

## A pairwise comparison of the effectiveness of selected active labour market programmes in Germany

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Die Forschungseinrichtung der  
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IAB

# IAB-Discussion Paper

29/2008

Beiträge zum wissenschaftlichen Dialog aus dem Institut für Arbeitsmarkt- und Berufsforschung

## A pairwise comparison of the effectiveness of selected active labour market programmes in Germany

Gesine Stephan  
André Pahnke

# A pairwise comparison of the effectiveness of selected active labour market programmes in Germany

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Mit der Reihe „IAB-Discussion Paper“ will das Forschungsinstitut der Bundesagentur für Arbeit den Dialog mit der externen Wissenschaft intensivieren. Durch die rasche Verbreitung von Forschungsergebnissen über das Internet soll noch vor Drucklegung Kritik angeregt und Qualität gesichert werden.

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## Abstract

For Germany, our study estimates average effects of further vocational training, short training and job creation schemes on the employment prospects of participants. We compare participation in each programme with non-participation as well as with participation in one of the other programmes. Outcome variables are cumulated days spent in regular employment during the 3.5 years after programme start as well as the share in regular employment at the end of the observation period. First, our results show rather favourable effects of participation in further vocational training programmes and in short firm-internal training – but not of participation in job creation schemes – on the employment prospects of participants. Second, as a result of shorter lock-in effects, shorter programmes perform mostly better when estimating programme effects on days in cumulated employment. However, regarding shares in regular employment at the end of the observation period, in particular long retraining shows positive effects compared to shorter programmes.

Wir untersuchen die Wirkung im März 2003 begonnener Weiterbildungs-, Trainings- und Arbeitsbeschaffungsmaßnahmen auf die Arbeitsmarktchancen der Geförderten. Hierzu werden die jeweiligen Teilnehmer sowohl mit einer ähnlichen Gruppe nicht geförderter Personen als auch mit ähnlichen Teilnehmern an anderen Maßnahmen verglichen. Der Beobachtungszeitraum umfasst 3,5 Jahre nach Förderbeginn; Ergebnisvariablen sind die kumulierten Tage in ungeförderter Beschäftigung in diesem Zeitraum sowie der Anteil in ungeförderter Beschäftigung am Ende des Zeitraums. Die Befunde weisen zunächst darauf hin, dass die Teilnahme an Weiterbildungs- und Trainingsmaßnahmen – nicht aber an Arbeitsbeschaffungsmaßnahmen – positive Effekte auf die Beschäftigungschancen der Geförderten hat. Der Programmvergleich zeigt: Wird der Effekt auf die kumulierten Tage in Beschäftigung untersucht, schneiden kürzere Programme im Vergleich zu längeren Maßnahmen besser ab – dies folgt vor allem aus den geringeren Einbindungseffekten. Allerdings haben mehrjährige Umschulungsmaßnahmen am Ende des Beobachtungszeitraums eine besonders positive Wirkung auf den Anteil in ungeförderter Beschäftigung.

**JEL classification:** J68, J64, J65

**Keywords:** Evaluation of active labour market programmes, further vocational training, short training programmes, job creation schemes, propensity score matching.

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## 1 Introduction

During the last years, the evaluation of active labour market programmes has become a central research topic in Germany. On the one hand, politics and administration have increasingly been interested in topics as programme effectiveness and efficiency. On the other hand, the development of comprehensive merged data sets – covering times of unemployment, programme participation and employment – laid the groundwork for further research. Although methodological advancements (Imbens 1999, Lechner 2001) have extended the often used framework for the estimation of causal treatment effects (Rubin 1974, Heckman et al. 1999) to pairwise programme comparisons, most evaluation studies have analysed the effects of being or not being in a particular programme. Thus for Germany, the knowledge on “comparative effectiveness” of participation in different programmes is still sparse. Furthermore, two recent studies using a comparative approach (Biewen et al. 2007, Wunsch/Lechner 2008), with the main focus on further vocational training programmes and short training-programmes, obtain partly different results.

Our study adds some further insights to the literature on active labour market programmes. For Germany, we conduct a pairwise comparison of participation in different variants of further vocational training, short-training programmes and job creation schemes. For the selected programme types we estimate average treatment effects of taking up a programme in March 2003 on the subsequent employment prospects of participants, compared to no programme entry as well as taking-up another of these programmes during March 2003. We follow participants and comparison group over 3.5 years and compute the cumulated effects on days spent in regular employment and the effect on shares in regular employment during this time interval. Average programme effects on participants are estimated by comparing the group of those joining a particular programme with a group of similar persons that did not enter this programme in March 2003. To choose adequate comparison groups we apply propensity score matching. The data used are provided by the TrEffeR-database of the German Public Employment Service.

The next section provides a brief survey on the programmes investigated and sketches previous research results. Section 3 describes the evaluation approach and the applied method while Section 4 informs about data and variables used in the empirical analysis. Our empirical results are depicted in section 5. We draw some conclusions in Section 6.

## 2 Programme features and literature review

Unemployment in Germany had been rising for long years. As a consequence, major labour market reforms were enacted from 2003 to 2005. New instruments of active labour market policy were implemented, existing programmes were modified, the German Public Employment Service was reorganised, and former unemployment assistance and social assistance were consolidated into a new means-tested basic social care for needy unemployed job-seekers. Unemployment reached its

maximum with on average 4.9 million unemployed persons in 2005. Since 2005 unemployment has been decreasing, down to (seasonally adjusted) 3.3 million registered unemployed in June 2008.

Active labour market programmes have the main objective to avoid or shorten periods of unemployment. Table 1 gives an overview on entries and the number of individuals in the most important German labour market programmes from 2000 to 2006 (see Bernhard et al. 2008 for details). Caseworkers have discretion in granting the majority of programmes (exceptions are start-up subsidies and – under certain conditions – access to the services of a private placement agency). Our analysis is restricted to three of the largest programmes: We analyse variants of further vocational training, short training programmes and job creation schemes. Programme features as well as evaluation results will be described in the following. Further important programmes are in particular wage subsidies, start-up subsidies and contracting-out to private agencies.

**Table 1**  
**Entries and average numbers in selected labour market programmes during 2000-2006 (in 1000)**

	2000	2001	2002	2003	2004	2005	2006
<b>Entries into programme</b>							
Further vocational training ( <i>Förderung beruflicher Weiterbildung</i> )	523	442	455	255	185	132	247
Job creation I ( <i>Arbeitsbeschaffungs-/Strukturanpassungsmaßnahmen</i> )	318	246	215	179	161	80	80
Job creation II ( <i>Arbeitsgelegenheiten</i> )	-	-	-	-	-	630	742
Short training ( <i>Trainingsmaßnahmen</i> )	485	551	865	1064	1188	894	978
Wage subsidy ( <i>Eingliederungszuschuss</i> )	152	127	188	183	157	134	217
Start-up subsidy I ( <i>Überbrückungsgeld</i> )	93	96	125	159	183	157	108
Start-up subsidy II ( <i>Existenzgründungszuschuss</i> )	-	-	-	95	168	91	43
Start-up subsidy III ( <i>Gründungszuschuss</i> )	-	-	-	-	-	-	34
Contracting-out to private agencies ( <i>Beauftragung privater Dritter</i> )*	-	-	-	-	635	426	301
<b>Average number in programme</b>							
Further vocational training ( <i>Förderung beruflicher Weiterbildung</i> )	343	352	340	260	184	114	119
Job creation I ( <i>Arbeitsbeschaffungs-/Strukturanpassungsmaßnahmen</i> )	266	237	193	144	117	61	50
Job creation II ( <i>Arbeitsgelegenheiten</i> )	-	-	-	-	-	201	293
Short training ( <i>Trainingsmaßnahmen</i> )	105	118	136	153	110	60	82
Wage subsidy ( <i>Eingliederungszuschuss</i> )	52	60	74	93	95	69	70
Start-up subsidy I ( <i>Überbrückungsgeld</i> )	43	46	56	73	84	83	63
Start-up subsidy II ( <i>Existenzgründungszuschuss</i> )	-	-	-	40	151	234	210
Start-up subsidy III ( <i>Gründungszuschuss</i> )	-	-	-	-	-	-	8
Contracting-out to private agencies ( <i>Beauftragung privater Dritter</i> )*	-	-	-	-	95	103	100

\*) Numbers are available since 2004, while different variants started already in 1998 (contracting-out subtasks of placement) and 2002 (contracting-out all placement services).

Source: Statistics Department of the German Public Employment Service (Data-Warehouse).

### *Programme features*

For a long time further vocational training (*Förderung beruflicher Weiterbildung*) has been one of the most important German labour market programmes. During the first half of this decade entries as well as the duration of these measures were shrinking; but the number of entries increased again in 2006. Further vocational training maintains, updates and extends professional qualifications and can thus be regarded as

a human capital investment. It encompasses a range of different treatments, which can be broadly classified in qualification programmes, training within “practice firms” (which offer practical occupational training, but are no “real” companies) and long retraining programmes. The latter might be granted to employees without completed vocational training or those who did not practice a corresponding job for the last four years might participate in a long retraining programme to obtain a degree. The direct training costs for further vocational training programmes are paid by the Public Employment Service. Furthermore, participants receive a subsistence allowance which usually equals unemployment compensation. Since 2003 access to further training programmes is granted through vouchers; issuing a training voucher to an unemployed person is in the discretion of the caseworker. Vouchers specify the training target, programme duration, the regional scope and the period of validity (up to three months).

Since 2001, short training programmes (*Trainingsmaßnahmen*) are the programme with the highest number of programme entries. Programme duration is, however, short and varies from two to eight weeks. Short training programmes have a number of different objectives (Kurtz 2003): They could improve knowledge and skills, test the occupational aptitude of the employee, check whether unemployed are suited for further longer-term measures, support job-search by job application training, or verify an employee's availability and willingness to work. Training measures are conducted by providers (classroom) or placement in a firm (firm-internal). Our analysis is restricted to classroom and firm-internal short training programmes improving knowledge and skills. Similar to further vocational training programmes, direct programme costs are paid by the Public Employment Service. Furthermore, participants in short training programmes continue to receive unemployment compensation.

In Germany, job creation programmes have been used widely in the past, but nearly disappeared until 2004. Since 2005, a new variant of job creation schemes for the new group of needy job seekers receiving basic social care (*Arbeitsgelegenheiten* or *Ein-Euro-Jobs*) plays a major role; this programme provides mostly only a modest additional reimbursement for work. Our analysis will focus on the most important traditional variant: Job creation schemes (*Arbeitsbeschaffungsmaßnahmen*) are conducted by providers. They might be supported if they reduce further unemployment and maintain or to improve employability of the participants. The tasks carried out during participation also have to be of “additional” nature and of public interest. Until 2004, grants paid for job creation schemes were based upon an “allowable” remuneration and covered part of the costs. Currently a lump sum payment is granted, whose amount varies with the qualification required. The regular duration of participation in a job creation schemes is limited to 12 months, while exemptions are possible. A further variant (*Strukturanpassungsmaßnahmen*) has been in place from 2003 to 2004, with the purpose to maintain or improve regional infrastructure and environment. Providers received a monthly lump sum payment for participants. The regular programme duration was 36 months, but could even be prolonged.



Selection into these programmes follows different mechanisms: Participation in further vocational training programmes requires that the caseworker issues a training voucher to a potential participant, who has then to find a training provider offering an adequate course. Furthermore, the provider must be willing to sign in the inhabitant of the voucher. Kruppe (2008) shows that hard-to-place unemployed a) receive less often a voucher and b) less often make use of the voucher. Access to short firm-external training programmes will be mostly “prescribed” by the caseworker. In contrast, short firm-internal training programmes takes place only if the caseworker assigns an unemployed person to the training and if a firm is willing to offer the training opportunity to potential participants. Employers might use the training to test the productivity of the unemployed person without incurring any wage costs. Thus short firm-internal training programmes might be seen as a kind of wage subsidy scheme. This raises also the danger of deadweight losses if an employer would have hired the unemployed in question anyway. Finally, participation in a job creation scheme requires consent of the caseworker, the unemployed person and the provider of the scheme.

#### *Recent evaluation results*

A considerable number of papers investigate the effectiveness of further vocational training programmes in Germany, comparing participants with comparable non-participants. For further vocational training, Lechner et al. (2005, 2007), Fitzenberger et al. (2006) and Fitzenberger/Völter (2007) analysed long-run effects up to seven years after programme entry, focusing mainly on unemployment entries during 1993/94. In the long run, they generally found positive effects of further vocational training. However, since programme effects are rather weak, it may take some time until the estimated effect turns positive. More recent programme entries into further vocational training – during the years 2000 to 2002 – have been investigated by Biewen et al. (2007), Kluve et al. (2007), Rinne et al. (2007) and Wunsch/Lechner (2008). Here the evidence is mixed: Wunsch/Lechner (2008) restricted their sample on the age group between 25 and 49. They estimated that further vocational training – and other programmes – had mostly negative or insignificant effects on employment rates of participants 30 months after programme start. Biewen et al. (2007) found positive effects on employment rates of participants of age 25 to 53 for programmes of short and medium duration in West Germany (but not in East Germany) and particular groups of unemployed. Rinne et al. (2007) obtained – two years after programme entry – positive effects of participation in medium length programmes on the employment probabilities of participants in all subgroups investigated, covering participants of age 17 to 65. Finally, Hujer et al. (2006a) applied duration analysis to East German data from the years 1999 to 2002. Their main result is that participation in further vocational training prolonged unemployment duration during the period investigated.

Short training programmes are analysed also in the already cited studies of Biewen et al. (2007) and Wunsch/Lechner (2008). Similar to further vocational training, Biewen et al. (2007) found mostly positive effects of short training-programs, while

Wunsch/Lechner (2008) – who separately analysed short combined measures, job-seeker assessment and short training for minor adjustment of skills – did not. Hujer et al. (2006b) applied duration analysis to show that the risk of entering employment is significantly higher for individuals participating in a short-training programme. Wolff/Jozwiak (2007) distinguished between short classroom training and short training within firms for individuals and investigated the effect on the employment prospects of needy job-seekers, who receive the new basic social care. They showed that both variants had positive effects, which are much larger for short training within firms. Büttner (2008) used data from a social experiment on short-training programmes to test the availability of the unemployed. His main result was that it is the notification of treatment rather than participation that has an effect on leaving unemployment.

Entries into job creation schemes – with an average duration of 9 to 11 months – have been investigated by Caliendo et al. (2006, 2008a, 2008b) and Hujer/Thomsen (2006). The authors applied statistical matching methods; they imposed no age restrictions, but estimated heterogeneous effects for groups of participants. Three years after programme entry in February 2000 these effects turned out to be mostly negative or insignificant. Exceptions were long-term unemployed, highly qualified men and older women in West Germany. Hujer/Zeiss (2006) evaluated these programmes in East Germany with the timing-of-events method. Their main conclusion is that participation in job creation schemes increases individual unemployment duration of participants. Recent results on the new “One-Euro-Jobs” (Hohmeyer/Wolff 2007), introduced in 2005, highlighted the effect heterogeneity of this programme. The authors found slightly positive effects in particular for participants from West Germany and individuals out of regular employment for a longer time period. The already cited study of Wunsch/Lechner (2008) also obtained negative effects of participation in this programme on the employment prospects of participants.

What are the results of cross-programme comparisons for Germany? First evidence was presented by Lechner et al. (2005), who compared participants in practice firms, short and long programmes providing professional skills as well as retraining, for programmes starting during 1994/1995. In the long run, seven years after programme start, they obtained few significant differences between programme effects (Table 6.2, 46). Using more recent data, Biewen et al. (2007) conducted pairwise evaluations of different training programmes, including also short training programmes (“Trainingsmaßnahmen”); they observed labour market outcomes of participants for a period of 2 to 2.5 years after treatment start. They found that participants in short training programmes would not have improved their latter employment rates by attending classroom or practical training. Classroom training showed no advantage for the treated, compared to the other programme variants. However, practical further training was more effective for participants than a short programme or – for West Germany – classroom training would have been. Wunsch/Lechner (2008) compared an even wider range of programmes, distinguishing three kinds of short training programmes, four variants of further vocational training, and public

employment schemes. Their pairwise comparisons (Table 7, 169) showed at  $\alpha = 0.05$  nearly no significant effect of participation in one programme – compared to participation in another programme – on the employment rates 2.5 years after treatment start. Exceptions were long retraining programmes that had a significant negative effect on employment rates of participants compared to most other programmes.

Finally, we sketch the results of several comparative programme studies for other countries: Gerfin/Lechner (2002) evaluated nine different Swiss active labour market programmes, focussing on the first programme participation of an unemployed. Their study showed that temporary wage subsidies – paid in order to temporarily compensate income-losses in comparison to former times of employment (“Zwischenverdienste”) – has been most efficient in integrating participants into regular employment. Gerfin et al. (2004) contrasted employment programmes in non-profit organizations and temporary wage subsidies; again the latter were the more “successful” programme. Sianesi (2008) compared six major Swedish active labour market programmes. Employment subsidies performed best by far; they were followed by trainee replacement and labour market training. For Great Britain, Dorsett (2001) contrasted entries into subsidised employment, full-time education and training, an environmental task force or a voluntary sector, which were different options within the New Deal Programme for Young People. Again, wages subsidies dominated all other options.

Sianesi (2008) summarises as a main result of many micro studies that the more a programme resembles regular employment in the competitive sector, the higher the programme’s benefits to its participants will be. However, the underlying selection process for participation in wage and start-up subsidy programmes – which are most similar to regular work in the private sector – differs to a larger extent from the programmes analysed in our paper: In the case of wage subsidies an employer must be willing to offer at least a subsidised job to an unemployed person, while founding a subsidised new enterprise requires that the founder has the “animal spirits” to do so.

### **3 Evaluation approach and applied method**

As the majority of micro studies of active labour market programmes, our evaluation approach is based on the model of potential outcomes. In the following, we will sketch the idea of “matching on observables” and describe our applied method (radius matching on the propensity score).

#### *Evaluation approach*

We compare labour market outcomes of – comparable – participants receiving different “treatments”. In the basic version of the potential outcomes model (Rubin 1974) an individual can potentially be in two states, while the outcome variable of interest may differ between these states. Based on Rubin’s work, Imbens (1999) and Lechner (2001) provided an extension to the case of multiple states.

Denote participation in one of  $N$  treatments starting at time  $t$  by  $S^t \in \{0, 1, \dots, N\}$ , and let the corresponding potential outcomes at time  $t+h$  be given by  $\{Y_0^{t+h}, Y_1^{t+h}, \dots, Y_N^{t+h}\}$ . Typically also non-participation at time  $t$  is interpreted as a particular kind of treatment. Since an individual may enter only one programme at time  $t$ , only one element of the latter set is observable, all other outcomes are unobserved “counterfactuals”. In our case the outcome variables under consideration will be the employment rate and cumulated days spent in regular employment after programme entry. Furthermore,  $t$  will be March 2003 and  $h$  will be 3.5 years.

We assume that the value of the outcome variables for each person is not influenced by the actual participation of other persons (“Stable Unit Treatment Value Assumption” SUTVA). Then the average effect of treatment  $J$  on participants in this programme, compared to receiving treatment  $K$  instead, is given by

$$(1) \quad \theta_{JK}^{t+h} = E[Y_J^{t+h} - Y_K^{t+h} | S^t = J] = E[Y_J^{t+h} | S^t = J] - E[Y_K^{t+h} | S^t = J].$$

In the following, we will denote participants in programme  $J$  as the “treatment group” and participants in programme  $K$  as the “comparison group”.

It is not possible to observe the average counterfactual outcome that members of the treatment group  $J$  would have had, would they have participated in programme  $K$  instead  $[Y_K^{t+h} | S^t = J]$ . Thus one has to find an adequate comparison group to impute the counterfactual outcome (Rubin 1974). With non-experimental data, statistical matching techniques might be applied to find such a comparison group – but only for those individuals in the treatment group  $J$  that have a positive probability to be in programme  $K$  instead (“Common Support Condition”).

Statistical matching relies on “matching on observables”: Assume that all variables  $X$ , determining the participation decision as well as the expected success of a programme, are known and available. Then a comparison group of individuals receiving treatment  $K$ , with similar observable characteristics  $X$  to the treatment group  $J$ , may be chosen to obtain an estimate for the counterfactual outcome  $[Y_K^{t+h} | S^t = J]$ . Similar to the binary case (Rubin 1974), Imbens (1999) and Lechner (1999, 2001) showed that the “Conditional Independence Assumption” (CIA) – formally given by  $Y_0^{t+h}, Y_1^{t+h}, \dots, Y_N^{t+h} \perp\!\!\!\perp S^t | X$  – identifies the parameters of interest in the case of multiple treatments.

The identifying assumption of statistical matching techniques is that no unobserved heterogeneity correlated with the selection into programmes and with outcome variables remains after accounting for observable variables. Thus a major challenge is to identify an appropriate set of covariates. In contrast, duration analysis (in particular the timing-of-events approach by Abbring/van den Berg 2003, 2004) allows for selection on unobserved characteristics. But these models impose the identifying assumption that transition processes into labour market programmes as well as across labour market states can be modelled as a multivariate mixed proportional hazard model, while statistical matching is a non-parametric approach.

Since we conduct not only cross-programme comparisons, but also a comparison with non-participation, we have to choose the classification window in time that defines participation and non-participation in a particular programme. Sianesi (2004) and Fredriksson/Johansson (2004) have pointed out that labour market programmes in Europe are ongoing and any unemployed is a potential participant at any point of time. Individuals may take up a programme sooner or later provided they are still eligible. But the unemployed themselves or the caseworker may decide against participation, because they expect or are expected to find regular employment soon. Thus selecting a comparison group of individuals who never participated in any programme would lead to base selection on expected (successful) future outcomes, and matching conditional on observable individual characteristics might not suffice to remove selectivity. Steiger (2004) and Stephan (2008) demonstrate empirically, how evaluation results vary with the choice of the classification window. Following the majority of the European literature, we do not put any restrictions on the future of persons and define non-participation in a particular programme as not taking up this programme during March 2003, but maybe at a later date. We will thus denote this group as “waiting”. Similarly, also participants in the programmes investigated might take part in another programme later.

#### *Applied method*

Propensity score matching is a useful simplification of matching on a high-dimensional vector of X-variables. For a large set of variables, exact matching on all covariates would become a complex task. However, Rosenbaum/Rubin (1983) have shown that it is sufficient to match on the propensity score – the probability to join a programme – to obtain the same probability distribution for treated and non-treated individuals. Similar properties hold in a multiple treatment framework as well (Lechner 2001). In consequence, the same methods as in a binary treatment framework can be applied.

Participation probabilities might be estimated by any parametric, semi-parametric, or nonparametric regression method that can handle one- or two-dimensional variables. In the multiple treatment framework this might be achieved by two approaches. First, propensity scores could be estimated separately for each combination of programmes J and K, using for instance a binary probit or logit model. Second, the complete choice problem can be formulated in one model and estimated, using for instance a multinomial logit or multinomial probit model. Lechner (2002) obtained basically the same estimation results, irrespective whether conditional probabilities were derived from a multinomial model or estimated directly. Our analysis is based on the first approach, estimating 81 binary probit models, since we compare participation in nine programme variants with participation in the other eight programme variants as well as with non-participation. Note that estimated effects  $\theta_{JK}^{t+h}$  and  $\theta_{KJ}^{t+h}$  are not necessarily symmetric, if common support can be achieved only for subgroups of participants in one of the programmes.

Comparison group members are then chosen by radius matching (Dehejia/Wahba 2002): Participants are matched with “synthetic comparison persons”, composed of a weighted equivalent of all persons falling within the radius of their propensity score. As more data points are used, radius matching will result in lower variances compared to the more common nearest neighbour matching. We apply a calliper of 0.005, which results in a rather good quality of matching without losing too many observations due to missing common support. The programme impact is then estimated as the mean difference in the weighted outcomes of both groups.

All estimates are performed using the STATA-module *psmatch2* (Leuven/Sianesi 2003). Note that variance estimates for estimated treatment effects neglect that the propensity score itself has been estimated (Abadie/Imbens 2006). To test for the quality of matching the mean standardised bias (MSB) (Rosenbaum/Rubin 1983) between each treated group and its matched comparison group is computed across all variables of  $X$ . The standardised bias of a covariate is defined as the difference of means in the treated and matched comparison sample, divided by the square root of the average sample variance. Thus, a lower value of the MSB indicates more similarity between the two groups. Sensitivity analyses showed that radius matching clearly outperformed nearest neighbour matching in terms of MSB reduction. While no clear theoretical indication exists, which remaining bias might be acceptable, Caliendo/Hujer (2006) summarise as a thumb rule that most studies assess a reduction of the MSB after matching to 3 or 5 percent as sufficient. We follow this suggestion and interpret pairwise comparisons where the remaining MSB after matching exceeded the value of 5 percent as programme types that are in fact not comparable in terms of their participants.

## 4 Data and variables

This Section describes in detail the administrative data set underlying our empirical analysis, the selected programmes analysed and the variables used.

### *Data set and analysed programmes*

The empirical analysis is based on the TrEffeR-data set (Stephan et al. 2006). This administrative data set has been constructed for monitoring purposes of the German Public Employment Service. The current version merges data flows from the distinct computer based operative systems of the Public Employment Service on periods of registered job search, registered unemployment, participation in labour market programmes and employment for the period from 2000 to 2007.

The sample analysed here covers individuals who were unemployed for no longer than one year in March 2003 and of age 25 to 59. Besides long-term unemployed, this selection also excludes individuals eligible for specific programmes for youth and older workers, who may enter early retirement or choose the option available to them not to register as unemployed any longer. We include all individuals entering one of the programmes investigated during March 2003 in our analysis. A 10-percent-sample of the group of unemployed persons not entering a programme dur-

ing March 2003 is utilised to compute programme effects on participants compared to a state of “waiting”. As is mostly done in the literature, only the first programme entry during an unemployment spell is analysed. All estimates are performed separately for West and East Germany.

We restrict our analysis on the programme variants described in Overview 1 during March 2003. Case managers in local employment agencies have latitude in the decision to grant participation in one of them. Based on the assumption that a programme is not characterised by its type, but also by its length, we also distinguish between different completed programme durations (up to three months, four to six months, seven to 12 months and more than 12 months). Note, that our data do not include information on planned programme duration. Presumably, participants exit a programme prior to its planned completion if they find a job during participation, or if they do not expect to find a job even with the help of the programme. Hence, completed duration might be correlated with the outcome of treatment as well as with individual characteristics and we cannot rule out endogeneity of this variable.

### Overview 1 Analysed programme variants

	Programme variant
1. Further vocational training ( <i>Förderung beruflicher Weiterbildung</i> )	a) <b>Provision of specific professional skills</b> , which might contain occupation-related training and general training ( <i>berufsbezogene übergreifende Weiterbildung, berufspraktische Weiterbildung oder berufliche Aufstiegsweiterbildung</i> ).
	b) Practical training in a <b>practice firm</b> , without trainees working in a “real” company ( <i>berufliche Weiterbildung in einer Übungsfirma, Übungswerkstatt oder sonstigen Übungseinrichtung</i> )
	c) Long <b>retraining</b> programmes, conducted firm-external within a group ( <i>Gruppenmaßnahme mit Abschluss in anerkanntem Ausbildungsberuf</i> )
2. Short training ( <i>Trainingsmaßnahme</i> )	a) <b>Short classroom training</b> , aimed at the improvement of knowledge and skills ( <i>Nicht-betriebliche Trainingsmaßnahme zur Vermittlung von Kenntnissen</i> )
	b) <b>Short firm-internal training</b> , aimed at the improvement of knowledge and skills ( <i>Betriebliche Trainingsmaßnahme zur Vermittlung von Kenntnissen</i> )
3. <b>Job creation scheme</b> of the traditional type ( <i>Arbeitsbeschaffungsmaßnahme</i> )	

Participation in each of the programmes is also compared with non-participation in March 2003 in the sense of “waiting”. As has already been mentioned, participants as well as non-participants may enter (further) programmes after March 2003. In fact, many of them do so: Using the same data set as we do in this paper, Stephan (2008) shows for a restricted set of programmes that typically around 40 to 50 per cent of those not starting a treatment during March 2003 and around 50 to 70 per cent of those taking-up a programme in March 2003 also participated in at least one (further) programme starting after March 2003.

### *Variables*

We estimate programme effects on participants using two outcome variables: First, we compute cumulated days spent in regular, unsubsidised employment during the 3.5 years after programme entry in March 2003. Second, we compute shares in regular, unsubsidised employment 3.5 years after programme entry. Periods, during which an individual is supported for instance by a wage subsidy are not interpreted as a “success” in this sense. Since the classification window encompasses only one month, outcome variables for “waiting” non-participants are measured since March 15, 2003, and all individuals who had already left unemployment at this date were excluded from the sample.

The message conveyed by these outcome variables is quite different: Cumulated effects display the evolvement of estimated programme effects over the entire observation period of time; they can be computed as the integral over employment shares during each day of the observation period. Thus they account for locking-in effects – times of reduced search – over the time period of programme participation. The share in regular employment at the end of the observation period refers only to one particular reporting day. It can, however, be interpreted as an indicator that shows how cumulated days in employment will develop further after the end of the observation period. If the average effect on the share of participants in employment is positive, we can expect that also the average effect on cumulated days will develop further in a “positive direction”.

The choice of comparison groups is based on the variables described in Overview 2, which are all categorised as dummy variables. The variables allow controlling for a wide range of individual characteristics, including past experiences with the Public Employment Service. Since the data include also information on previous unemployment histories, which should capture most of the effects of unobserved individual factors (Heckman et. al 1999), unobserved individual heterogeneity should not be a serious problem for the analysis. However, regarding short firm-internal programmes, the lack of information on employer characteristics may produce a bias in the estimates if participating individuals are working in average within firms with other characteristics than non-participants do (Jaenichen/Stephan 2007).

Mean values of selected explaining variables can be found in Table A.1 in the Appendix. It shows that participants in a specific programme differ in fact from the average non-participant as well as from participants in other programmes. In particular, participants in all training programmes seem to be a positive selection of unemployed persons, whereas those joining a job creation scheme can be considered as a negative selection.



## Overview 2

### Explaining variables

	Variables
Socio-demographic characteristics, measured at the start of an unemployment spell	Age, marital status, nationality, education, degree of disablement, but also information on the kind of benefit receipt
Unemployment duration in current spell	Months until programme entry in March 2003 for participants; months until March 15, 2003 for matched comparison persons
Unemployment-history in the two years preceding the analysed unemployment spell, measured at the start of the unemployment spell	Former unemployment, participation in labour market programs, sanctions and periods of illness
Regional labour market situation	Performance cluster of the regional labour market (Blien et al. 2004)

## 5 Empirical Results

The main results of our empirical analysis are summarised in Table 2. Panel I and II display average treatment effects of receiving treatment J (in rows) for the participants in this programme, compared to receiving treatment K (in columns), where the latter outcome is imputed by means of a comparison group that has participated in programme K. While Panel I shows the effect on cumulated days spent in regular, unsubsidised employment during the 3.5 years after programme entry, Panel II shows the effect on the share in regular employment at the end of the observation period. Only those pairwise comparisons are presented, for which a mean standardised bias (MSB) below 5 could be achieved in the matching procedure. Comparisons with a higher MSB are indicated with an “x”; our interpretation is that for these combinations treatment and comparison group are too different in terms of their characteristics to draw any conclusions how members of the one programme would have fared in the other programme.

A more detailed representation of the results can be found in Table A.2 to A.4 in the Appendix. Table A.2 contains information on the MSB before and after matching and on the number of observations in the treatment and comparison group after the matching took place. The number of observations might be reduced in comparison to the descriptive statistics in Table A.1 due to the requirement of common support (we set a calliper of 0.005) – this implies that results are not valid for the entire set of treated persons, but only for those that are in common support. Table A.3 contains the average values of both outcome variables for treatment and comparison groups, whose difference is the average treatment effect on the treated, given in Table 2.

### *Joining a programme compared to “waiting”*

We begin with a discussion of the mean effects of a programme entry compared to no or a later participation (“waiting”); this is the comparison most often presented in studies of active labour market programmes. Results at the end of the observation

period are summarised in the last column of Table 2 and in Figure 1. The development of estimated treatment effects over the entire observation period is shown in Figure A.1 and Figure A.2 in the Appendix. Since we analyse only entries from one selected month, seasonal patterns of employment can be observed clearly in Figure A.2.

**Table 2**  
**Average effects of treatment J on participants in this programme compared to participation in programme K**

Treatment group J		Comparison group K									
		Provision of skills			Pract. firm	Retrain- ing	Short training		Job creation scheme		Waiting
		up to 3	4-6	7-12	4-6	> 12	firm-internal	class-room	4-6	7-12	
<i>I. Cumulated days in regular employment, 3.5 years after programme entry in March 2003</i>											
Provision of skills up to 3 months	West		28	<b>85**</b>	71	<b>317**</b>	-100**	<b>74**</b>	x	<b>158**</b>	<b>103**</b>
	East		22	<b>150**</b>	-11	<b>391**</b>	-65*	<b>110**</b>	<b>269**</b>	x	<b>119**</b>
Provision of skills 4-6 months	West	-7		<b>63**</b>	57	<b>284**</b>	-130**	<b>55**</b>	x	x	<b>70**</b>
	East	-9		<b>115**</b>	25	<b>368**</b>	-77**	<b>100**</b>	<b>197**</b>	x	<b>119**</b>
Provision of skills 7-12 months	West	-92**	-56**		x	<b>228**</b>	-200**	-18	x	x	14
	East	-87*	-102**		-52	x	-190**	6	<b>148**</b>	<b>169**</b>	31
Practice firm 4-6 months	West	-68*	-46	19		<b>237**</b>	-201**	8	x	x	21
	East	-95	x	31		<b>222**</b>	-178**	37	<b>151**</b>	x	54
Retraining > 12 months	West	-270**	-282**	-211**	x		-376**	-208**	x	x	-167**
	East	x	-328**	-220**	x		-402**	-181**	x	x	-184**
Short firm-internal Training	West	<b>111**</b>	<b>125**</b>	<b>190**</b>	<b>197**</b>	<b>432**</b>		<b>183**</b>	x	x	<b>199**</b>
	East	<b>80*</b>	<b>55*</b>	<b>171**</b>	<b>130**</b>	<b>425**</b>		<b>187**</b>	x	x	<b>212**</b>
Short classroom Training	West	-59*	-44**	2	31	<b>228**</b>	-192**		x	x	<b>28**</b>
	East	-103**	-108**	-10	-37	x	-201**		<b>106**</b>	x	<b>24*</b>
Job creation 4-6 months	West	x	x	-34	x	x	-211**	-63*		<b>58*</b>	-9
	East	x	x	x	x	x	-272**	-110**		x	-62**
Job creation 7-12 months	West	-163**	x	-79**	x	x	x	-111**	-119**		-68**
	East	x	x	x	x	x	-343**	-104**	-36		-62**
<i>II. Share in regular employment, 3.5 years after programme entry in March 2003</i>											
Provision of skills up to 3 months	West		-0.04	-0.02	-0.04	-0.07	-0.05**	<b>0.05*</b>	x	0.03	<b>0.09**</b>
	East		-0.09*	-0.03	-0.13*	-0.09	-0.07*	0.05	<b>0.18**</b>	x	<b>0.07*</b>
Provision of skills 4-6 months	West	<b>0.05*</b>		0.03	0.00	-0.04	-0.02	<b>0.08**</b>	x	x	<b>0.12**</b>
	East	0.07		0.02	-0.04	-0.01	0.00	<b>0.12**</b>	<b>0.20**</b>	x	<b>0.16**</b>
Provision of skills 7-12 months	West	0.01	-0.02		x	-0.04	-0.05**	<b>0.05**</b>	x	x	<b>0.10**</b>
	East	0.05	-0.02		-0.03	x	-0.02	<b>0.11**</b>	<b>0.19**</b>	<b>0.15**</b>	<b>0.15**</b>
Practice firm 4-6 months	West	0.03	0.00	0.01		-0.05	-0.05	<b>0.08**</b>	x	x	<b>0.11**</b>
	East	0.02	x	0.01		-0.11	-0.02	<b>0.11*</b>	<b>0.17**</b>	x	<b>0.14**</b>
Retraining > 12 months	West	<b>0.10**</b>	0.03	<b>0.07*</b>	x		<b>0.05*</b>	<b>0.13**</b>	x	x	<b>0.18**</b>
	East	x	0.05	0.04	x		0.04	<b>0.17**</b>	x	x	<b>0.19**</b>
Short firm-internal training	West	<b>0.06**</b>	0.01	<b>0.05*</b>	0.05	-0.02		<b>0.10**</b>	x	x	<b>0.14**</b>
	East	<b>0.08*</b>	-0.01	0.01	0.01	-0.01		<b>0.12**</b>	x	x	<b>0.16**</b>
Short classroom training	West	0.00	-0.08**	-0.06**	-0.05	-0.13**	-0.11**		x	x	<b>0.04**</b>
	East	-0.05	-0.13**	-0.11**	-0.08	x	-0.14**		<b>0.07</b>	x	<b>0.04**</b>
Job creation 4-6 months	West	x	x	-0.06	x	x	-0.11**	-0.04		-0.03	0.04
	East	x	x	x	x	x	-0.16**	-0.07*		x	0.01
Job creation 7-12 months	West	-0.02	x	-0.02	x	x	x	-0.02	-0.04		0.04
	East	x	x	x	x	x	-0.17**	-0.02	0.00		0.03

\*)  $\alpha = 0.05$ , \*\*)  $\alpha = 0.01$ , x) Information not displayed, due to insufficient match quality (MSB  $\geq 5$ ).

Shaded area = significant negative effect of treatment in pairwise comparison.

Bold type = significant positive effect of treatment in pairwise comparison.

Numbers of observations and mean standardised biases are given in Table A.2.

Source: Own calculations, based on the TrEffer data.

We give an example: Persons from West Germany who joined a further vocational training programme aiming at the provision of skills with a duration of up to three

months in March 2003, spent 103 days more in regular employment during the 3.5 years after programme start than members of the matched comparison group not joining a programme (Panel I of Table 2). Their share in regular employment was 9 percentage points higher at the end of the observation period (Panel II of Table 2). For this combination, Table A.2 shows that the quality of the matching is excellent, reducing the MSB after matching to a value of 0.9. Table A.3 in the Appendix contributes the information that the average treatment effect on the treated is the result of in average 515 and 412 days spent in a regular job within the groups of participants and matched comparison persons, respectively. Shares in employment amounted to 0.50 and 0.41, respectively. Finally, Figure A.2 shows that seasonal employment effects are more important for the comparison group than for the treated group.

**Figure 1**  
Average treatment effects of participation in selected programmes compared to waiting



Note: Outcome variables are measured 3.5 years after programme entry in March 2003.

Source: Own calculations, based on the TrEffeR data.

Panel I of Table 2 and Figure 1 show rather mixed results of programme participation on cumulated days the participants have spent in regular employment during the 3.5 years after treatment start. We find significant positive effects of further vocational training providing professional skills with programme durations of up to six months. Longer training providing skills for six to 12 months as well as training in practice firms for four to six months has insignificant effects on the number of days in regular employment. The cumulated effect of long retraining programmes is significantly negative. This is however, not surprising, since substantial lock-in effects are a necessary side-effect of this kind of programmes. Regarding short training programmes, the effect on days spent in employment amounts to about 200 days for

firm-internal programmes, but is small for classroom training. This underlines the fact that it is important to distinguish between different variants of short training programmes. Finally, job creation schemes with duration between four and 12 months have mostly significant negative effects on cumulated days spent in employment.

A surprising fact is, however, that we obtain mostly significantly positive effects on shares of participants in regular employment, 3.5 years after programme entry. The only exceptions are job creation schemes, which have insignificant effects at the end of the observation period. Furthermore, effects are largest for long retraining schemes. Thus one can expect that also cumulated effects could have turned positive for all further training programmes and short training programmes investigated – but not for job creation schemes – if the observation period would have been longer.

These results are in line with those obtained by Biewen et al. (2007) and Rinne et al. (2007), who found also (at least partly) positive employment effects of further vocational training and short training programmes. They are, however, in contrast to the findings of Wunsch/Lechner (2008) for the programmes mentioned above as well as for job creation schemes. One reason for the different results might be that the latter analysed a shorter time period after programme entry (30 months compared to 42 months in this study), while programme effects might take some time to break-even. Second, Wunsch/Lechner (2008) restricted their sample to the age group 25 to 53. However, our results are even more positive, if we introduce a similar age restriction. Third, we analyse only (short-term unemployed) persons who entered a programme during the first year of their unemployment spell. Fourth, Wunsch/Lechner (2008) defined non-participants as persons who did not enter a programme during the 18 months following the inflow date into their sample. Thus their definition of non-treatment requires that no treatment has occurred up to a period of 18 months after entry into unemployment. In contrast, Biewen et al. (2007) as well as Rinne et al. (2007) performed separate estimates by duration of unemployment at the beginning of a treatment and require only that non-participants have not entered a measure during an accordingly chosen classification window. We have defined all those individuals as non-participants who did not enter a programme during one single month.

For job creation schemes our results are similar to the findings of Caliendo et al. (2006, 2008a, 2008b). Our findings are slightly better as far as we obtain no negative, but insignificant effects of participation on shares in employment at the end of the observation period. But note that we observe outcome variables for a slightly longer period of time (42 instead of 36 months) and that we analyse programme entries starting three years later than these authors did (2003 instead of 2000).

#### *Pairwise comparison of programme participations*

We turn now to a pairwise comparison of participation in particular programs. The first fact to note is that participants in variants of further vocational training schemes and short training schemes may be compared in most cases with each other. They

may, however, quite often not be compared with individuals joining a job creation scheme (denoted through combinations with an “x” in Table 2). Participants in the latter can be supposed as a “negative” selection of unemployed – the more so as job creation schemes are often used for long-term unemployed or “hard-to-place” workers. Hence, it not surprising that it turns out to be difficult to find a comparable group of individuals supported by a training scheme. Also the reduction of observations comparing Table A.2 with Table A.1 shows that some observations are lost due to common support requirements, when one strives to compare participants in further vocational training with those in job creation schemes.

Regarding further vocational training programmes, it seems that shorter programmes have the effect that participants have spent more days in regular employment during the observation period. However, the negative, while mostly insignificant differences, in shares in employment indicate that this “advantage” may not continue to increase, but start to decline over time. Thus the more positive effects of shorter programmes on cumulated days spent in employment are clearly an effect of the lock-in effects of participation increasing with programme duration. Furthermore, differences in both outcome variables are mostly insignificant comparing training, aimed at the provision of skills, and training in a practice firm.

Lock-in effects are naturally largest for long retraining programmes, and thus retraining performs worst among all programmes when comparing cumulated days in regular employment during the 3.5 years after programme start. However, the share in employment at the end of the observation period in West Germany is marginally significantly larger than it is the case for several shorter further vocational training programmes. This implies that the effectiveness of retraining programmes on cumulated days in employment could be supposed to increase further over time. For this programme, Lechner et al. (2005, Table 6.1, 38) found rather positive but only partly significant results for an observation period of seven years, compared to shorter programmes.

The “winners” in the pairwise comparison are obviously short training programmes conducted within firms: Participants spend more days in regular employment than those in every other programme, while they would have fared far worse in most other programmes. Additional analyses showed that this would be even more the case for wage subsidies (which are not included in the comparison presented here). The explanation at hand is that short firm-internal training programmes are – similarly to wage subsidies – not only a training programme, but rather a training programme in combination with access to a firm. They offer participants the possibility not only to increase their productivity, but also to convey their productivity to a potential employer. They may thus be used as a kind of cheap probation period by employers, where the “wage” is paid by the Public Employment Service.

In contrast, participants in short classroom training have spent less days in regular employment during the observation period than those individuals participating in further vocational training aimed at the provision of skills with an duration of up to 6

months; and also participants in the latter fared better with their training compared to a short classroom training. Thus one might conclude that previous results of Biewen et al. (2007) and Wunsch/Lechner (2008), who obtained no advantages of participation in further vocational training compared to short programmes, is partly a result of the fact that these authors did not distinguish between variants of short training programmes.

As has already been noted, participation in job creation schemes may quite often not be compared with participation in another of the investigated programmes. In particular, matching quality was not satisfactory for pairwise comparisons of participants in job creation schemes and in long retraining programmes; these groups seem to differ strongly. For instance (Table A.1), participants in job creation schemes were in average older, had more often health problems, had less often obtained a secondary degree, and have spent more time in unemployment (in the years preceding the current spell as well as in the current unemployment spell). The same applies to participants in long-term job creation schemes (six to 12 months) compared to participants in medium-term training (four to six months), aimed at the provision of skills or in a practice firm. However, when a comparison with other programmes was feasible, participation in job creations schemes achieved worse employment effects compared to participation in training schemes.

## 6 Conclusions

Our paper conducted a pairwise comparison of the effects of participation in further training programmes, short training programmes and job creation schemes, starting in March 2003, as well as of not entering a programme during this month. The analysis is restricted to persons of age 25 to 59 and on the first programme during the first year of an unemployment spell.

Compared to non-participation in the sense of “waiting”, we find that participation in further vocational training aimed at the provision of skills as well as short training programmes increase the number of days, participants have spent in regular employment during the 3.5 years after programme start. In contrast, participation in retraining and job creation schemes decreases the number of days. However, all programmes had a positive impact on the share of participants in regular employment at the end of the observation period.

The pairwise comparison of programmes conveys the impression that across further vocational training programmes, shorter programmes perform overall better; this is mostly the result of shorter lock-in effects. Also further training aimed at the provision of skills with duration of up to six months seems to be more advantageous than short classroom training. In contrast, short firm-internal training is by the far the most “successful” programme in the portfolio of programmes included into this investigation. This is, however, probably related to the fundamentally different design of this programme, which requires an employer willing to offer a training opportunity.

Finally, regarding their observed characteristics, participants in job creation schemes differ so strongly from participants in other programmes that a direct comparison is mostly not feasible. This might be taken as a hint that participants in this programme – whose objective is explicitly not to achieve employment but to increase employability – are in fact a strongly selected group of hard-to-place individuals. Other programmes available in the time period investigated might not have been suitable for this group. Thus it remains at least questionable if participation in another programme could have improved the labour market prospects of participants in job creation schemes.

Summing up, our results are rather favourable regarding the effects of further vocational training programmes and of short firm-internal training on the employment prospects of participants. In this respect our results are more similar to those obtained by Biewen et al. (2007) and Rinne et al. (2007) than to the findings of Wunsch/Lechner (2008). However, our results highlight also the strong heterogeneity in the effects of variants of short training programmes, which has also been noticed by Wolff/Jozwiak (2007) and Stephan et al. (2006). Finally, we confirm previous findings of Caliendo et al. (2006, 2008a, 2008b) and Hujer/Thomsen (2006) that job creation schemes are no effective means to get unemployed persons into employment. But our findings show also that participants in these schemes are not really comparable with participants in training schemes with regard to their characteristics.

While these results complement existing evidence for Germany, it is important to keep in mind that our evaluation design does not isolate the effects of a single intervention. A companion paper has shown that a high share of programme participants enters a further programme and that a high share of those “waiting” take up at least one programme later (Stephan 2008). Thus, further research in particular on programme careers is called for.

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## Appendix: Additional Figures and Tables

Table A.1

Variable means of selected attributes (0 = no, 1 = yes) before matching

Variables	Provision of skills						Practice firm		Retraining		Short training				Job creation scheme				Waiting	
	up to 3 m.		4-6 months		7-12 months		4-6 months		> 12 months		firm		classroom		4-6 months		7-12 months		Waiting	
	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East
Female	0.36	0.23	0.47	0.32	0.44	0.41	0.56	0.40	0.52	0.63	0.33	0.33	0.55	0.44	0.47	0.42	0.43	0.49	0.41	0.44
Age 25-29	0.20	0.18	0.17	0.16	0.14	0.11	0.16	0.18	0.29	0.18	0.25	0.21	0.18	0.19	0.23	0.24	0.21	0.25	0.25	0.22
Age 30-34	0.19	0.17	0.21	0.17	0.22	0.20	0.19	0.17	0.25	0.26	0.20	0.18	0.19	0.17	0.11	0.07	0.10	0.06	0.17	0.13
Age 35-39	0.21	0.19	0.24	0.22	0.22	0.21	0.18	0.13	0.25	0.27	0.20	0.22	0.22	0.19	0.15	0.10	0.14	0.11	0.18	0.16
Age 40-44	0.19	0.20	0.19	0.19	0.23	0.20	0.21	0.21	0.14	0.18	0.17	0.18	0.19	0.19	0.15	0.14	0.16	0.11	0.16	0.18
Age 45-49	0.15	0.17	0.13	0.15	0.12	0.19	0.18	0.17	0.06	0.08	0.11	0.12	0.13	0.16	0.16	0.20	0.21	0.17	0.13	0.16
Age 50-54	0.07	0.09	0.06	0.10	0.06	0.10	0.07	0.13	0.01	0.03	0.06	0.09	0.09	0.11	0.21	0.25	0.18	0.29	0.12	0.15
Age 54-59	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.04	0.00	0.00	0.02	0.02	0.02	0.04	0.11	0.19	0.14	0.20	0.09	0.10
Health problems	0.05	0.02	0.06	0.04	0.05	0.06	0.05	0.03	0.05	0.04	0.08	0.04	0.06	0.06	0.15	0.09	0.20	0.19	0.13	0.10
Slightly disabled	0.02	0.01	0.01	0.00	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.02	0.02	0.02	0.02	0.04	0.07	0.03	0.02
Severely disabled	0.02	0.01	0.02	0.01	0.03	0.01	0.03	0.02	0.01	0.00	0.04	0.02	0.02	0.02	0.10	0.07	0.11	0.12	0.04	0.02
Married	0.51	0.55	0.54	0.58	0.52	0.57	0.55	0.64	0.48	0.58	0.46	0.54	0.51	0.54	0.48	0.71	0.49	0.64	0.53	0.55
Married and female	0.19	0.12	0.26	0.20	0.24	0.26	0.33	0.25	0.26	0.41	0.13	0.21	0.29	0.26	0.24	0.31	0.21	0.35	0.24	0.27
Foreigner	0.12	0.01	0.13	0.03	0.12	0.01	0.13	0.02	0.13	0.00	0.11	0.02	0.15	0.02	0.11	0.00	0.10	0.00	0.18	0.02
Without secondary degree	0.08	0.02	0.08	0.04	0.04	0.02	0.06	0.02	0.06	0.02	0.07	0.04	0.09	0.03	0.12	0.04	0.13	0.04	0.15	0.06
Secondary degree (Hauptschule)	0.44	0.13	0.40	0.16	0.29	0.15	0.46	0.13	0.45	0.11	0.47	0.18	0.40	0.21	0.34	0.31	0.41	0.31	0.53	0.30
Secondary degree (Realschule)	0.29	0.74	0.29	0.67	0.27	0.67	0.34	0.68	0.31	0.77	0.28	0.67	0.27	0.65	0.34	0.56	0.28	0.53	0.19	0.57
Secondary degree (Gymnasium)	0.20	0.10	0.23	0.13	0.40	0.17	0.13	0.17	0.18	0.10	0.19	0.11	0.24	0.12	0.20	0.08	0.19	0.12	0.14	0.07
Without vocational training	0.25	0.05	0.27	0.07	0.18	0.05	0.26	0.04	0.46	0.09	0.23	0.07	0.26	0.08	0.29	0.06	0.35	0.09	0.40	0.14
Vocational training	0.68	0.90	0.62	0.85	0.62	0.83	0.71	0.83	0.50	0.87	0.69	0.87	0.61	0.84	0.59	0.89	0.53	0.84	0.54	0.82
University degree	0.08	0.05	0.11	0.08	0.20	0.12	0.03	0.13	0.04	0.04	0.08	0.06	0.12	0.07	0.12	0.05	0.11	0.07	0.06	0.04
Unemployment benefit receipt	0.64	0.74	0.61	0.69	0.59	0.67	0.64	0.69	0.53	0.56	0.65	0.65	0.57	0.57	0.70	0.69	0.65	0.66	0.48	0.52
Unemployment assistance receipt	0.10	0.10	0.10	0.13	0.08	0.18	0.08	0.17	0.12	0.30	0.10	0.15	0.08	0.20	0.17	0.20	0.21	0.22	0.13	0.22
No benefit receipt	0.26	0.16	0.29	0.19	0.34	0.15	0.28	0.15	0.34	0.15	0.25	0.20	0.34	0.23	0.13	0.11	0.15	0.12	0.38	0.26
Unemployed up to 1 month	0.55	0.46	0.57	0.46	0.59	0.39	0.54	0.47	0.52	0.34	0.49	0.36	0.59	0.39	0.37	0.35	0.33	0.26	0.45	0.28
Unemployed 1-6 months	0.22	0.22	0.19	0.20	0.19	0.19	0.23	0.19	0.18	0.16	0.24	0.22	0.19	0.19	0.22	0.16	0.17	0.17	0.20	0.17
Unemployed 7-12 months	0.14	0.19	0.14	0.19	0.12	0.19	0.14	0.15	0.16	0.16	0.16	0.24	0.12	0.18	0.20	0.22	0.21	0.26	0.17	0.23
Unemployed 13-18 months	0.06	0.08	0.06	0.08	0.06	0.13	0.06	0.12	0.08	0.16	0.08	0.12	0.06	0.14	0.12	0.16	0.14	0.18	0.10	0.18
Unemployed 19-24 months	0.04	0.05	0.04	0.06	0.04	0.10	0.03	0.08	0.06	0.18	0.03	0.06	0.04	0.10	0.10	0.11	0.14	0.13	0.09	0.14
Labour market programme	0.25	0.37	0.21	0.35	0.21	0.44	0.19	0.39	0.27	0.51	0.30	0.47	0.21	0.42	0.35	0.39	0.44	0.52	0.20	0.42
Period of sickness	0.09	0.09	0.08	0.15	0.05	0.16	0.11	0.13	0.07	0.17	0.09	0.14	0.08	0.17	0.16	0.19	0.16	0.27	0.13	0.21
Sanctions	0.01	0.01	0.02	0.01	0.03	0.01	0.02	0.01	0.04	0.01	0.02	0.01	0.03	0.01	0.02	0.00	0.03	0.00	0.05	0.02
1st month of unemployment	0.10	0.15	0.09	0.13	0.10	0.14	0.09	0.10	0.14	0.25	0.17	0.14	0.11	0.08	0.10	0.04	0.08	0.06	0.13	0.11
2nd month of unemployment	0.10	0.20	0.11	0.12	0.10	0.08	0.09	0.10	0.12	0.08	0.15	0.13	0.14	0.11	0.09	0.07	0.07	0.10	0.14	0.11
3rd month of unemployment	0.16	0.14	0.13	0.14	0.14	0.13	0.16	0.15	0.11	0.10	0.15	0.17	0.18	0.17	0.08	0.08	0.09	0.08	0.16	0.17
4th month of unemployment	0.10	0.12	0.11	0.11	0.09	0.12	0.11	0.12	0.09	0.10	0.11	0.11	0.10	0.12	0.10	0.10	0.12	0.09	0.11	0.13
5th month of unemployment	0.11	0.10	0.10	0.09	0.09	0.09	0.08	0.10	0.10	0.07	0.09	0.09	0.10	0.11	0.10	0.08	0.06	0.08	0.09	0.09
6th month of unemployment	0.09	0.09	0.10	0.09	0.11	0.09	0.12	0.06	0.09	0.07	0.07	0.08	0.09	0.08	0.09	0.10	0.07	0.09	0.08	0.07
7th month of unemployment	0.07	0.03	0.08	0.07	0.09	0.07	0.07	0.03	0.08	0.06	0.06	0.07	0.07	0.07	0.09	0.09	0.11	0.09	0.07	0.06
8th month of unemployment	0.06	0.07	0.06	0.08	0.06	0.06	0.07	0.06	0.07	0.05	0.04	0.04	0.05	0.05	0.07	0.10	0.09	0.09	0.05	0.05
9th month of unemployment	0.07	0.05	0.06	0.06	0.08	0.08	0.08	0.09	0.07	0.08	0.06	0.05	0.05	0.07	0.09	0.10	0.08	0.06	0.06	0.06
10th month of unemployment	0.06	0.02	0.06	0.04	0.06	0.05	0.04	0.07	0.04	0.06	0.03	0.04	0.04	0.05	0.06	0.09	0.08	0.06	0.04	0.05
11th month of unemployment	0.04	0.02	0.05	0.03	0.04	0.05	0.02	0.06	0.03	0.05	0.03	0.04	0.03	0.04	0.07	0.06	0.07	0.09	0.03	0.04
12th month of unemployment	0.04	0.03	0.05	0.04	0.06	0.06	0.06	0.06	0.05	0.03	0.03	0.04	0.03	0.05	0.06	0.10	0.06	0.08	0.04	0.05
Mean programme duration	59	54	149	147	277	280	155	150	812	824	33	23	46	39	172	175	326	312	-	-
Observations	818	390	1414	432	1662	762	401	163	725	466	3135	1057	5716	2403	449	792	498	590	14441	5744

Source: Own calculations, based on the TrEffer data.

**Table A.2**

**Mean standardized bias before and after matching and number of observations within common support for treatment groups J and comparison groups K**

Treatment group J		Comparison group K																			
		Provision of skills						Practice firm		Retraining		Short training				Job creation scheme				Waiting	
		up to 3 m.		4-6 months		7-12 months		4-6 months		> 12 months		firm-internal		classroom		4-6 months		7-12 months		West	
		West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East
Provision of skills up to 3 months	MSB before			6.1	8.0	9.9	11.6	10.3	12.4	11.0	17.9	6.6	9.7	9.4	12.5	19.0	22.7	18.1	23.2	10.9	15.7
	<b>MSB after</b>			<b>1.3</b>	<b>2.9</b>	<b>1.7</b>	<b>2.0</b>	<b>4.7</b>	<b>6.0</b>	<b>3.6</b>	<b>4.9</b>	<b>1.1</b>	<b>1.5</b>	<b>1.0</b>	<b>1.2</b>	<b>10.1</b>	<b>5.0</b>	<b>5.0</b>	<b>5.4</b>	<b>0.9</b>	<b>0.9</b>
	Observations J			783	367	765	361	707	317	713	296	788	374	789	375	628	296	662	228	793	377
Observations K			1348	381	1574	679	362	138	638	342	3063	959	5468	2109	319	554	356	375	13416	4924	
Provision of skills 4-6 months	MSB before	6.1	8.0			7.0	8.3	9.6	10.2	9.8	15.2	8.1	7.2	6.0	8.6	19.1	19.5	18.5	18.4	10.5	12.6
	<b>MSB after</b>	<b>1.6</b>	<b>3.6</b>			<b>1.4</b>	<b>1.7</b>	<b>2.4</b>	<b>3.9</b>	<b>3.3</b>	<b>4.7</b>	<b>1.0</b>	<b>2.1</b>	<b>0.7</b>	<b>1.1</b>	<b>14.6</b>	<b>4.8</b>	<b>7.4</b>	<b>6.1</b>	<b>0.6</b>	<b>0.9</b>
	Observations J	1346	380			1342	395	1206	337	1273	346	1349	408	1354	411	1245	335	1265	346	1358	409
Observations K	783	366			1562	672	378	140	668	407	3066	969	5469	2016	287	552	342	363	13446	4692	
Provision of skills 7-12 months	MSB before	9.9	11.6	7.0	8.3			13.9	5.9	12.3	12.9	12.3	7.9	9.2	5.9	19.6	17.1	19.6	16.8	13.7	10.2
	<b>MSB after</b>	<b>1.9</b>	<b>4.0</b>	<b>1.5</b>	<b>2.6</b>			<b>5.9</b>	<b>4.0</b>	<b>3.8</b>	<b>5.9</b>	<b>1.4</b>	<b>1.8</b>	<b>1.0</b>	<b>0.8</b>	<b>12.9</b>	<b>4.3</b>	<b>7.6</b>	<b>4.3</b>	<b>1.0</b>	<b>1.2</b>
	Observations J	1569	675	1561	672			1391	662	1496	645	1564	702	1581	701	1429	665	1389	619	1585	708
Observations K	765	361	1341	395			365	151	666	413	3063	994	5430	2168	335	591	360	405	13453	4868	
Practice firm 4-6 months	MSB before	10.3	12.4	9.6	10.2	13.9	5.9			15.2	15.3	11.3	10.0	11.6	7.4	23.0	16.2	23.5	17.5	13.8	11.0
	<b>MSB after</b>	<b>3.1</b>	<b>4.5</b>	<b>1.4</b>	<b>8.2</b>	<b>3.1</b>	<b>1.6</b>			<b>4.6</b>	<b>4.8</b>	<b>1.5</b>	<b>3.3</b>	<b>1.2</b>	<b>1.0</b>	<b>12.7</b>	<b>4.6</b>	<b>9.0</b>	<b>6.7</b>	<b>0.8</b>	<b>2.6</b>
	Observations J	362	138	379	139	365	151			327	122	385	153	384	157	192	133	246	110	386	157
Observations K	717	318	1231	344	1543	668			552	360	3026	941	5466	2086	251	461	186	363	13441	4726	
Retraining > 12 months	MSB before	11.0	17.9	9.8	15.2	12.3	12.9	15.2	15.3			12.2	14.2	11.6	14.6	18.7	20.5	17.5	19.1	11.5	16.8
	<b>MSB after</b>	<b>2.5</b>	<b>5.5</b>	<b>2.4</b>	<b>4.5</b>	<b>2.2</b>	<b>3.1</b>	<b>5.6</b>	<b>6.4</b>			<b>1.5</b>	<b>2.5</b>	<b>1.5</b>	<b>2.0</b>	<b>9.1</b>	<b>7.2</b>	<b>7.4</b>	<b>5.8</b>	<b>0.9</b>	<b>1.4</b>
	Observations J	635	335	669	403	665	414	536	354			670	428	679	421	452	357	545	320	681	440
Observations K	716	301	1282	346	1514	646	328	122			3017	902	5296	2018	241	373	257	248	12252	4446	
Short firm-internal training	MSB before	6.6	9.7	8.1	7.2	12.3	7.9	11.3	10.0	12.2	14.2			9.4	6.2	20.6	18.9	19.3	19.1	9.7	10.0
	<b>MSB after</b>	<b>1.6</b>	<b>3.1</b>	<b>1.5</b>	<b>2.1</b>	<b>1.9</b>	<b>2.2</b>	<b>3.6</b>	<b>4.3</b>	<b>4.7</b>	<b>2.8</b>			<b>0.8</b>	<b>0.6</b>	<b>11.7</b>	<b>5.4</b>	<b>7.8</b>	<b>5.8</b>	<b>0.4</b>	<b>0.6</b>
	Observations J	3059	957	3062	965	3056	995	2933	920	2982	893			3067	1008	2971	925	2948	880	3067	1012
Observations K	788	374	1349	408	1564	703	385	153	670	428			5425	2173	341	597	366	385	13485	4810	
Short classroom training	MSB before	9.4	12.5	6.0	8.6	9.2	5.9	11.6	7.4	11.6	14.6	9.4	6.2			21.4	17.1	20.7	16.5	9.8	5.9
	<b>MSB after</b>	<b>3.7</b>	<b>4.1</b>	<b>1.2</b>	<b>2.6</b>	<b>1.9</b>	<b>1.7</b>	<b>4.2</b>	<b>3.4</b>	<b>2.9</b>	<b>8.0</b>	<b>1.2</b>	<b>1.2</b>			<b>14.2</b>	<b>4.7</b>	<b>9.0</b>	<b>5.9</b>	<b>0.4</b>	<b>0.6</b>
	Observations J	5430	2086	5464	1975	5394	2168	5195	2056	5069	1958	5416	2171			4747	2137	4902	2080	5474	2186
Observations K	790	376	1355	411	1581	701	384	157	680	422	3068	1008			381	621	398	443	13464	4927	
Job creation scheme 4-6 months	MSB before	19.0	22.7	19.1	19.5	19.6	17.1	23.0	16.2	18.7	20.5	20.6	18.9	21.4	17.1			8.6	11.2	19.3	15.5
	<b>MSB after</b>	<b>6.2</b>	<b>11.6</b>	<b>5.3</b>	<b>7.9</b>	<b>3.6</b>	<b>5.4</b>	<b>15.9</b>	<b>9.6</b>	<b>6.9</b>	<b>10.3</b>	<b>4.1</b>	<b>4.9</b>	<b>4.7</b>	<b>2.6</b>			<b>2.7</b>	<b>5.1</b>	<b>3.2</b>	<b>3.5</b>
	Observations J	315	475	281	479	335	579	167	442	229	323	341	592	381	621			385	581	399	657
Observations K	653	298	1267	336	1472	666	221	133	468	365	3035	934	5460	2184			374	448	13434	4947	
Job creation scheme 7-12 months	MSB before	18.1	23.2	18.5	18.4	19.6	16.8	23.5	17.5	17.5	19.1	19.3	19.1	20.7	16.5	8.6	11.2			16.6	15.1
	<b>MSB after</b>	<b>4.7</b>	<b>9.6</b>	<b>5.1</b>	<b>9.1</b>	<b>3.8</b>	<b>5.2</b>	<b>9.2</b>	<b>10.2</b>	<b>5.2</b>	<b>10.0</b>	<b>5.2</b>	<b>4.5</b>	<b>3.5</b>	<b>4.5</b>	<b>3.4</b>	<b>2.6</b>			<b>2.9</b>	<b>2.2</b>
	Observations J	354	369	338	350	360	400	176	344	244	240	365	384	398	443	373	446			410	458
Observations K	688	230	1320	348	1449	625	255	110	566	323	3066	902	5468	2130	384	585			13452	4823	

Source: Own calculations, based on the TrEffer data.

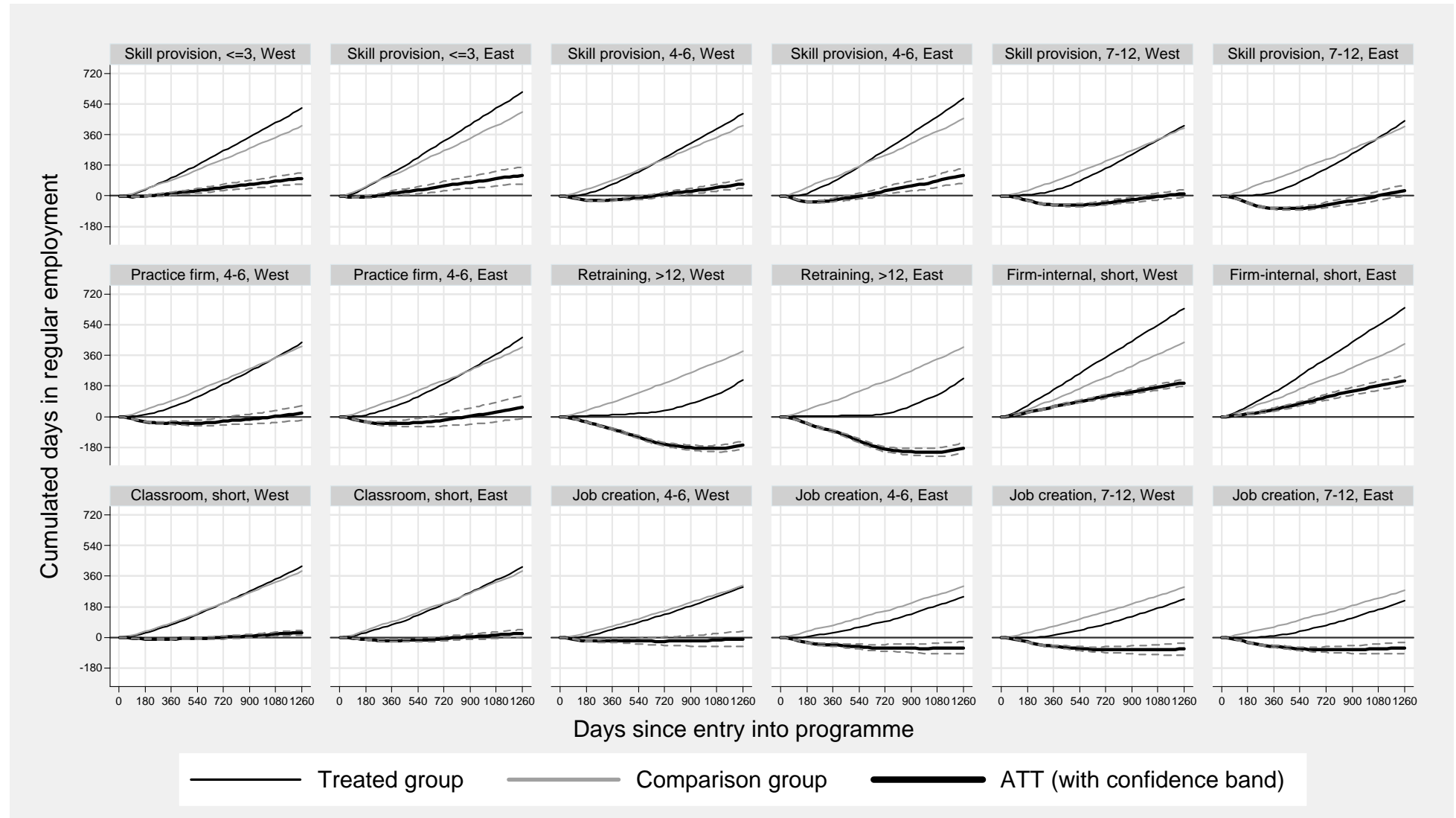
**Table A.3**  
**Average outcomes for treatment groups J and comparison groups K**

Treatment group J	Comparison group K																				
	up to 3 months		Provision of skills 4-6 months		7-12 months		Practice firm 4-6 months		Retraining > 12 months		Short training firm-internal		classroom		Job creation scheme 4-6 months		7-12 months		Waiting		
	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	West	East	
<i>I. Cumulated days in regular employment, 3.5 years after programme entry in March 2003</i>																					
Provision of skills up to 3 months	J			515	615	516	624	520	619	524	615	518	607	514	609	490	575	482	525	515	611
	K			487	593	431	474	449	630	208	224	619	672	440	499	397	307	324	277	412	492
Provision of skills 4-6 months	J	484	591			484	580	491	606	487	580	482	570	483	571	480	552	483	540	483	572
	K	492	599			422	465	434	581	203	212	613	647	427	470	346	354	339	275	413	453
Provision of skills 7-12 months	J	413	444	412	447			414	438	416	452	410	440	412	440	414	435	407	429	412	439
	K	505	531	468	550			413	490	188	224	610	630	430	434	472	286	357	260	399	408
Practice firm 4-6 months	J	432	487	435	504	443	463			434	439	434	467	434	460	436	446	403	420	435	463
	K	501	582	481	546	424	432			197	217	635	646	426	424	455	295	350	243	414	408
Retraining > 12 months	J	220	216	216	218	214	227	222	223			219	224	217	223	199	219	209	221	217	224
	K	489	527	498	547	425	447	421	431			595	627	425	405	525	319	409	286	384	408
Short firm-internal training	J	636	640	636	637	636	637	638	639	639	650			636	638	634	638	630	629	636	637
	K	525	560	511	582	446	466	441	509	207	225			453	451	517	302	354	304	437	425
Short classroom training	J	418	423	417	429	419	413	418	413	427	428	419	414			413	411	417	414	417	411
	K	477	526	461	538	417	423	387	451	199	202	611	615			444	305	318	274	389	388
Job creation 4-6 months	J	327	249	329	261	319	255	361	252	329	279	307	252	299	250			291	239	296	238
	K	424	435	410	464	353	344	320	379	202	222	518	524	362	359			233	216	304	300
Job creation 7-12 months	J	242	228	246	218	235	216	282	222	276	250	241	227	230	215	224	216			226	215
	K	405	438	373	383	313	331	353	337	198	226	490	570	341	320	343	252			294	277
<i>II. Share in regular employment, 3.5 years after programme entry in March 2003</i>																					
Provision of skills up to 3 months	J			0.50	0.58	0.50	0.58	0.51	0.58	0.51	0.59	0.50	0.57	0.50	0.57	0.49	0.54	0.48	0.51	0.50	0.57
	K			0.53	0.67	0.52	0.61	0.55	0.71	0.57	0.68	0.56	0.64	0.45	0.52	0.42	0.36	0.45	0.41	0.41	0.50
Provision of skills 4-6 months	J	0.53	0.64			0.53	0.63	0.53	0.65	0.53	0.62	0.52	0.62	0.52	0.62	0.52	0.61	0.53	0.58	0.52	0.62
	K	0.48	0.57			0.50	0.61	0.53	0.69	0.56	0.63	0.54	0.61	0.44	0.50	0.37	0.41	0.44	0.40	0.41	0.46
Provision of skills 7-12 months	J	0.50	0.57	0.49	0.59			0.50	0.58	0.50	0.58	0.49	0.58	0.49	0.57	0.49	0.57	0.49	0.56	0.49	0.58
	K	0.48	0.52	0.52	0.60			0.56	0.61	0.54	0.63	0.54	0.59	0.44	0.47	0.49	0.38	0.50	0.41	0.40	0.42
Practice firm 4-6 months	J	0.51	0.59	0.52	0.60	0.53	0.58			0.53	0.56	0.52	0.58	0.51	0.57	0.51	0.55	0.50	0.52	0.52	0.57
	K	0.48	0.56	0.52	0.59	0.51	0.57			0.57	0.67	0.56	0.60	0.43	0.46	0.46	0.37	0.42	0.36	0.40	0.43
Retraining > 12 months	J	0.57	0.63	0.57	0.62	0.57	0.63	0.57	0.63			0.57	0.63	0.57	0.62	0.55	0.62	0.57	0.63	0.57	0.62
	K	0.47	0.52	0.53	0.57	0.50	0.59	0.54	0.54			0.52	0.59	0.44	0.45	0.53	0.36	0.52	0.46	0.39	0.43
Short firm-internal training	J	0.57	0.61	0.56	0.61	0.56	0.61	0.57	0.61	0.57	0.62			0.57	0.61	0.56	0.61	0.56	0.60	0.57	0.60
	K	0.50	0.53	0.55	0.61	0.52	0.60	0.52	0.60	0.59	0.63			0.46	0.49	0.50	0.35	0.42	0.44	0.43	0.45
Short classroom training	J	0.43	0.46	0.43	0.46	0.43	0.45	0.43	0.45	0.43	0.46	0.43	0.45			0.42	0.45	0.43	0.45	0.43	0.45
	K	0.42	0.51	0.50	0.59	0.49	0.56	0.48	0.53	0.56	0.59	0.54	0.58			0.47	0.38	0.44	0.44	0.38	0.40
Job creation 4-6 months	J	0.38	0.32	0.37	0.34	0.37	0.33	0.39	0.33	0.35	0.37	0.35	0.33	0.34	0.32			0.34	0.31	0.34	0.31
	K	0.43	0.41	0.45	0.52	0.43	0.49	0.37	0.50	0.60	0.67	0.47	0.49	0.38	0.39			0.36	0.29	0.30	0.31
Job creation 7-12 months	J	0.36	0.34	0.37	0.33	0.36	0.32	0.40	0.31	0.40	0.41	0.35	0.34	0.34	0.32	0.33	0.32			0.33	0.31
	K	0.38	0.44	0.42	0.42	0.38	0.48	0.47	0.34	0.55	0.64	0.44	0.51	0.36	0.34	0.37	0.32			0.29	0.28

Source: Own calculations, based on the TrEffer data.

**Figure A.1**

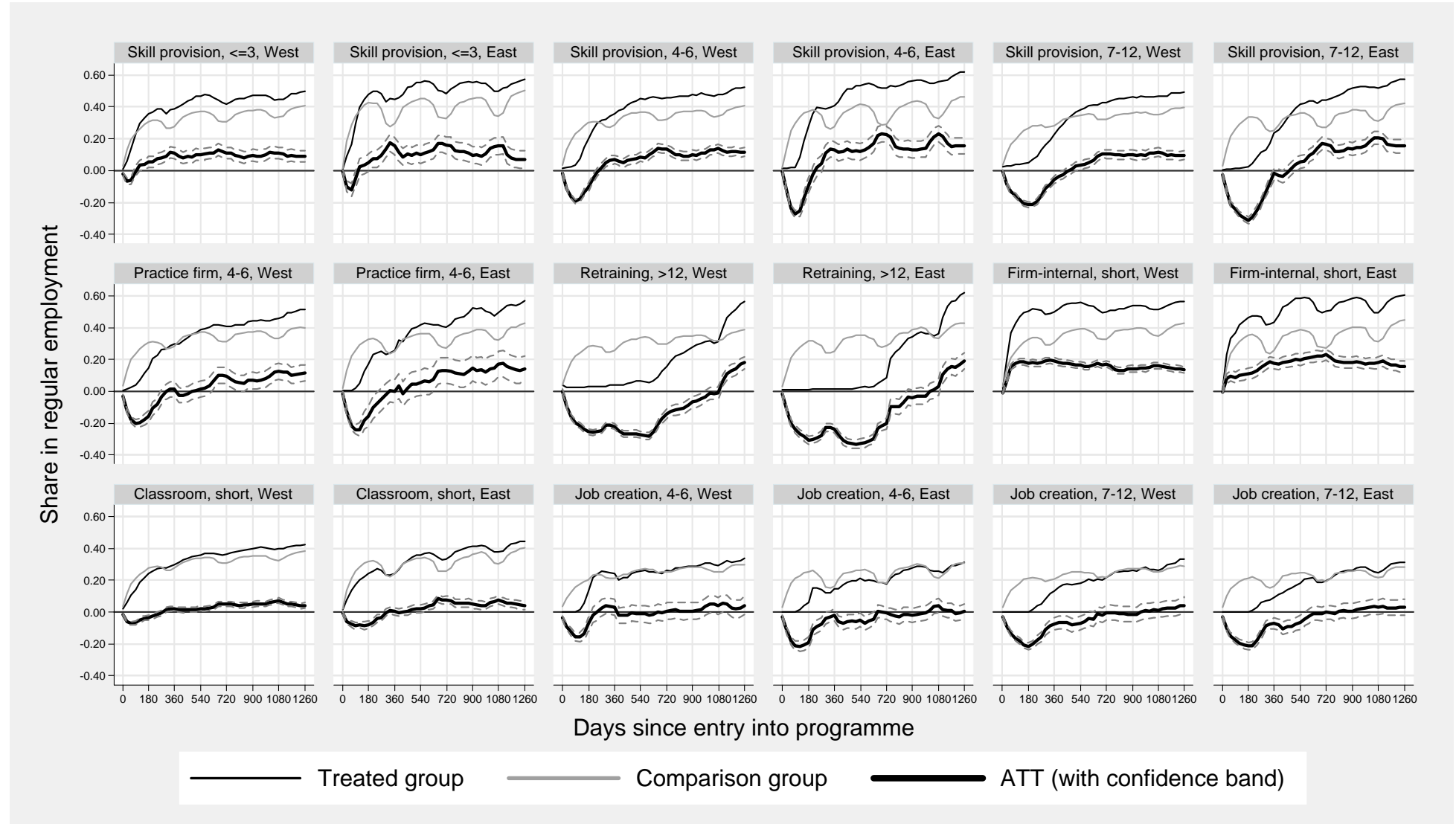
**Average programme effects on participants compared to waiting – cumulated days in regular employment**



Source: Own calculations, based on the TrEffer data. Confidence band: Computed at  $\alpha = 0.05$ .

**Figure A.2**

**Average programme effects on participants compared to waiting – share in regular employment**



Source: Own calculations, based on the TrEffer data. Confidence band: Computed at  $\alpha = 0.05$ .

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