.11	***	.109
Vocational education	.262	.105	**	.096
Further or higher education	.172	.255		.063
Work experience (r.g.: 0-2 years)				
2-5 years	.284	.115	**	.104
5-10 years	.407	.154	***	.149
10+ years	.558	.178	***	.204

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.465	.142	***	-.17
Ordinary education	-.371	.156	**	-.136
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.593	.154	***	-.217
Ordinary education	-.239	.203		-.087
No available information	.069	.134		.025
Year when programme started (r.g.: 1994)				
1993	.089	.098		.032
1995	.035	.099		.013
1996	-.099	.126		-.036
1997	-.289	.146	**	-.106
1998	-.074	.202		-.027
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.203	.108	*	.074
40,000-100,000	.041	.098		.015
>100,000	.134	.102		.049
Relative unemployment level	-.53	.327		-.194

Table A.3

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.801	.334	**	.268
Age (r.g.: 17-24)				
25-29	-.243	.159		-.081
30-39	-.552	.173	***	-.185
40-49	-.971	.232	***	-.325
50-66	-.834	.304	***	-.279
Marital state (r.g.: Single)				
Married	-.15	.247		-.05
Cohabitating	.081	.144		.027
Has children	.429	.193	**	.143
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.243	.111	**	.081
Vocational education	.134	.139		.045
Further or higher education	.365	.231		.122
Work experience (r.g.: 0-2 years)				
2-5 years	.351	.139	**	.117
5-10 years	.368	.181	**	.123
10+ years	.835	.217	***	.279

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.573	.162	***	-.192
Ordinary education	.033	.156		.011
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.537	.193	***	-.18
Ordinary education	-.169	.217		-.057
No available information	-.166	.151		-.056
Year when programme started (r.g.: 1994)				
1993	-.142	.178		-.047
1995	.037	.113		.012
1996	.031	.115		.011
1997	.058	.138		.019
1998	-.036	.146		-.012
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.047	.121		-.016
40,000-100,000	-.082	.112		-.027
>100,000	-.237	.107	**	-.079
Relative unemployment level	-.703	.276	**	-.235

Table A.4

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 6 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.319	.149	.207	.325	.532	.171
(.013)	(.008)	(.01)	(.011)	(.007)	(.02)
***	***	***	***	***	***

Table A.5

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 6 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.325	.147	.221	.308	.528	.179
(.014)	(.009)	(.012)	(.011)	(.008)	(.022)
***	***	***	***	***	***

Table A.6

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 6 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment parameters regarding the employment state.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.321	.149	.208	.322	.53	.171
(.013)	(.008)	(.01)	(.011)	(.007)	(.02)
***	***	***	***	***	***

Table A.7

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 6 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	.036	.027
Age (r.g.: 17-24)		
25-29	.126	.126
30-39	.101	.104
40-49	.109	.114
50-66	.156	.16
Marital state (r.g.: Single)		
Married	.057	.056
Cohabitating	-.032	-.034
Has children	-.121	-.124
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	.028	.027
Vocational education	.051	.049
Further or higher education	-.059	-.058
Work experience (r.g.: 0-2 years)		
2-5 years	-.013	-.018
5-10 years	.026	.021
10+ years	-.075	-.082

	$\mathrm{E}_X[\frac{\partial\triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial\triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	.022	.024
Ordinary education	-.147	-.147
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.037	-.031
Ordinary education	-.031	-.028
No available information	.081	.083
Year when programme started (r.g.: 1994)		
1993	.08	.076
1995	.001	.002
1996	-.047	-.042
1997	-.125	-.121
1998	-.015	-.01
Residents in municipality (r.g.: <20,000)		
20,000-40,000	.09	.09
40,000-100,000	.042	.042
>100,000	.128	.129
Relative unemployment level	.041	.049

Table B.1

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.81	.353	**	.204
Age (r.g.: 17-24)				
25-29	.112	.146		.028
30-39	-.066	.156		-.017
40-49	-.245	.192		-.062
50-66	-.12	.265		-.03
Marital state (r.g.: Single)				
Married	.336	.201	*	.085
Cohabitating	.33	.124	***	.083
Has children	.106	.16		.027
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.132	.111		-.033
Vocational education	.166	.116		.042
Further or higher education	-.518	.223	**	-.131
Work experience (r.g.: 0-2 years)				
2-5 years	.591	.125	***	.149
5-10 years	.463	.159	***	.117
10+ years	.449	.19	**	.113

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.134	.149		.034
Ordinary education	.16	.161		.04
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.629	.17	***	-.159
Ordinary education	.-37	.209	*	-.093
No available information	-.263	.142	*	-.066
Year when programme started (r.g.: 1994)				
1993	.799	.13	***	.202
1995	-.31	.099	***	-.078
1996	-.766	.117	***	-.193
1997	-.714	.133	***	-.18
1998	-.902	.157	***	-.228
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.057	.114		-.014
40,000-100,000	.069	.103		.017
>100,000	-.082	.103		-.021
Relative unemployment level	-.851	.303	***	-.215
Relative importance of PRP programmes	.315	.06	***	.08
Common unobserved factor	1.000			

Table B.2

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.792	.377	**	.286
Age (r.g.: 17-24)				
25-29	.131	.137		.047
30-39	-.23	.152		-.083
40-49	-.6	.193	***	-.217
50-66	-.337	.255		-.122
Marital state (r.g.: Single)				
Married	.034	.19		.012
Cohabitating	-.002	.126		-.001
Has children	.062	.15		.022
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.295	.111	***	.107
Vocational education	.271	.114	**	.098
Further or higher education	.146	.268		.053
Work experience (r.g.: 0-2 years)				
2-5 years	.313	.16	*	.113
5-10 years	.428	.18	**	.155
10+ years	.581	.205	***	.21

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.462	.143	***	-.167
Ordinary education	-.364	.158	**	-.132
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.622	.201	***	-.225
Ordinary education	-.253	.215		-.091
No available information	.061	.139		.022
Year when programme started (r.g.: 1994)				
1993	.119	.152		.043
1995	.022	.111		.008
1996	-.133	.187		-.048
1997	-.324	.198		-.117
1998	-.12	.271		-.043
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.204	.109	*	.074
40,000-100,000	.047	.101		.017
>100,000	.127	.105		.046
Relative unemployment level	-.562	.37		-.203
Common unobserved factor	.146	.568		

Table B.3

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.452	1.19		.432
Age (r.g.: 17-24)				
25-29	-.239	.191		-.071
30-39	-.622	.291	**	-.185
40-49	-1.129	.488	**	-.336
50-66	-.934	.489	*	-.278
Marital state (r.g.: Single)				
Married	-.11	.288		-.033
Cohabitating	.158	.208		.047
Has children	.516	.291	*	.154
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.249	.138	*	.074
Vocational education	.184	.193		.055
Further or higher education	.321	.265		.096
Work experience (r.g.: 0-2 years)				
2-5 years	.52	.346		.155
5-10 years	.517	.35		.154
10+ years	1.028	.492	**	.306

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.628	.243	***	-.187
Ordinary education	.082	.198		.024
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.75	.461		-.223
Ordinary education	-.26	.31		-.077
No available information	-.239	.227		-.071
Year when programme started (r.g.: 1994)				
1993	.045	.331		.013
1995	-.025	.151		-.007
1996	-.111	.231		-.033
1997	-.077	.235		-.023
1998	-.218	.308		-.065
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.053	.141		-.016
40,000-100,000	-.053	.131		-.016
>100,000	-.284	.164	*	-.084
Relative unemployment level	-.932	.596		-.278
Common unobserved factor	.643	.939		

Table B.4

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.226	.205	.271	.298	.569	.021
(.126)	(.055)	(.08)	(.112)	(.09)	(.172)
*	***	***	***	***	

Table B.5

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.191	.24	.355	.214	.57	-.049
(.145)	(.112)	(.145)	(.112)	(.066)	(.25)
	**	**	*	***	

Tables B.6

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 6 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional parameters regarding the employment state when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.149	.275	.404	.171	.576	-.126
(.19)	(.178)	(.208)	(.155)	(.084)	(.358)
		*		***	

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.232	.209	.268	.291	.56	.023
(.114)	(.066)	(.088)	(.099)	(.054)	(.178)
**	***	***	***	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.297	.13	.149	.424	.573	.166
(.249)	(.09)	(.079)	(.252)	(.177)	(.329)
		*	*	***	

c. Values when $U_D = 2$.

Table B.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	-.146	-.122
Age (r.g.: 17-24)		
25-29	.119	.124
30-39	.102	.102
40-49	.119	.115
50-66	.156	.156
Marital state (r.g.: Single)		
Married	.045	.058
Cohabitating	-.048	-.036
Has children	-.131	-.129
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	.032	.026
Vocational education	.043	.049
Further or higher education	-.043	-.063
Work experience (r.g.: 0-2 years)		
2-5 years	-.042	-.022
5-10 years	.001	.016
10+ years	-.096	-.084

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	.02	.028
Ordinary education	-.156	-.15
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.001	-.021
Ordinary education	-.014	-.027
No available information	.093	.084
Year when programme started (r.g.: 1994)		
1993	.03	.059
1995	.015	.004
1996	-.015	-.043
1997	-.094	-.121
1998	.022	-.011
Residents in municipality (r.g.: <20,000)		
20,000-40,000	.09	.088
40,000-100,000	.033	.035
>100,000	.13	.128
Relative unemployment level	.074	.047
Relative importance of PRP programmes		.012

Table C.1

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 12 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.797	.354	**	.201
Age (r.g.: 17-24)				
25-29	.106	.146		.027
30-39	-.075	.157		-.019
40-49	-.254	.193		-.064
50-66	-.146	.263		-.037
Marital state (r.g.: Single)				
Married	.344	.2	*	.087
Cohabitating	.334	.125	***	.084
Has children	.107	.16		.027
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.128	.111		-.032
Vocational education	.169	.116		.043
Further or higher education	-.514	.222	**	-.13
Work experience (r.g.: 0-2 years)				
2-5 years	.597	.125	***	.151
5-10 years	.471	.159	***	.119
10+ years	.458	.19	**	.116

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.14	.149		.035
Ordinary education	.16	.161		.04
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.63	.169	***	-.159
Ordinary education	-.372	.209	*	-.094
No available information	-.259	.142	*	-.065
Year when programme started (r.g.: 1994)				
1993	.803	.13	***	.203
1995	-.311	.099	***	-.078
1996	-.762	.117	***	-.192
1997	-.715	.133	***	-.181
1998	-.902	.157	***	-.228
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.048	.115		-.012
40,000-100,000	.072	.103		.018
>100,000	-.081	.103		-.02
Relative unemployment level	-.838	.304	***	-.212
Relative importance of PRP programmes	.307	.06	***	.077
Common unobserved factor	1.000			

Table C.2

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.271	.367	***	.472
Age (r.g.: 17-24)				
25-29	.035	.134		.013
30-39	-.267	.147	*	-.099
40-49	-.73	.184	***	-.271
50-66	-.713	.25	***	-.265
Marital state (r.g.: Single)				
Married	.041	.181		.015
Cohabitating	.028	.113		.01
Has children	.124	.147		.046
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.031	.109		.011
Vocational education	.258	.104	**	.096
Further or higher education	.382	.267		.142
Work experience (r.g.: 0-2 years)				
2-5 years	.2	.115	*	.074
5-10 years	.426	.154	***	.158
10+ years	.569	.179	***	.211

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.319	.142	**	-.119
Ordinary education	-.259	.154	*	-.096
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.505	.152	***	-.188
Ordinary education	-.111	.203		-.041
No available information	.063	.133		.023
Year when programme started (r.g.: 1994)				
1993	.192	.097	**	.071
1995	.056	.098		.021
1996	.013	.125		.005
1997	-.141	.141		-.052
1998	-.019	.196		-.007
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.01	.106		.004
40,000-100,000	-.042	.098		-.016
>100,000	.137	.103		.051
Relative unemployment level	-1.025	.331	***	-.381

Table C.3

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.377	.345		.134
Age (r.g.: 17-24)				
25-29	.064	.153		.023
30-39	-.387	.167	**	-.137
40-49	-.705	.219	***	-.25
50-66	-.848	.286	***	-.3
Marital state (r.g.: Single)				
Married	.115	.237		.041
Cohabitating	.038	.138		.013
Has children	.13	.19		.046
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.144	.108		.051
Vocational education	.418	.136	***	.148
Further or higher education	.307	.212		.109
Work experience (r.g.: 0-2 years)				
2-5 years	.185	.137		.066
5-10 years	.171	.17		.06
10+ years	.169	.211		.06

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.426	.158	***	-.151
Ordinary education	-.134	.155		-.047
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.398	.185	**	-.141
Ordinary education	-.15	.21		-.053
No available information	.012	.149		.004
Year when programme started (r.g.: 1994)				
1993	-.16	.169		-.057
1995	-.12	.108		-.042
1996	-.039	.113		-.014
1997	.008	.137		.003
1998	-.312	.151	**	-.11
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.134	.117		.048
40,000-100,000	-.057	.11		-.02
>100,000	-.058	.107		-.02
Relative unemployment level	-.31	.3		-.11

Table C.4

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 12 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.299	.172	.213	.317	.53	.127
(.012)	(.009)	(.01)	(.011)	(.006)	(.02)
***	***	***	***	***	***

Table C.5

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 12 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.305	.168	.227	.3	.526	.137
(.014)	(.009)	(.012)	(.011)	(.007)	(.022)
***	***	***	***	***	***

Table C.6

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 12 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment parameters regarding the employment state.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.3	.173	.214	.313	.527	.127
(.012)	(.009)	(.01)	(.011)	(.006)	(.02)
***	***	***	***	***	***

Table C.7

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 12 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	.339	.331
Age (r.g.: 17-24)		
25-29	-.01	-.011
30-39	.038	.039
40-49	-.022	-.017
50-66	.035	.039
Marital state (r.g.: Single)		
Married	-.026	-.028
Cohabitating	-.003	-.005
Has children	-.0001	-.001
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.04	-.039
Vocational education	-.052	-.054
Further or higher education	.033	.035
Work experience (r.g.: 0-2 years)		
2-5 years	.009	.004
5-10 years	.098	.094
10+ years	.152	.147

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	.032	.033
Ordinary education	-.049	-.049
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.047	-.041
Ordinary education	.012	.015
No available information	.019	.021
Year when programme started (r.g.: 1994)		
1993	.128	.123
1995	.063	.065
1996	.019	.023
1997	-.055	-.05
1998	.103	.11
Residents in municipality (r.g.: <20,000)		
20,000-40,000	-.044	-.044
40,000-100,000	.004	.004
>100,000	.071	.072
Relative unemployment level	-.271	-.264

Table D.1

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.847	.355	**	.214
Age (r.g.: 17-24)				
25-29	.107	.147		.027
30-39	-.052	.157		-.013
40-49	-.23	.193		-.058
50-66	-.102	.266		-.026
Marital state (r.g.: Single)				
Married	.33	.201	*	.083
Cohabitating	.329	.125	***	.083
Has children	.117	.16		.03
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.126	.111		-.032
Vocational education	.165	.116		.042
Further or higher education	-.516	.223	**	-.13
Work experience (r.g.: 0-2 years)				
2-5 years	.592	.125	***	.149
5-10 years	.463	.159	***	.117
10+ years	.428	.19	**	.108

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.128	.15		.032
Ordinary education	.164	.16		.041
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.633	.169	***	-.16
Ordinary education	-.392	.209	*	-.099
No available information	-.268	.142	*	-.068
Year when programme started (r.g.: 1994)				
1993	.798	.13	***	.201
1995	-.313	.1	***	-.079
1996	-.772	.116	***	-.195
1997	-.713	.133	***	-.18
1998	-.908	.157	***	-.229
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.049	.115		-.012
40,000-100,000	.065	.103		.016
>100,000	-.073	.103		-.019
Relative unemployment level	-.882	.305	***	-.223
Relative importance of PRP programmes	.314	.06	***	.079
Common unobserved factor	1.000			

Table D.2

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.446	.56	***	.484
Age (r.g.: 17-24)				
25-29	.024	.145		.008
30-39	-.28	.165	*	-.094
40-49	-.752	.23	***	-.252
50-66	-.753	.301	**	-.252
Marital state (r.g.: Single)				
Married	.004	.201		.001
Cohabitating	-.009	.134		-.003
Has children	.121	.158		.04
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.045	.12		.015
Vocational education	.252	.114	**	.084
Further or higher education	.468	.342		.157
Work experience (r.g.: 0-2 years)				
2-5 years	.142	.142		.048
5-10 years	.402	.167	**	.135
10+ years	.549	.196	***	.184

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.355	.177	**	-.119
Ordinary education	-.301	.189		-.101
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.47	.165	***	-.157
Ordinary education	-.076	.223		-.026
No available information	.093	.153		.031
Year when programme started (r.g.: 1994)				
1993	.125	.133		.042
1995	.1	.126		.034
1996	.117	.207		.039
1997	-.05	.192		-.017
1998	.117	.29		.039
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.015	.115		.005
40,000-100,000	-.058	.11		-.019
>100,000	.168	.125		.056
Relative unemployment level	-.977	.353	***	-.327
Common unobserved factor	-.436	.661		

Table D.3

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.21	1.23		.334
Age (r.g.: 17-24)				
25-29	.124	.207		.034
30-39	-.47	.291		-.129
40-49	-.91	.499	*	-.251
50-66	-1.037	.573	*	-.286
Marital state (r.g.: Single)				
Married	.214	.338		.059
Cohabitating	.133	.223		.037
Has children	.209	.259		.058
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.144	.14		.04
Vocational education	.554	.326	*	.153
Further or higher education	.261	.265		.072
Work experience (r.g.: 0-2 years)				
2-5 years	.394	.357		.108
5-10 years	.341	.339		.094
10+ years	.319	.349		.088

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.494	.26	*	-.136
Ordinary education	-.11	.195		-.03
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.671	.498		-.185
Ordinary education	-.278	.342		-.077
No available information	-.049	.205		-.013
Year when programme started (r.g.: 1994)				
1993	.082	.364		.023
1995	-.237	.218		-.065
1996	-.243	.298		-.067
1997	-.182	.287		-.05
1998	-.617	.49		-.17
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.167	.162		.046
40,000-100,000	-.015	.143		-.004
>100,000	-.087	.143		-.024
Relative unemployment level	-.591	.589		-.163
Common unobserved factor	.861	1.08		

Table D.4

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.293	.236	.299	.173	.471	.057
(.101)	(.07)	(.044)	(.117)	(.09)	(.149)
***	***	***		***	

Table D.5

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.177	.326	.355	.143	.498	-.149
(.103)	(.119)	(.103)	(.119)	(.068)	(.212)
*	***	***		***	

Tables D.6

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 12 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional parameters regarding the employment state when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.098	.441	.341	.12	.461	-.344
(.103)	(.199)	(.147)	(.165)	(.127)	(.291)
	**	**		***	

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.273	.217	.326	.185	.51	.056
(.104)	(.073)	(.082)	(.102)	(.041)	(.176)
***	***	***	*	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.536	.076	.205	.183	.388	.46
(.24)	(.056)	(.101)	(.221)	(.185)	(.295)
**		**		**	

c. Values when $U_D = 2$.

Table D.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	.15	.268
Age (r.g.: 17-24)		
25-29	-.026	-.014
30-39	.036	.022
40-49	-.001	-.043
50-66	.033	.003
Marital state (r.g.: Single)		
Married	-.058	-.021
Cohabitating	-.04	-.004
Has children	-.017	-.001
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.024	-.036
Vocational education	-.068	-.042
Further or higher education	.085	.039
Work experience (r.g.: 0-2 years)		
2-5 years	-.061	.007
5-10 years	.041	.097
10+ years	.096	.151

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	.017	.022
Ordinary education	-.07	-.058
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	.028	-.051
Ordinary education	.051	.006
No available information	.044	.017
Year when programme started (r.g.: 1994)		
1993	.019	.105
1995	.099	.065
1996	.106	.024
1997	.033	-.044
1998	.209	.109
Residents in municipality (r.g.: <20,000)		
20,000-40,000	-.041	-.044
40,000-100,000	-.015	-.009
>100,000	.08	.074
Relative unemployment level	-.165	-.275
Relative importance of PRP programmes		.033

Table E.1

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 24 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.801	.354	**	.202
Age (r.g.: 17-24)				
25-29	.106	.147		.027
30-39	-.074	.157		-.019
40-49	-.253	.192		-.064
50-66	-.143	.265		-.036
Marital state (r.g.: Single)				
Married	.34	.201	*	.086
Cohabitating	.333	.125	***	.084
Has children	.109	.16		.027
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.127	.111		-.032
Vocational education	.169	.117		.043
Further or higher education	-.508	.223	**	-.128
Work experience (r.g.: 0-2 years)				
2-5 years	.597	.126	***	.151
5-10 years	.471	.159	***	.119
10+ years	.456	.191	**	.115

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.139	.149		.035
Ordinary education	.16	.161		.04
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.628	.169	***	-.159
Ordinary education	-.372	.209	*	-.094
No available information	-.257	.142	*	-.065
Year when programme started (r.g.: 1994)				
1993	.801	.129	***	.202
1995	-.311	.099	***	-.079
1996	-.764	.117	***	-.193
1997	-.72	.133	***	-.182
1998	-.902	.157	***	-.228
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.049	.115		-.012
40,000-100,000	.073	.102		.018
>100,000	-.081	.103		-.02
Relative unemployment level	-.841	.304	***	-.212
Relative importance of PRP programmes	.306	.06	***	.077
Common unobserved factor	1.000			

Table E.2

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.289	.359		.107
Age (r.g.: 17-24)				
25-29	.121	.133		.045
30-39	-.281	.143	**	-.104
40-49	-.571	.186	***	-.212
50-66	-.539	.256	**	-.2
Marital state (r.g.: Single)				
Married	.02	.185		.007
Cohabitating	-.002	.114		-.001
Has children	.3	.15	**	.111
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.197	.11	*	-.073
Vocational education	.163	.105		.06
Further or higher education	.469	.286		.174
Work experience (r.g.: 0-2 years)				
2-5 years	.258	.113	**	.096
5-10 years	.516	.149	***	.191
10+ years	.484	.18	***	.179

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.31	.143	**	-.115
Ordinary education	-.381	.157	**	-.141
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.767	.157	***	-.284
Ordinary education	-.177	.206		-.066
No available information	-.204	.137		-.076
Year when programme started (r.g.: 1994)				
1993	.066	.098		.024
1995	.072	.099		.027
1996	.109	.128		.04
1997	-.08	.143		-.03
1998	.02	.179		.008
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.258	.11	**	.095
40,000-100,000	.076	.099		.028
>100,000	.121	.102		.045
Relative unemployment level	.002	.322		.001

Table E.3

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.004	.353		.001
Age (r.g.: 17-24)				
25-29	-.19	.16		-.067
30-39	-.684	.172	***	-.24
40-49	-1.004	.207	***	-.353
50-66	-1.263	288	***	-.444
Marital state (r.g.: Single)				
Married	.247	.23		.087
Cohabitating	-.04	.137		-.014
Has children	.265	.179		.093
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.012	.109		-.004
Vocational education	.176	.137		.062
Further or higher education	.269	.223		.094
Work experience (r.g.: 0-2 years)				
2-5 years	.528	.141	***	.185
5-10 years	.46	.171	***	.162
10+ years	.807	.197	***	.283

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.193	.157		-.068
Ordinary education	-.241	.16		-.085
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.469	.186	**	-.165
Ordinary education	.075	.213		.026
No available information	-.009	.152		-.003
Year when programme started (r.g.: 1994)				
1993	-.19	.178		-.067
1995	.138	.109		.049
1996	.248	.115	**	.087
1997	.213	.13		.075
1998	-.166	.152		-.058
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.283	.118	**	.1
40,000-100,000	.167	.111		.059
>100,000	.008	.108		.003
Relative unemployment level	-.253	.305		-.089

Table E.4

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 24 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.29	.175	.201	.334	.535	.115
(.012)	(.009)	(.01)	(.012)	(.006)	(.02)
***	***	***	***	***	***

Table E.5

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 24 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.296	.172	.214	.319	.532	.124
(.013)	(.01)	(.012)	(.011)	(.007)	(.022)
***	***	***	***	***	***

Table E.6

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 24 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment parameters regarding the employment state.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.292	.176	.202	.33	.532	.116
(.012)	(.009)	(.01)	(.011)	(.006)	(.02)
***	***	***	***	***	***

Table E.7

Model without selection on the unobservables ($\alpha_1 = \alpha_0 = 0$), employment state 24 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	.106	.1
Age (r.g.: 17-24)		
25-29	.111	.111
30-39	.136	.139
40-49	.141	.146
50-66	.244	.248
Marital state (r.g.: Single)		
Married	-.079	-.082
Cohabitating	.013	.011
Has children	.018	.016
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.069	-.068
Vocational education	-.002	-.003
Further or higher education	.079	.081
Work experience (r.g.: 0-2 years)		
2-5 years	-.09	-.095
5-10 years	.029	.024
10+ years	-.104	-.11

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	-.047	-.047
Ordinary education	-.057	-.056
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.119	-.113
Ordinary education	-.092	-.089
No available information	-.072	-.07
Year when programme started (r.g.: 1994)		
1993	.091	.087
1995	-.022	-.02
1996	-.047	-.043
1997	-.104	-.1
1998	.066	.071
Residents in municipality (r.g.: <20,000)		
20,000-40,000	-.004	-.005
40,000-100,000	-.031	-.032
>100,000	.042	.042
Relative unemployment level	.089	.095

Table F.1

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, estimates of the parameters determining selection into PRP programmes.

	Coeff.	Std.	Sgl.	Marg.
Constant	.781	.355	**	.197
Age (r.g.: 17-24)				
25-29	.11	.147		.028
30-39	-.06	.157		-.015
40-49	-.245	.192		-.062
50-66	-.138	.266		-.035
Marital state (r.g.: Single)				
Married	.337	.202	*	.085
Cohabitating	.331	.125	***	.084
Has children	.112	.16		.028
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.125	.112		-.031
Vocational education	.17	.117		.043
Further or higher education	-.517	.223	**	-.13
Work experience (r.g.: 0-2 years)				
2-5 years	.588	.126	***	.148
5-10 years	.461	.159	***	.116
10+ years	.443	.19	**	.112

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.143	.149		.036
Ordinary education	.159	.161		.04
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.632	.169	***	-.16
Ordinary education	-.383	.209	*	-.097
No available information	-.259	.142	*	-.065
Year when programme started (r.g.: 1994)				
1993	.803	.129	***	.203
1995	-.309	.099	***	-.078
1996	-.76	.117	***	-.192
1997	-.715	.133	***	-.181
1998	-.898	.157	***	-.227
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.051	.115		-.013
40,000-100,000	.073	.102		.018
>100,000	-.078	.103		-.02
Relative unemployment level	-.827	.306	***	-.209
Relative importance of PRP programmes	.31	.06	***	.078
Common unobserved factor	1.000			

Table F.2

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.377	.416		.133
Age (r.g.: 17-24)				
25-29	.113	.138		.04
30-39	-.286	.154	*	-.101
40-49	-.573	.199	***	-.203
50-66	-.549	.274	**	-.194
Marital state (r.g.: Single)				
Married	-.008	.198		-.003
Cohabitating	-.03	.13		-.011
Has children	.303	.159	*	.107
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.195	.115		-.069
Vocational education	.153	.109		.054
Further or higher education	.532	.336		.188
Work experience (r.g.: 0-2 years)				
2-5 years	.218	.135		.077
5-10 years	.496	.157	***	.175
10+ years	.461	.189	**	.163

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.332	.162	**	-.117
Ordinary education	-.409	.182	**	-.145
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.744	.164	***	-.263
Ordinary education	-.155	.216		-.055
No available information	-.192	.142		-.068
Year when programme started (r.g.: 1994)				
1993	.006	.146		.002
1995	.101	.121		.036
1996	.183	.203		.065
1997	-.016	.195		-.006
1998	.11	.263		.039
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.271	.12	**	.096
40,000-100,000	.067	.103		.024
>100,000	.141	.115		.05
Relative unemployment level	.073	.359		.026
Common unobserved factor	-.311	.595		

Table F.3

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period.

	Coeff.	Std.	Sgl.	Marg.
Constant	.261	.739		.092
Age (r.g.: 17-24)				
25-29	-.191	.164		-.067
30-39	-.715	.198	***	-.251
40-49	-1.064	.272	***	-.373
50-66	-1.332	.365	***	-.467
Marital state (r.g.: Single)				
Married	.289	.257		.101
Cohabitating	-.015	.159		-.005
Has children	.281	.196		.098
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.022	.115		-.008
Vocational education	.191	.155		.067
Further or higher education	.243	.238		.085
Work experience (r.g.: 0-2 years)				
2-5 years	.593	.246	**	.208
5-10 years	.516	.238	**	.181
10+ years	.875	.283	***	.307

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.182	.161		-.064
Ordinary education	-.229	.164		-.08
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.534	.284	*	-.187
Ordinary education	.041	.231		.014
No available information	-.033	.165		-.011
Year when programme started (r.g.: 1994)				
1993	-.109	.274		-.038
1995	.119	.122		.042
1996	.201	.169		.07
1997	.168	.178		.059
1998	-.234	.257		-.082
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.284	.126	**	.1
40,000-100,000	.183	.13		.064
>100,000	.003	.111		.001
Relative unemployment level	-.347	.384		-.122
Common unobserved factor	.259	.717		

Table F.4

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.307	.187	.245	.261	.506	.119
(.099)	(.095)	(.064)	(.122)	(.064)	(.183)
***	**	***	**	***	

Table F.5

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, average treatment effect on the treated $\triangle^{ATT}$ and associated distributional treatment parameters regarding the employment state.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.248	.231	.262	.26	.521	.017
(.127)	(.159)	(.127)	(.159)	(.043)	(.284)
*		**		***	

Tables F.6

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 24 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional parameters regarding the employment state when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.196	.285	.244	.276	.519	-.089
(.168)	(.248)	(.175)	(.242)	(.081)	(.415)
				***	

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.303	.182	.252	.263	.515	.122
(.103)	(.085)	(.082)	(.106)	(.036)	(.185)
***	**	***	**	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.429	.105	.237	.229	.466	.324
(.223)	(.091)	(.117)	(.211)	(.133)	(.314)
*		**		***	

c. Values when $U_D = 2$.

Table F.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$\mathrm{E}_X[\frac{\partial\triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial\triangle^{ATT}}{\partial z}]$
Constant	.042	.081
Age (r.g.: 17-24)		
25-29	.107	.115
30-39	.15	.152
40-49	.171	.166
50-66	.273	.276
Marital state (r.g.: Single)		
Married	-.104	-.089
Cohabitating	-.005	.012
Has children	.009	.013
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.061	-.068
Vocational education	-.013	-.005
Further or higher education	.103	.075
Work experience (r.g.: 0-2 years)		
2-5 years	-.131	-.105
5-10 years	-.006	.015
10+ years	-.144	-.127

	$\mathrm{E}_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$\mathrm{E}_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	-.054	-.045
Ordinary education	-.064	-.055
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.076	-.106
Ordinary education	-.069	-.09
No available information	-.057	-.07
Year when programme started (r.g.: 1994)		
1993	.04	.083
1995	-.006	-.023
1996	-.006	-.047
1997	-.065	-.103
1998	.121	.076
Residents in municipality (r.g.: <20,000)		
20,000-40,000	-.004	-.008
40,000-100,000	-.041	-.038
>100,000	.049	.045
Relative unemployment level	.148	.108
Relative importance of PRP programmes		.016

Table G.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	.94	.343	***	.237
Age (r.g.: 17-24)				
25-29	.064	.141		.016
30-39	-.077	.151		-.019
40-49	-.279	.187		-.07
50-66	-.135	.262		-.034
Marital state (r.g.: Single)				
Married	.331	.201	*	.084
Cohabitating	.36	.124	***	.091
Has children	.115	.161		.029
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.16	.109		-.041
Vocational education	.162	.113		.041
Further or higher education	-.448	.223	**	-.113
Work experience (r.g.: 0-2 years)				
2-5 years	.564	.121	***	.142
5-10 years	.442	.154	***	.112
10+ years	.46	.188	**	.116

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.113	.145		.029
Ordinary education	.132	.159		.033
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.59	.165	***	-.149
Ordinary education	.-349	.205	*	-.088
No available information	-.211	.14		-.053
Year when programme started (r.g.: 1994)				
1993	.794	.128	***	.201
1995	-.291	.098	***	-.074
1996	-.773	.114	***	-.195
1997	-.757	.129	***	-.191
1998	-.887	.154	***	-.224
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.032	.113		-.008
40,000-100,000	.064	.1		.016
>100,000	-.053	.101		-.013
Relative unemployment level	-.989	.291	***	-.25
Relative importance of PRP programmes	.312	.059	***	.079
Common unobserved factor	1.000			

Table G.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	.783	.57		.203
Age (r.g.: 17-24)				
25-29	.173	.233		.045
30-39	-.296	.311		-.077
40-49	-.81	.774		-.21
50-66	-.446	.499		-.116
Marital state (r.g.: Single)				
Married	.107	.302		.028
Cohabitating	.076	.237		.02
Has children	.099	.216		.026
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.332	.24		.086
Vocational education	.37	.368		.096
Further or higher education	.073	.35		.019
Work experience (r.g.: 0-2 years)				
2-5 years	.495	.606		.129
5-10 years	.619	.664		.161
10+ years	.817	.841		.212

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.558	.431		-.145
Ordinary education	-.433	.347		-.112
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.894	.936		-.232
Ordinary education	-.4	.504		-.104
No available information	.034	.177		.009
Year when programme started (r.g.: 1994)				
1993	.286	.468		.074
1995	-.042	.198		-.011
1996	-.351	.629		-.091
1997	-.594	.812		-.154
1998	-.367	.725		-.095
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.271	.243		.067
40,000-100,000	.07	.151		.018
>100,000	.165	.176		.043
Relative unemployment level	-.935	1.18		-.243
Relative importance of PRP programmes	.096	.202		.025
Common unobserved factor	.899	1.9		

Table G.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	-.225	.983		.-.017
Age (r.g.: 17-24)				
25-29	-.629	.463		-.046
30-39	-1.753	.513	***	-.129
40-49	-2.45	.732	***	-.181
50-66	-2.328	.855	***	-.172
Marital state (r.g.: Single)				
Married	-.661	.631		-.049
Cohabitating	-.285	.402		-.021
Has children	1.088	.524	**	.08
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	1.033	.373	***	.076
Vocational education	.257	.407		.019
Further or higher education	1.166	.598	*	.086
Work experience (r.g.: 0-2 years)				
2-5 years	.974	.4	**	.072
5-10 years	1.054	.524	**	.078
10+ years	1.912	.707	***	.141

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-1.82	.538	***	-.134
Ordinary education	.449	.49		.033
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-1.361	.536	**	-.1
Ordinary education	-.162	.641		-.012
No available information	-.705	.448		-.052
Year when programme started (r.g.: 1994)				
1993	-1.075	.439	**	-.079
1995	.366	.34		.027
1996	1.122	.396	***	.083
1997	1.512	.509	***	.112
1998	.752	.486		.056
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.228	.355		-.017
40,000-100,000	-.254	.337		-.019
>100,000	-.969	.344	***	-.072
Relative unemployment level	-.686	.787		-.051
Relative importance of PRP programmes	-.813	.234	***	-.06
Common unobserved factor	-3.236	.54	***	

Table H.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	.81	.355	**	.204
Age (r.g.: 17-24)				
25-29	.104	.146		.026
30-39	-.08	.157		-.02
40-49	-.257	.194		-.065
50-66	-.13	.264		-.033
Marital state (r.g.: Single)				
Married	.338	.199	*	.085
Cohabitating	.324	.126	***	.082
Has children	.11	.161		.028
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.127	.111		-.032
Vocational education	.171	.116		.043
Further or higher education	-.508	.223	**	-.128
Work experience (r.g.: 0-2 years)				
2-5 years	.6	.125	***	.151
5-10 years	.458	.16	***	.116
10+ years	.454	.19	**	.115

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.132	.15		.033
Ordinary education	.152	.161		.038
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.622	.17	***	-.157
Ordinary education	-.364	.21	*	-.092
No available information	-.266	.142	*	-.067
Year when programme started (r.g.: 1994)				
1993	.798	.13	***	.201
1995	-.312	.099	***	-.079
1996	-.764	.117	***	-.193
1997	-.722	.133	***	-.182
1998	-.909	.157	***	-.229
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.055	.115		-.014
40,000-100,000	.073	.103		.018
>100,000	-.081	.103		-.02
Relative unemployment level	-.846	.304	***	-.213
Relative importance of PRP programmes	.312	.06	***	.079
Common unobserved factor	1.000			

Table H.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.097	.576	*	.32
Age (r.g.: 17-24)				
25-29	.063	.187		.018
30-39	-.31	.321		-.091
40-49	-.89	.853		-.26
50-66	-.832	.763		-.243
Marital state (r.g.: Single)				
Married	.101	.312		.03
Cohabitating	.099	.265		.029
Has children	.16	.243		.047
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.007	.137		.002
Vocational education	.327	.362		.095
Further or higher education	.303	.317		.089
Work experience (r.g.: 0-2 years)				
2-5 years	.352	.573		.103
5-10 years	.587	.695		.171
10+ years	.742	.831		.216

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.338	.263		-.099
Ordinary education	-.269	.227		-.078
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.71	.87		-.207
Ordinary education	-.205	.413		-.06
No available information	.026	.186		.008
Year when programme started (r.g.: 1994)				
1993	.356	.615		.104
1995	-.007	.2		-.002
1996	-.159	.557		-.047
1997	-.328	.672		-.096
1998	-.229	.727		-.067
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.018	.125		.005
40,000-100,000	-.037	.117		-.011
>100,000	.172	.157		.05
Relative unemployment level	-1.31	1.49		-.382
Relative importance of PRP programmes	.138	.27		.04
Common unobserved factor	.688	2.15		

Table H.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	.782	2.30		.272
Age (r.g.: 17-24)				
25-29	.074	.191		.026
30-39	-.413	.325		-.143
40-49	-.759	.62		-.264
50-66	-.918	.626		-.319
Marital state (r.g.: Single)				
Married	.154	.405		.053
Cohabitating	.071	.319		.025
Has children	.153	.245		.053
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.134	.114		.047
Vocational education	.445	.382		.155
Further or higher education	.293	.293		.102
Work experience (r.g.: 0-2 years)				
2-5 years	.25	.594		.087
5-10 years	.228	.494		.079
10+ years	.232	.512		.081

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.413	.193	**	-.144
Ordinary education	-.098	.172		-.034
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.495	.737		-.172
Ordinary education	-.195	.43		-.068
No available information	-.015	.259		-.005
Year when programme started (r.g.: 1994)				
1993	-.043	.687		-.015
1995	-.15	.324		-.052
1996	-.088	.594		-.031
1997	-.044	.553		-.015
1998	-.38	.846		-.132
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.152	.125		.053
40,000-100,000	-.002	.127		-.001
>100,000	-.055	.151		-.019
Relative unemployment level	-.436	.862		-.151
Relative importance of PRP programmes	-.098	.195		-.034
Common unobserved factor	.308	2.49		

Table I.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	.809	.347	**	.204
Age (r.g.: 17-24)				
25-29	.086	.146		.022
30-39	-.141	.156		-.036
40-49	-.311	.190		-.079
50-66	-.191	.261		-.048
Marital state (r.g.: Single)				
Married	.365	.198	*	.092
Cohabitating	.337	.124	***	.085
Has children	.09	.159		.023
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.162	.11		-.041
Vocational education	.164	.116		.041
Further or higher education	-.466	.22	**	-.117
Work experience (r.g.: 0-2 years)				
2-5 years	.604	.125	***	.152
5-10 years	.502	.159	***	.127
10+ years	.506	.189	***	.128

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.138	.147		.035
Ordinary education	.172	.16		.043
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.6	.168	***	-.151
Ordinary education	-.324	.208		-.082
No available information	-.249	.141	*	-.063
Year when programme started (r.g.: 1994)				
1993	.801	.129	***	.202
1995	-.311	.099	***	-.078
1996	-.767	.116	***	-.193
1997	-.714	.131	***	-.180
1998	-.902	.154	***	-.228
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.038	.114		-.01
40,000-100,000	.07	.102		.018
>100,000	-.089	.102		-.022
Relative unemployment level	-.845	.297	***	-.213
Relative importance of PRP programmes	.304	.06	***	.077
Common unobserved factor	1.000			

Table I.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	-.044	.643		-.008
Age (r.g.: 17-24)				
25-29	.245	.24		.044
30-39	-.524	.275	*	-.093
40-49	-1.095	.437	**	-.195
50-66	-1.01	.535	*	-.179
Marital state (r.g.: Single)				
Married	.209	.33		.037
Cohabitating	.168	.211		.03
Has children	.496	.286	*	.088
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.426	.238	*	-.076
Vocational education	.329	.197	*	.058
Further or higher education	.529	.514		.094
Work experience (r.g.: 0-2 years)				
2-5 years	.682	.287	**	.121
5-10 years	1.077	.381	***	.191
10+ years	1.034	.42	**	.184

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.441	.276		-.078
Ordinary education	-.555	.32	*	-.099
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-1.56	.512	***	-.277
Ordinary education	-.449	.38		-.08
No available information	-.457	.264	*	-.081
Year when programme started (r.g.: 1994)				
1993	.418	.229	**	.074
1995	-.03	.181		-.005
1996	-.233	.269		-.041
1997	-.496	.338		-.088
1998	-.426	.362		-.076
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.44	.233	*	.078
40,000-100,000	.162	.181		.029
>100,000	.212	.192		.038
Relative unemployment level	-.488	.614		-.087
Relative importance of PRP programmes	.266	.135	**	.047
Common unobserved factor	1.56	.614	**	

Table I.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period, instrument's validation.

	Coeff.	Std.	Sgl.	Marg.
Constant	-1.23	.977		-.177
Age (r.g.: 17-24)				
25-29	-.392	.355		-.057
30-39	-1.156	.580	**	-.167
40-49	-1.618	.722	**	-.234
50-66	-2.2	1.01	**	-.318
Marital state (r.g.: Single)				
Married	.339	.425		.049
Cohabitating	-.227	.285		-.033
Has children	.399	.357		.058
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.08	.211		.012
Vocational education	.232	.259		.033
Further or higher education	.659	.522		.095
Work experience (r.g.: 0-2 years)				
2-5 years	.652	.34	*	.094
5-10 years	.561	.355		.081
10+ years	1.187	.568	**	.171

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.418	.353		-.06
Ordinary education	-.526	.385		-.076
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.502	.367		-.072
Ordinary education	.33	.447		.048
No available information	.157	.309		.023
Year when programme started (r.g.: 1994)				
1993	-.785	.431	*	-.113
1995	.451	.343		.065
1996	.891	.543		.129
1997	.792	.525		.114
1998	.215	.378		.031
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.528	.308	*	.076
40,000-100,000	.286	.24		.041
>100,000	.071	.207		.01
Relative unemployment level	-.117	.575		-.017
Relative importance of PRP programmes	-.2	.17		-.029
Common unobserved factor	-1.64	.842	*	

Table J.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.243	.344	***	.316
Age (r.g.: 17-24)				
25-29	.103	.145		.026
30-39	-.092	.153		-.023
40-49	-.257	.188		-.065
50-66	-.151	.258		-.038
Marital state (r.g.: Single)				
Married	.354	.199	*	.09
Cohabitating	.335	.124	***	.085
Has children	.11	.161		.028
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.141	.111		-.036
Vocational education	.167	.115		.042
Further or higher education	-.451	.22	**	-.115
Work experience (r.g.: 0-2 years)				
2-5 years	.602	.124	***	.153
5-10 years	.484	.157	***	.123
10+ years	.485	.186	***	.123

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.139	.147		.035
Ordinary education	.201	.16		.051
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.633	.169	***	-.161
Ordinary education	.-34	.209		-.086
No available information	-.238	.142	*	-.06
Year when programme started (r.g.: 1994)				
1993	.838	.13	***	.213
1995	-.29	.098	***	-.074
1996	-.74	.116	***	-.188
1997	-.704	.132	***	-.179
1998	-.886	.157	***	-.225
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.043	.113		-.011
40,000-100,000	.134	.1		.034
>100,000	-.123	.102		-.031
Relative unemployment level	-.966	.299	***	-.245
Common unobserved factor	1.000			

Table J.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	.89	.682		.246
Age (r.g.: 17-24)				
25-29	.167	.255		.046
30-39	-.295	.348		-.082
40-49	-.772	.84		-.214
50-66	-.446	.551		-.123
Marital state (r.g.: Single)				
Married	.103	.337		.029
Cohabitating	-.058	.255		.016
Has children	.088	.211		.024
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.329	.261		.091
Vocational education	.355	.414		.098
Further or higher education	.099	.348		.027
Work experience (r.g.: 0-2 years)				
2-5 years	.476	.717		.131
5-10 years	.6	.777		.166
10+ years	.787	.962		.218

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.528	.435		-.146
Ordinary education	-.403	.318		-.111
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.845	1.07		-.234
Ordinary education	-.366	.547		-.101
No available information	.035	.181		.01
Year when programme started (r.g.: 1994)				
1993	.269	.58		.075
1995	-.023	.209		-.006
1996	-.307	.696		-.085
1997	-.524	.866		-.145
1998	-.313	.823		-.087
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.236	.237		.065
40,000-100,000	.077	.181		.021
>100,000	.135	.14		.037
Relative unemployment level	-.907	1.32		-.251
Common unobserved factor	.785	2.29		

Table J.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	-.189	.671		.-.027
Age (r.g.: 17-24)				
25-29	-.424	.329		-.06
30-39	-.878	.437	**	-.125
40-49	-1.455	.614	**	-.207
50-66	-1.315	.714	*	-.187
Marital state (r.g.: Single)				
Married	-.41	.447		-.058
Cohabitating	-.054	.266		-.008
Has children	.689	.414	*	.098
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.491	.288	*	.07
Vocational education	.131	.246		.019
Further or higher education	.765	.511		.109
Work experience (r.g.: 0-2 years)				
2-5 years	.309	.246		.044
5-10 years	.387	.323		.055
10+ years	1.148	.519	**	.163

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-1.062	.535	**	-.151
Ordinary education	-.036	.277		-.005
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.61	.365	*	-.087
Ordinary education	-.068	.384		-.01
No available information	-.154	.267		-.022
Year when programme started (r.g.: 1994)				
1993	-.739	.474		-.105
1995	.195	.238		.027
1996	.414	.338		.059
1997	.464	.37		.066
1998	.341	.362		.048
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.049	.212		-.007
40,000-100,000	-.208	.213		-.029
>100,000	-.355	.234		-.05
Relative unemployment level	-.648	.509		-.092
Common unobserved factor	-1.564	.824	*	

Table K.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.138	.346	***	.29
Age (r.g.: 17-24)				
25-29	.116	.146		.03
30-39	-.07	.156		-.018
40-49	-.238	.19		-.06
50-66	-.15	.258		-.038
Marital state (r.g.: Single)				
Married	.353	.198	*	.09
Cohabitating	.324	.125	***	.083
Has children	.123	.16		.031
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.118	.111		-.03
Vocational education	.167	.115		.042
Further or higher education	-.454	.221	**	-.116
Work experience (r.g.: 0-2 years)				
2-5 years	.599	.125	***	.153
5-10 years	.485	.158	***	.123
10+ years	.477	.186	**	.121

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.132	.148		.033
Ordinary education	.206	.159		.052
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.633	.169	***	-.161
Ordinary education	-.366	.208	*	-.093
No available information	-.244	.141	*	-.062
Year when programme started (r.g.: 1994)				
1993	.834	.13	***	.212
1995	-.296	.098	***	-.075
1996	-.728	.116	***	-.185
1997	-.7	.132	***	-.178
1998	-.877	.158	***	-.223
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.037	.114		-.009
40,000-100,000	.145	.101		.037
>100,000	-.12	.102		-.031
Relative unemployment level	-.872	.303	***	-.222
Common unobserved factor	1.000			

Table K.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.356	.721	*	.493
Age (r.g.: 17-24)				
25-29	.027	.143		.01
30-39	-.267	.152	*	-.097
40-49	-.726	.193	***	-.264
50-66	-.715	.27	***	-.26
Marital state (r.g.: Single)				
Married	.022	.223		.008
Cohabitating	.019	.171		.004
Has children	.122	.15		.044
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.037	.122		.013
Vocational education	.253	.108	**	.092
Further or higher education	.42	.403		.153
Work experience (r.g.: 0-2 years)				
2-5 years	.168	.236		.061
5-10 years	.406	.187	**	.148
10+ years	.549	.204	***	.2

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.331	.187	*	-.12
Ordinary education	-.273	.211		-.1
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.479	.215	**	-.174
Ordinary education	-.093	.241		-.034
No available information	.076	.168		.027
Year when programme started (r.g.: 1994)				
1993	.156	.265		.057
1995	.073	.172		.026
1996	.055	.363		.02
1997	-.105	.331		-.038
1998	.033	.462		.012
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.009	.109		.003
40,000-100,000	-.054	.125		-.02
>100,000	.143	.127		.052
Relative unemployment level	-1.01	.365	***	-.368
Common unobserved factor	-.191	1.45		

Table K.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	.706	3.04		.242
Age (r.g.: 17-24)				
25-29	.075	.218		.026
30-39	-.419	.408		-.143
40-49	-.781	.804		-.267
50-66	-.925	.835		-.316
Marital state (r.g.: Single)				
Married	.169	.489		.058
Cohabitating	.081	.374		.028
Has children	.149	.294		.051
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.135	.114		.046
Vocational education	.458	.498		.157
Further or higher education	.264	.283		.09
Work experience (r.g.: 0-2 years)				
2-5 years	.269	.733		.092
5-10 years	.242	.625		.083
10+ years	.245	.639		.084

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.426	.241	*	-.146
Ordinary education	-.113	.188		-.039
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.496	.929		-.17
Ordinary education	-.201	.514		-.069
No available information	-.019	.28		-.006
Year when programme started (r.g.: 1994)				
1993	.047	.83		-.016
1995	-.157	.387		-.054
1996	-.118	.7		-.04
1997	-.068	.654		-.023
1998	-.42	1.05		-.144
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.14	.138		.048
40,000-100,000	-.04	.149		-.014
>100,000	-.074	.201		-.025
Relative unemployment level	-.398	1.07		-.136
Common unobserved factor	.375	3		

Table L.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.15	.346	***	.292
Age (r.g.: 17-24)				
25-29	.121	.147		.031
30-39	-.07	.156		-.018
40-49	-.233	.189		-.059
50-66	-.143	.259		-.036
Marital state (r.g.: Single)				
Married	.346	.199	*	.088
Cohabitating	.326	.125	***	.083
Has children	.122	.159		.031
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.118	.111		-.03
Vocational education	.17	.116		.043
Further or higher education	-.461	.221	**	-.117
Work experience (r.g.: 0-2 years)				
2-5 years	.597	.125	***	.152
5-10 years	.478	.159	***	.122
10+ years	.476	.188	**	.121

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.131	.148		.033
Ordinary education	.205	.16		.052
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.635	.169	***	-.162
Ordinary education	-.361	.208	*	-.092
No available information	-.245	.141	*	-.062
Year when programme started (r.g.: 1994)				
1993	.831	.13	***	.211
1995	-.3	.099	***	-.076
1996	-.731	.116	***	-.186
1997	-.699	.132	***	-.178
1998	-.88	.158	***	-.224
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.044	.113		-.011
40,000-100,000	.146	.101		.037
>100,000	-.124	.102		-.032
Relative unemployment level	-.877	.303	***	-.223
Common unobserved factor	1.000			

Table L.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	.306	.522		.113
Age (r.g.: 17-24)				
25-29	.121	.144		.045
30-39	-.281	.145	*	-.104
40-49	-.572	.205	***	-.212
50-66	-.539	.26	**	-.2
Marital state (r.g.: Single)				
Married	.018	.226		.007
Cohabitating	-.003	.172		-.001
Has children	.3	.156	*	.111
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.197	.12	*	-.073
Vocational education	.164	.124		.061
Further or higher education	.471	.364		.174
Work experience (r.g.: 0-2 years)				
2-5 years	.259	.272		.096
5-10 years	.513	.24	**	.19
10+ years	.481	.267	*	.178

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.311	.154	**	-.115
Ordinary education	-.383	.18	**	-.142
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.769	.297	***	-.284
Ordinary education	-.179	.25		-.066
No available information	-.206	.162		-.076
Year when programme started (r.g.: 1994)				
1993	.067	.302		.025
1995	.073	.165		.027
1996	.109	.362		.04
1997	-.08	.352		-.03
1998	.023	.468		.008
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.257	.11	**	.095
40,000-100,000	.073	.118		.027
>100,000	.119	.112		.044
Relative unemployment level	-.015	.467		-.005
Common unobserved factor	.006	1.45		

Table L.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period, no additional instrument.

	Coeff.	Std.	Sgl.	Marg.
Constant	.287	2.79		.099
Age (r.g.: 17-24)				
25-29	-.191	.167		-.066
30-39	-.728	.559		-.252
40-49	-1.08	.924		-.373
50-66	-1.35	1.02		-.466
Marital state (r.g.: Single)				
Married	.295	.551		.102
Cohabitating	-.005	.325		-.002
Has children	.286	.355		.099
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.022	.16		-.008
Vocational education	.202	.328		.07
Further or higher education	.242	.318		.084
Work experience (r.g.: 0-2 years)				
2-5 years	.612	.936		.212
5-10 years	.535	.776		.185
10+ years	.9	1.01		.311

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.186	.163		-.064
Ordinary education	-.228	.168		-.079
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.55	.933		-.19
Ordinary education	.04	.367		.014
No available information	-.035	.293		-.012
Year when programme started (r.g.: 1994)				
1993	-.09	.836		-.032
1995	.118	.228		.041
1996	.188	.518		.065
1997	.15	.527		.052
1998	-.252	.928		-.087
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.293	.189		.101
40,000-100,000	.192	.272		.067
>100,000	-.004	.164		-.001
Relative unemployment level	-.337	1.02		-.117
Common unobserved factor	.327	3.02		

Table M.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, discrete distr. of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.04	.359	***	.26
Age (r.g.: 17-24)				
25-29	.128	.144		.032
30-39	-.032	.157		-.008
40-49	-.224	.198		-.056
50-66	-.16	.261		-.04
Marital state (r.g.: Single)				
Married	.36	.198	*	.09
Cohabitating	.342	.126	***	.085
Has children	.09	.157		.022
Completed education (r.g.: Primary or lower secondary school)				
Upper secondary school	-.132	.118		-.033
Vocational education	.156	.112		.039
Further or higher education	-.597	.242	**	-.149
Work experience (r.g.: 0-2 years)				
2-5 years	.627	.128	***	.157
5-10 years	.474	.161	***	.118
10+ years	.443	.195	**	.111

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.142	.149		.036
Ordinary education	.194	.171		.048
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.608	.172	***	-.152
Ordinary education	-.355	.217		-.089
No available information	-.242	.146	*	-.061
Year when programme started (r.g.: 1994)				
1993	.715	.128	***	.179
1995	-.328	.105	***	-.082
1996	-.873	.138	***	-.218
1997	-.772	.156	***	-.193
1998	-1.045	.181	***	-.261
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.011	.116		-.003
40,000-100,000	.055	.102		.014
>100,000	-.066	.108		-.017
Relative unemployment level	-.981	.314	***	-.245
Relative importance of PRP programmes	.307	.061	***	.077
Common unobserved factor	1.000			

Table M.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	.799	.369	**	.287
Age (r.g.: 17-24)				
25-29	.138	.139		.05
30-39	-.232	.152		-.083
40-49	-.612	.193	***	-.22
50-66	-.351	.257		-.126
Marital state (r.g.: Single)				
Married	.041	.191		.015
Cohabitating	.008	.127		.003
Has children	.067	.151		.024
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.297	.112	***	.107
Vocational education	.278	.113	**	.1
Further or higher education	.135	.27		.049
Work experience (r.g.: 0-2 years)				
2-5 years	.327	.16	**	.117
5-10 years	.441	.178	**	.159
10+ years	.596	.203	***	.214

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.463	.144	***	-.166
Ordinary education	-.363	.16	**	-.13
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.636	.195	***	-.229
Ordinary education	-.265	.216		-.095
No available information	.057	.139		.021
Year when programme started (r.g.: 1994)				
1993	.131	.135		.047
1995	.015	.113		.005
1996	-.166	.199		-.06
1997	-.354	.205	*	-.127
1998	-.161	.279		-.058
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.208	.111	*	.074
40,000-100,000	.051	.101		.018
>100,000	.124	.105		.044
Relative unemployment level	-.578	.376		-.208
Common unobserved factor	.162	.351		

Table M.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 6 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	2.98	6.99		.423
Age (r.g.: 17-24)				
25-29	-.383	.216	*	-.054
30-39	-.733	.296	**	-.104
40-49	-1.434	.536	***	-.204
50-66	-1.185	.547	**	-.168
Marital state (r.g.: Single)				
Married	-.065	.301		-.009
Cohabitating	.185	.178		.026
Has children	.526	.254	**	.074
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.273	.138	**	.039
Vocational education	.161	.171		.023
Further or higher education	.362	.308		.051
Work experience (r.g.: 0-2 years)				
2-5 years	.604	.243	**	.086
5-10 years	.619	.316	*	.088
10+ years	1.216	.456	***	.173

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.611	.237	***	-.087
Ordinary education	.071	.179		.01
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.776	.349	**	-.11
Ordinary education	-.218	.256		-.031
No available information	-.181	.18		-.026
Year when programme started (r.g.: 1994)				
1993	-.104	.195		-.015
1995	.022	.13		.003
1996	-.169	.177		-.024
1997	-.017	.172		-.002
1998	-.254	.215		-.036
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.021	.139		-.003
40,000-100,000	-.086	.129		-.012
>100,000	-.235	.142	*	-.033
Relative unemployment level	-1.35	.542	**	-.192
Common unobserved factor	2.3	10.29		

Table M.4

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, the average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.19	.24	.301	269	.57	-.05
(.079)	(.026)	(128.735)	(128.734)	(.074)	(.092)
**	***			***	

Table M.5

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 6 months after the end of the programme, the average treatment effect on the treated $\triangle^{TT}$ and associated distributional treatment parameters regarding the.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.123	.291	.402	.184	.586	-.168
(.042)	(.041)	(.043)	(.04)	(.076)	(.033)
***	***	***	***	***	***

Tables M.6

Model where the common factor follows a discrete distribution, there is selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 6 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.02	.457	.622	-.099	.522	-.437
(.009)	(.113)	(.112)	(.016)	(.12)	(.106)
**	***	***	***	***	***

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.213	.184	.222	.381	.603	.028
(.089)	(.037)	(.032)	(.086)	(.061)	(.121)
**	***	***	***	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.307	.171	.191	.331	.522	.136
(.13)	(.076)	(.067)	(.127)	(.066)	(.203)
**	**	***	***	***	

c. Values when $U_D = 2$.

Table M.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), discrete distribution of the common factor, employment state 6 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	-.332	-.051
Age (r.g.: 17-24)		
25-29	.129	.111
30-39	.069	.019
40-49	.076	-.031
50-66	.12	.03
Marital state (r.g.: Single)		
Married	.028	.053
Cohabitating	-.036	.005
Has children	-.085	-.042
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	.05	.054
Vocational education	.067	.087
Further or higher education	-.027	-.053
Work experience (r.g.: 0-2 years)		
2-5 years	-.008	.081
5-10 years	.03	.105
10+ years	-.038	.074

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	-.04	-.063
Ordinary education	-.145	-.119
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.067	-.162
Ordinary education	-.05	-.09
No available information	.058	.025
Year when programme started (r.g.: 1994)		
1993	.069	.119
1995	.001	-.025
1996	-.025	-.106
1997	-.123	-.183
1998	-.005	-.106
Residents in municipality (r.g.: <20,000)		
20,000-40,000	.079	.073
40,000-100,000	.036	.034
>100,000	.093	.07
Relative unemployment level	.072	-.093
Relative importance of PRP programmes		.025

Table N.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, discrete distr. of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	.88	.372	**	.219
Age (r.g.: 17-24)				
25-29	.159	.151		.039
30-39	-.074	.162		-.018
40-49	-.241	.201		-.06
50-66	-.272	.288		-.068
Marital state (r.g.: Single)				
Married	.389	.197	**	.097
Cohabitating	.369	.129	***	.092
Has children	.046	.159		.011
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.144	.12		-.036
Vocational education	.15	.117		.037
Further or higher education	-.683	.23	***	-.17
Work experience (r.g.: 0-2 years)				
2-5 years	.632	.128	***	.157
5-10 years	.525	.162	***	.131
10+ years	.562	.197	***	.14

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.191	.154		.048
Ordinary education	.199	.173		.05
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.683	.174	***	-.159
Ordinary education	-.343	.223		-.085
No available information	-.222	.151		-.055
Year when programme started (r.g.: 1994)				
1993	.768	.133	***	.191
1995	-.349	.108	***	-.087
1996	-.891	.131	***	-.222
1997	-.782	.15	***	-.195
1998	-1.03	.172	***	-.255
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.053	.121		-.013
40,000-100,000	.042	.106		.011
>100,000	-.093	.11		-.023
Relative unemployment level	-.884	.322	***	-.22
Relative importance of PRP programmes	.322	.062	***	.08
Common unobserved factor	1.000	.		

Table N.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	1.42	.482	***	.486
Age (r.g.: 17-24)				
25-29	.011	.146		.004
30-39	-.275	.16	*	-.095
40-49	-.747	.213	***	-.257
50-66	-.727	.278	***	-.25
Marital state (r.g.: Single)				
Married	-.01	.203		-.003
Cohabitating	-.019	.135		-.006
Has children	.127	.157		.044
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.049	.12		.017
Vocational education	.253	.112	**	.087
Further or higher education	.496	.329		.171
Work experience (r.g.: 0-2 years)				
2-5 years	.124	.15		.043
5-10 years	.384	.167	**	.132
10+ years	.52	.193	***	.179

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.364	.173	**	-.125
Ordinary education	-.304	.183	*	-.105
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.456	.167	***	-.157
Ordinary education	-.084	.219		-.029
No available information	.089	.147		.03
Year when programme started (r.g.: 1994)				
1993	.108	.141		.037
1995	.111	.128		.038
1996	.147	.212		.05
1997	-.03	.198		-.01
1998	.138	.278		.047
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.022	.115		.007
40,000-100,000	-.056	.107		-.019
>100,000	.173	.122		.06
Relative unemployment level	-.958	.348	***	-.329
Common unobserved factor	-.359	.441		

Table N.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 12 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	5.44	313		.279
Age (r.g.: 17-24)				
25-29	.118	.196		.006
30-39	-.719	.292	**	-.037
40-49	-1.37	.492	***	-.07
50-66	-4.34	295		-.222
Marital state (r.g.: Single)				
Married	.478	.337		.025
Cohabitating	.217	.175		.011
Has children	-.013	.253		-.001
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	.146	.138		.007
Vocational education	.588	.191	***	.03
Further or higher education	-.133	.433		-.007
Work experience (r.g.: 0-2 years)				
2-5 years	.371	.19	*	.019
5-10 years	.431	.277		.022
10+ years	.812	.399	**	.042

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.35	.205	*	-.018
Ordinary education	-.078	.191		-.004
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.763	.289	***	-.039
Ordinary education	-.199	.272		-.01
No available information	.014	.19		.001
Year when programme started (r.g.: 1994)				
1993	-.068	.185		-.003
1995	-.201	.137		-.01
1996	-.307	.175	*	-.016
1997	-.139	.184		-.007
1998	-.711	.26	***	-.036
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.124	.147		.006
40,000-100,000	-.095	.14		-.005
>100,000	-.144	.14		-.007
Relative unemployment level	-.634	.413		-.032
Common unobserved factor	6.038	394		

Table N.4

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, the average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.273	.272	.318	.137	.455	.001
(.115)	(.031)	(1854.612)	(1854.597)	(.097)	(.138)
**	***			***	

Table N.5

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 12 months after the end of the programme, the average treatment effect on the treated $\triangle^{TT}$ and associated distributional treatment parameters regarding the.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.142	.39	.377	.091	.468	-.249
(.065)	(.047)	(.067)	(.048)	(.083)	(.077)
**	***	***	*	***	***

Tables N.6

Model where the common factor follows a discrete distribution, there is selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 12 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.021	.65	.495	.-166	.329	-.629
(.009)	(.106)	(.106)	(.008)	(.112)	(.1)
**	***	***	***	***	***

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.282	.194	.264	.26	.524	.088
(.119)	(.034)	(.092)	(.101)	(.088)	(.151)
**	***	***	***	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.508	.099	.284	.109	.393	.41
(.214)	(.087)	(.181)	(.182)	(.128)	(.301)
**				***	

c. Values when $U_D = 2$.

Table N.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), discrete distribution of the common factor, employment state 12 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
Constant	-.53	.005
Age (r.g.: 17-24)		
25-29	-.018	.014
30-39	.04	-.024
40-49	-.0003	-.137
50-66	.561	.197
Marital state (r.g.: Single)		
Married	-.093	.0003
Cohabitating	-.047	.024
Has children	.046	.052
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.01	-.021
Vocational education	-.023	.042
Further or higher education	.195	.084
Work experience (r.g.: 0-2 years)		
2-5 years	-.027	.094
5-10 years	.051	.16
10+ years	.026	.169

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	-.059	-.057
Ordinary education	-.089	-.066
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.014	-.164
Ordinary education	.009	-.057
No available information	.028	-.004
Year when programme started (r.g.: 1994)		
1993	.05	.157
1995	.075	.009
1996	.107	-.047
1997	.016	-.109
1998	.18	-.024
Residents in municipality (r.g.: <20,000)		
20,000-40,000	-.016	-.014
40,000-100,000	-.001	-.002
>100,000	.086	.062
Relative unemployment level	-.209	-.386
Relative importance of PRP programmes		.047

Table O.1

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, estimates of the parameters determining selection into PRP programmes, discrete distr. of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	.926	.373	**	.23
Age (r.g.: 17-24)				
25-29	.129	.152		.032
30-39	-.086	.164		-.021
40-49	-.272	.201		-.068
50-66	-.283	.265		-.07
Marital state (r.g.: Single)				
Married	.433	.208	**	.108
Cohabitating	.377	.129	***	.094
Has children	.07	.158		.017
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.184	.118		-.046
Vocational education	.17	.118		.042
Further or higher education	-.62	.233	***	-.154
Work experience (r.g.: 0-2 years)				
2-5 years	.643	.128	***	.16
5-10 years	.524	.163	***	.13
10+ years	.566	.201	***	.141

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	.145	.155		.036
Ordinary education	.196	.174		.049
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.579	.174	***	-.144
Ordinary education	-.278	.221		-.069
No available information	-.198	.149		-.049
Year when programme started (r.g.: 1994)				
1993	.756	.134	***	.188
1995	-.371	.109	***	-.092
1996	-.876	.131	***	-.218
1997	-.864	.147	***	-.215
1998	-1.02	.173	***	-.253
Residents in municipality (r.g.: <20,000)				
20,000-40,000	-.061	.12		-.015
40,000-100,000	.051	.106		.013
>100,000	-.096	.111		-.024
Relative unemployment level	-.911	.326	***	-.226
Relative importance of PRP programmes	.31	.62	***	.077
Common unobserved factor	1.000	.		

Table O.2

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PRP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	.333	.383		.121
Age (r.g.: 17-24)				
25-29	.113	.137		.041
30-39	-.276	.147	*	-.101
40-49	-.558	.191	***	-.203
50-66	-.528	.262	**	-.192
Marital state (r.g.: Single)				
Married	-.012	.198		-.004
Cohabitating	-.03	.129		-.011
Has children	.301	.154	*	.11
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.19	.113	*	-.069
Vocational education	.153	.108		.055
Further or higher education	.516	.314		.188
Work experience (r.g.: 0-2 years)				
2-5 years	.212	.142		.077
5-10 years	.483	.157	***	.176
10+ years	.443	.192	**	.161

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.327	.154	**	-.119
Ordinary education	-.403	.172	**	-.147
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.741	.162	***	-.269
Ordinary education	-.164	.211		-.06
No available information	-.198	.14		-.072
Year when programme started (r.g.: 1994)				
1993	.016	.143		.006
1995	.103	.124		.038
1996	.183	.203		.067
1997	-.013	.207		-.005
1998	.103	.254		.038
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.267	.115	**	.097
40,000-100,000	.071	.101		.026
>100,000	.14	.112		.051
Relative unemployment level	.074	.352		.027
Common unobserved factor	-.202	.408		

Table O.3

Model with selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), participants in PUP programmes, estimates of the parameters determining the employment state 24 months after the end of the programme period, discrete distribution of the common factor.

	Coeff.	Std.	Sgl.	Marg.
Constant	5.14	49.3		.26
Age (r.g.: 17-24)				
25-29	-.393	.232	*	-.02
30-39	-1.328	.351	***	-.067
40-49	-2.046	.516	***	-.103
50-66	-3.225	1.06	***	-.163
Marital state (r.g.: Single)				
Married	.735	.323	**	.037
Cohabitating	.171	.181		.009
Has children	.248	.245		.013
Completed education (r.g.: Primary or lower sec. school)				
Upper secondary school	-.167	.155		-.008
Vocational education	.226	.183		.011
Further or higher education	.096	.364		.005
Work experience (r.g.: 0-2 years)				
2-5 years	.972	.219	***	.049
5-10 years	1.097	.316	***	.055
10+ years	1.951	.464	***	.099

	Coeff.	Std.	Sgl.	Marg.
State during the 12 months preceding the programme period (r.g.: Employment)				
Unemployment	-.175	.203		-.009
Ordinary education	-.189	.209		-.01
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)				
Unemployment	-.654	.268	**	-.033
Ordinary education	.306	.289		.015
No available information	.12	.2		.006
Year when programme started (r.g.: 1994)				
1993	-.099	.203		-.005
1995	.047	.141		.002
1996	.066	.175		.003
1997	-.062	.193		-.003
1998	-.587	.281	**	-.03
Residents in municipality (r.g.: <20,000)				
20,000-40,000	.306	.159	*	.015
40,000-100,000	.186	.143		.009
>100,000	-.068	.151		-.003
Relative unemployment level	-.698	.446		-.035
Common unobserved factor	6.09	61.55		

Table O.4

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, the average treatment effect $\triangle^{ATE}$ and associated distributional treatment parameters regarding the.

$P^{ATE}_{Y_1,Y_0}(1,0)$	$P^{ATE}_{Y_1,Y_0}(0,1)$	$P^{ATE}_{Y_1,Y_0}(1,1)$	$P^{ATE}_{Y_1,Y_0}(0,0)$	$P^{ATE}_{\triangle}(0)$	$\triangle^{ATE}$
.235	.284	.304	.178	.481	-.05
(0.111)	(.044)	(941.904)	(941.896)	(.091)	(.142)
**	***			***	

Table O.5

Model where the common factor follows a discrete distribution and there is selection on the unobservables ($\alpha_1 \neq 0, \alpha_0 \neq 0, \alpha_1 \neq \alpha_0$), employment state 24 months after the end of the programme, the average treatment effect on the treated $\triangle^{TT}$ and associated distributional treatment parameters regarding the.

$P^{ATT}_{Y_1,Y_0}(1,0)$	$P^{ATT}_{Y_1,Y_0}(0,1)$	$P^{ATT}_{Y_1,Y_0}(1,1)$	$P^{ATT}_{Y_1,Y_0}(0,0)$	$P^{ATT}_{\triangle}(0)$	$\triangle^{ATT}$
.12	.393	.377	.11	.487	-.273
(.059)	(.051)	(.061)	(.051)	(.079)	(.078)
**	***	***	**	***	***

Tables O.6

Model where the common factor follows a discrete distribution, there is selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), parameters regarding the employment state 24 months after the end of the programme, marginal treatment effect $\triangle^{MTE}$ and associated distributional treatment when, respectively, $U_D = -2$, $U_D = 0$, $U_D = 2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.018	.633	.512	-.163	.349	-.616
(.008)	(.104)	(.104)	(.008)	(.11)	(.098)
**	***	***	***	***	***

a. Values when $U_D = -2$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.24	.211	.247	.301	.549	.029
(.114)	(.046)	(.078)	(.107)	(.08)	(.154)
**	***	***	***	***	

b. Values when $U_D = 0$.

$P^{MTE}_{Y_1,Y_0}(1,0)$	$P^{MTE}_{Y_1,Y_0}(0,1)$	$P^{MTE}_{Y_1,Y_0}(1,1)$	$P^{MTE}_{Y_1,Y_0}(0,0)$	$P^{MTE}_{\triangle}(0)$	$\triangle^{MTE}$
.441	.128	.242	.189	.431	.314
(.209)	(.103)	(.158)	(.196)	(.111)	(.31)
**				***	

c. Values when $U_D = 2$.

Table 0.7

Model with selection on the unobservables ($\alpha_1 \neq 0$, $\alpha_0 \neq 0$, $\alpha_1 \neq \alpha_0$), discrete distribution of the common factor, employment state 24 months after the end of the programme, marginal effect of explanatory variables on the average treatment effect and the effect of treatment on the treated.

	$E_X[\frac{\partial\triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial\triangle^{ATT}}{\partial z}]$
Constant	-.782	-.298
Age (r.g.: 17-24)		
25-29	.11	.097
30-39	.133	.03
40-49	.156	-.019
50-66	.374	.113
Marital state (r.g.: Single)		
Married	-.133	-.024
Cohabitating	-.041	.02
Has children	.066	.089
Completed education (r.g.: Primary or lower secondary school)		
Upper secondary school	-.04	-.073
Vocational education	.016	.052
Further or higher education	.17	.092
Work experience (r.g.: 0-2 years)		
2-5 years	-.094	.057
5-10 years	-.017	.124
10+ years	-.182	.027

	$E_X[\frac{\partial \triangle^{ATE}}{\partial x}]$	$E_Z[\frac{\partial \triangle^{ATT}}{\partial z}]$
State during the 12 months preceding the programme period (r.g.: Employment)		
Unemployment	-.088	-.078
Ordinary education	-.113	-.097
State during 24 months period starting 3 years and ending 1 year before the programme period (r.g.: Employment)		
Unemployment	-.154	-.268
Ordinary education	-.113	-.126
No available information	-.093	-.108
Year when programme started (r.g.: 1994)		
1993	.023	.114
1995	.029	-.017
1996	.055	-.056
1997	.006	-.11
1998	.141	-.034
Residents in municipality (r.g.: <20,000)		
20,000-40,000	.044	.054
40,000-100,000	-.007	.012
>100,000	.063	.044
Relative unemployment level	.149	-.02
Relative importance of PRP programmes		.04

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Appendix E

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"*You can run from economic models, but you can't hide from them.*"

Derek Neal