Institute for Employment Research

The Research Institute of the Federal Employment Agency

IAB

IAB-Discussion Paper 17/2009

Articles on labour market issues

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The effects of different training types

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Contents

Abstract

Since 2005, jobless employable individuals have to be available for the labour market with various activation programmes helping them. One major programme is short-term training teaching certain skills or assisting in job search. However, little is known about the effectiveness of such a short programme for welfare recipients. This study evaluates the effects of seven short-term training types in the introduction period of the reform in spring 2005 on the individual probability of being regularly employed. I use large German administrative datasets and propensity score matching. The results show that within-company training has large positive effects. Furthermore, skill training is more effective than other types. However, comparing skill training participants pair-wise with others does not result in consistent positive effects.

Zusammenfassung

Seit 2005 müssen arbeitslose erwerbsfähige Hilfebedürftige dem Arbeitsmarkt zur Verfügung stehen. Aktivierungsmaßnahmen sollen sie hierbei unterstützen. Zahlenmäßig bedeutsam sind die kurzen Eignungsfeststellungs- und Trainingsmaßnahmen, die verschiedene Qualifikationen vermitteln oder beim Bewerbungsprozess unterstützen sollen. Es ist jedoch nur wenig über die Wirksamkeit solch kurzer Maßnahmen für Arbeitslosengeld-II-Empfänger bekannt. Diese Arbeit evaluiert die Effekte von sieben Trainingsmaßnahmearten in der Einführungsperiode einschneidender Arbeitsmarktreformen Anfang 2005 auf die individuelle Beschäftigungswahrscheinlichkeit der Teilnehmer. Es werden dazu administrative Daten und Propensity Score Matching verwendet. Die Ergebnisse zeigen, dass betriebliche Trainingsmaßnahmen starke positive Effekte haben. Außerdem ist Kenntnisvermittlung wirksamer als andere Arten von Training. Dennoch können die direkten Vergleiche von Kenntnisvermittlung mit anderen Maßnahmetypen nicht konsistente positive Effekte zeigen.

JEL classification: C13, I38, J24, J68

Keywords: welfare benefit, activation, training, evaluation, propensity score matching

1 Introduction

Facing high unemployment - and especially high rates of long-term unemployment - the activation of unemployed people is a political task with high priority in Germany. One fundamental reform has been introduced in 2005 when a new benefit system for welfare recipients and long-term unemployed has been introduced. Since January 2005, all jobless people who are capable of working have to be available for the labour market. A variety of active labour market programmes should help them find a job or increase employability. One major programme is short-term training that lasts from a few days up to twelve weeks, which should help the unemployed learn certain skills or assist them in job search in short courses or short firm internships. This programme is characterised by a yearly inflow of more than 400,000 welfare recipients. This figure is noticeable given that the number of registered unemployed welfare benefit recipients ranges from 2.4 to 2.2 million from 2005 to 2007.[1]

There is international evidence on the effects of likewise programmes mostly for unemployment insurance recipients. Evidence on programme effects for means-tested benefit recipients is internationally scarce (Fromm/Sproß 2008). On the one hand, there is research on mainly individual job search assistance for unemployment insurance recipients (e.g. Centeno et al. 2008; Crépon et al. 2005; Dolton/ O'Neill 2002; Weber/Hofer 2003). On the other hand, there are also studies on longer training programmes and basic courses in other countries (e.g., Andrén/ Andrén 2002; Prey 1999). Most studies report positive programme effects on the individual employment probability. However, there is almost no study that specifically concentrates on such short programmes for welfare recipients and long-term unemployed. Only two German studies analyse the programme for welfare benefit recipients but both do not take programme heterogeneity into account (Huber et al. 2009; Wolff/Jozwiak 2007).

A lot is known about the impact of such policies on unemployed persons in general. However, little is known about the effectiveness for welfare recipients and long-term unemployed who live in poor households. Is it plausible that such a short programme works for those persons who have not worked for a long time period?

Furthermore, short-term training is a heterogeneous instrument and can have various characteristics and aims. On the one hand, short-term training is designed to improve human capital in short courses that are carried out either in classrooms or within firms. On the other hand, it is used to test the willingness to work of unemployed people. Besides, different types of qualifications can be acquired or im-

[1] Source: Department of Statistics of the Federal Employment Agency, calculations from the Data Ware House. The mentioned statistics as well as all data and figures in this study exclude the 69 districts in which only local authorities are in charge of administering the UB II, for which such information is not systematically available in the period just after the reform. According to estimates of the Federal Employment Agency around 13 percent of the unemployed are cared for in these 69 districts. There are no data available for the amount of programme participations in 2005.

proved, e.g., application training, computer courses or profession specific skills. Training courses are also applied as aptitude tests for certain occupations and jobs or retraining measures. However, despite this variety of training types, only little is known on the functioning and effectiveness of various sub-programmes. As the treatment is different and not homogeneous, differing or even conflicting outcomes could emerge while considering sub-programmes of short-term training. Therefore, the evaluation of such a diverse programme should take the issues of programme heterogeneity into account

This study is the first to deal with a variety of heterogeneous effects of short-term training and therefore evaluates the effects of seven short-term training types for welfare benefit recipients. The following sub-programmes are evaluated separately: application training, work tests, aptitude tests, skill training courses, combinations within classrooms, and aptitude tests, skill training/combinations within firms. I estimate the impact of these seven types of short-term training on the individual probability of being employed in a regular unsubsidised job without receiving additional benefits. Moreover, I evaluate the effect of these training programmes on the probability of getting a stable job after participation.

The estimation method is propensity score matching, which is one widely used estimator to identify causal treatment effects. Various matching algorithms as well as sensitivity analyses are applied in order to establish the robustness of the estimation results. This study does not only rely on large samples of several rich administrative data sets. In contrast to most micro-econometric evaluation studies also detailed information on partners and other household members are available. Therefore, partner characteristics can be taken into account as they may influence the selection into the programme as well as the outcomes.

The remainder of the paper is as follows: First, the institutional setting of the new law and the various short-term training programmes are explained. This is followed by theoretical expectations of the effects of different short-term training programmes. Then, the literature on training and heterogeneity of training is displayed. Furthermore, data, samples, the estimation strategy and the implementation are explained. Finally, the results are followed by the conclusion. All tables and figures are displayed in the Appendix.

2 Institutional setting

Due to persistently high unemployment in recent years a large number of labour market reforms have been implemented in Germany since 2002. The most fundamental reform has been introduced in January 2005. The Social Code II, a new legal setting on means-tested benefit receipt, was established. A new benefit system has

been introduced where needy people who are able to work[2] are assigned to a new welfare benefit, the unemployment benefit II (UB II). It is designed for those unemployed who are not eligible for unemployment insurance (UI) or ran out of their UI eligibility. This benefit replaces the former unemployment aid and social assistance. Hence, since 2005, there are two types of unemployment benefit.

As former social assistance recipients have not been automatically available for the labour market, there are a lot of changes for them now: They have to look for a job and take part in active labour market programmes. If they do not comply, they will face financial sanctions. Therefore, there is a completely new group who appeared in the labour agencies and on the labour market. UB II is means-tested; hence its level depends on income and assets of all members of the needy household. Such a household consists of at least one needy working age unemployed person who is able to work. Other people living in the same household may belong to the needy household, but not necessary all of them do. The partner and children under the age of 25 years belong to the needy household. If the needy employable member is younger than 18 years and not married, also the parents and/or the partner of a parent may belong to the needy household.

The new welfare benefit UB II consists of a base benefit, that is currently 359 Euro; additionally, costs of housing and heating are covered (Wolff/Jozwiak 2007). Furthermore, additional expenses, e.g., for pregnant women, are additionally covered with a lump sum.

With the introduction of UB II, new forms of active labour market policies (ALMPs) have been introduced. Moreover, UB II recipients can participate in various programmes that have existed before and are also still available for UI recipients. We can distinguish a large bundle of different ALMPs that aim to help unemployed people to reintegrate into the regular labour market. First, there are programmes enhancing qualifications and accumulate human capital such as training programmes. Second, there are public employment programmes such as job creation schemes or work opportunities. Third, there are subsidised jobs with wage subsidies either for employers or employees. Fourth, there are programmes promoting self-employment. Finally, there are programmes where counselling and/or the placing service is contracted out to private agencies (OECD 1993).

Short-term training programmes ("Eignungsfeststellungs- und Trainingsmaßnahmen") are an important scheme of German ALMP. Its yearly costs amount to approximately 160 Million Euro from 2005 on. This is considerably less than for other programmes, such as One-Euro-Jobs, also because of the short duration (Bernhard et al. 2009).

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[2] People who can work under the usual labour market conditions for at least three hours a day are considered as capable of working or employable. Only due to an illness or disability it is possible not to fulfil this criterion (Article 8, Social Code II).

The overall aim of short-term training is to help unemployed people to reintegrate directly or indirectly into the regular labour market. However, short-term training is a heterogeneous instrument. First, skill training courses are assigned to integrate participants directly into regular employment. Furthermore, aptitude tests are either assigned to test for the abilities to participate in other programmes, e.g., a wage subsidy, or are assigned to integrate directly into the regular labour market. A third course type is application training which should improve the search process and the search effectiveness in order to reintegrate into employment. However, this kind of short-term training is also often used as test of willingness to work. A small proportion of courses provides founders of start-ups with the necessary knowledge on starting a business. The shortest courses are application training courses and work tests which only last a couple of days up to two weeks. Aptitude tests lasts up to four weeks and skill training courses have a duration of up to eight weeks. If a course is offered in combination with another course type it can last a maximum of twelve weeks. Then, mostly aptitude tests and skill training are combined. Kurtz (2003, 2004) reports that the most frequent aim of short-term training is the integration into the regular labour market. However, other aims such as integration into other labour market programmes or work tests are also applied in practice. Short-term training programmes can be either carried out in classrooms or within companies as internships.

During the programme participants continue their UB II receipt, however they do not receive any additional wage. Only programme costs, travel expenses and costs for child care are covered. While participating in a short-term training programme, participants are still registered as job-seekers; though they are no longer registered as unemployed.

The heterogeneity of short-term training programmes has hindered programme evaluations in the past (Blaschke/Plath 2002; Kurtz 2004). As the treatment is different and not homogeneous, differing or even conflicting outcomes could emerge while considering sub-programmes of short-term training. Therefore, the evaluation of such a diverse programme should take the issues of programme heterogeneity into account (Caliendo 2005; Heckman et al. 1999). This study analyses the effects of seven types of short-term training.

3 Potential effects of short-term training programmes

Although short-term training is heterogeneous and pursues different aims or secondary aims (Blaschke/Plath 2002), integration into the regular labour market is most important as it enables participants to reduce their dependence on benefit receipt and ends their neediness in the long term (Achatz et al. 2009). Furthermore, all secondary aims, e.g. increased employability or the verification of skills, lead to the main aim of labour market integration.

Therefore, several effects of short-term training can be expected theoretically (Calmfors 1994). First, some short-term training programmes are designed to test the will-

ingness to work of UB II recipients. This kind of programme could lead to threat effects in that sense that unemployed who do not want to participate and therefore leave unemployment, e.g., by legalising illegal employment. However, this effect is an ex ante effect and is not considered in this study because of the lack of required data.

Other effects that are theoretically expected are ex post effects. Most evaluation studies find locking-in effects. During their programme participation, participants reduce their search intensity. I expect locking-in effects to be small and of minor importance as short-term training programmes have a maximum duration of twelve weeks. Moreover, in the case of application training courses locking-in effects should not even be apparent or especially small. Participants should improve the search effectiveness and are supposed to write applications during their application training course.

However, the most important effect, which is expected, is an employment effect. It can be reached through different channels, and therefore through different specific sub-programmes. The theoretical discussion can be embedded in a standard search model (Mortensen 1986). Such a model explains job search behaviour of unemployed people and specifies job search as a process until finding a suitable job. The job finding probability of a job-seeker can be influenced by altering the probability of getting a job offer and the probability of accepting it. Job-seekers choose a strategy that maximizes their expected life-time income. Therefore, short-term training programmes should raise the reemployment opportunities of participants compared to non-participants through different possible channels.

First, an employment effect can be reached through human capital improvement. Skill training courses, aptitude tests or combinations aim at enhancing general or specific human capital. Enhanced qualifications should imply better job finding chances especially for unemployed people who lack some important skills. Most of the courses that take place in classrooms provide general human capital. Most of those sub-programmes within companies provide general as well as firm or sector specific human capital. Second, an employment effect can be reached through the improvement of search abilities as well. Such abilities are taught in application training courses or work tests. Therefore, application training should shorten the search process because it conveys a more efficient search pattern, provides counselling in job search, and improves the motivation of participants. Third, the provision of information is another channel that could lead to an employment effect. Participants of most classroom short-term training programmes are provided with information, e.g., on the regional labour market. This information could help to optimise the search process or alter the likelihood to accept a job. Also within-company training provides participants with firm- or sector specific information which helps to find a job. A fourth channel is the signalling through certificates. This should especially be the case for classroom skill training courses or combinations where participants get certificates needed for certain occupations or jobs, such as the forklift certificate. Fifth,

aptitude tests in classrooms or within firms test someone's ability and suitability for other ALMPs or activities which should lead to regular labour market integration later. Sixth, within-company training programmes moreover provide the participant with a contact to a potential employer which should help the intern to establish himself on the regular labour market. Finally, programme participation could also lead to stigmatisation. However, this should be of minor importance as short-term training programmes are quite short and not especially designed for unemployed who are hard to place or who have special difficulties on the labour market such as, e.g., job creation schemes.

Furthermore, there are unwanted indirect effects that may appear and are mentioned in the literature (Calmfors 1994). These are deadweight losses, substitution effects, and direct displacement effects. Deadweight losses arise when firms hire participants that they would have hired anyway also in absence of the programme. Such effects are more likely to occur in the case of job creation schemes (Calmfors 1994), but they could also occur in the case of within-company training programmes. Substitution effects appear when one worker is replaced by a programme participant because of a change in relative wage costs. This effect is not likely for short-term training programmes because the programme only lasts for a maximum of a few weeks. Moreover, active labour market programmes could crowd out regular employment and lead to a direct displacement effect. That means that the number of jobs may be reduced elsewhere because the competition may be influenced through subsidised employment. All these effects are unintended but may appear while the latter two are less likely in this case. However, it is beyond the scope of this paper to detect such effects.

To sum up, I expect positive effects for the sub-programmes of short-term training. However, I presume that ex post effects for work tests are rather zero as this sub-programme is not primarily designed to improve after programme employment outcomes but to test ones willingness to work in general. Moreover, I expect sub-programmes where an employment effect can be reached through more than one channel, such as classroom skill training courses, classroom combinations and both types of within-company training, to be more effective than application training or aptitude tests.

4 Training effects and heterogeneity of training in the literature

There are international studies on the effects of two types of likewise programmes, one is job search assistance (JSA), and training programmes are the other type. As German short-term training programmes are very heterogeneous there are several different programmes that are partly comparable to the sub-programmes. However, not all studies can be compared easily to German programme types. First, most studies on JSA analyse individual counselling or job coaching. However, this is more comparable to another German programme "contracting out". Second, in other countries, training programmes mostly last longer than twelve weeks and are some-

times more comparable to the longer German training programmes. Card et al. (2009) show with their meta analysis that job search assistance as well as classroom and on-the-job training have positive effects in a large bundle of international studies.

Most international studies on individual job search assistance report positive effects on different outcome variables. Dolton/O'Neill (2002) and Graversen/van Ours (2006) use experimental data. The former detect positive effects for males on the unemployment rate while the latter find a 30 percent higher job finding rate driven by more intensive contacts. Others use administrative data from different countries. While Crépon et al. (2005) find positive programme effects that unemployment recurrence is lower with duration models, Centeno et al. (2008) use difference-in-difference models and matching and state only small positive programme effects given the after-programme unemployment duration, mostly for males and better educated individuals. Women benefited less. Weber/Hofer (2004) use the timing-of-events approach and also detect positive programme effects of Austrian JSA, measuring the success with the individual unemployment duration. Van den Berg/ van der Klaauw (2006) use administrative as well as survey data. They apply duration models and find that low-intensity job search assistance programmes have no or only small effects. On the contrary, high-intensive assistance programmes have a more positive effect on the exit rate to work. Dahlberg et al. (2009) find positive employment effects for social assistance recipients of Swedish activation programmes.

In contrast to these studies, Geerdsen/Holm (2007), Graversen/van Ours (2008) and Rosholm/Svarer (2008) examine threat effects and therefore ex ante effects of JSA. They use Danish experimental data and are able to detect threat effects. Only Graversen/van Ours (2008) cannot confirm such effects for the long-term unemployed. Büttner (2008) uses German experimental data to analyse threat effects of aptitude tests besides programme effects for UI recipients. He concludes that the threat effect is larger than the programme effect itself comparing the outflows out of unemployment for part-time unemployed women and young adults under 27 years.

Other studies deal with classroom training programmes in general. Examples are studies that survey different studies on training programmes. Friedlander et al. (1997) survey training programmes for the economically disadvantaged in the US. They demonstrate that most studies find positive earnings effects of voluntary as well as mandatory training programmes, especially for women. Calmfors et al. (2002) report positive effects on regular employment in most studies with a few exceptions without significant results or even negative effects. The study from Andrén/ Andrén (2002) is another example and is concerned with training programmes in Sweden. They find positive employment effects. Moreover, Prey (1999) deals with different basic courses in St. Gallen/Switzerland. This measure seems to be more comparable to German short-term training. She finds evidence for positive effects on the employment status of German language classes with the help of propensity score matching, whereas she cannot state any effect for computer lessons.

Furthermore, some authors analyse and compare different measures including training programmes. Most of them compare programme effects directly to the effects of another programme. However, Leetma/Vörk (2003) analyse three different programmes separately with survey data and propensity score matching and state positive effects of training on the employment probability as well as on the wage. Dahl/ Lorentzen (2005) do not compare training directly to employment programmes because participants are too different to be comparable. They detect positive earnings effects of training for social assistance recipients with propensity score matching.

Kluve et al. (2008) find positive employment effects for training compared to intervention works with difference-in-difference matching procedures. On the contrary, Bolvig et al. (2003) use competing risk models and state detrimental effects on the welfare exit rate of training programmes. Weber/Hofer (2003) compare active jobsearch programmes and formal training. They find positive effects for active jobsearch and negative effects for training for the exit out of unemployment. Only for women, they find small positive effects for training. Also Fredriksson/Johansson (2003) find negative effects of training participation on the outflow to employment. Sianesi (2008) states generally negative employment effects of training programmes with propensity score matching. Only if training is compared to work practice, there are small positive effects. Moreover, Gerfin/Lechner (2002) analyse basic courses, computer courses and language courses and find negative effects on the outflow of unemployment.

While it is shown that a lot of studies show positive effects of different training programmes on the labour market performance of participants, some find negative effects. However, there are also some studies that concentrate on the heterogeneity of programmes and analyse sub-programmes of one programme. Examples are evaluations of sub-programmes of the US welfare-to-work programme (Dyke et al. 2006; Hotz et al. 2006) or different programmes of the British "New Deal" (Blundell et al. 2004). Another German example is Caliendo (2005) who analyses job creation schemes in Germany that take place in different sectors of the economy also differentiating the promotion type as well as different programme providers. These authors emphasise the importance of distinguishing between sub-programmes in an evaluation if the programme is heterogeneous.

Moreover, there are several studies that analyse the heterogeneity of German further training programmes. In contrast to short-term training, this is a longer programme (up to three years) mostly with direct reference to an occupation or job. Each study takes different samples from administrative data during the years 1986 to 2002 into account.

Kluve et al. (2007) use the generalized propensity score, i.e. a dose-response function. They find an increasing dose-response function for training programmes up to 100 days. Longer programmes do not lead to an increase in treatment effect. The other studies use propensity score matching. Biewen et al. (2007) compare different further training programmes and short-term training. They find that short training

participants would not have been better off in longer training programmes. However, this is not the case for practically oriented further training, which is superior to the other training programmes. Lechner et al. (2005) state the largest effects for retraining in the long-run. Yet, comparing different programmes directly, shorter programmes up to six months outperform longer programmes because of shorter locking-in effects. Fitzenberger et al. (2006) find locking-in effects of further training, but positive effects in the long-run. They detect weak evidence that programmes providing specific professional skills and practice firms outperform the longer retraining programme.

In addition, there are some studies that are concerned with programme heterogeneity of German short-term training programmes. All of them use administrative data and propensity score matching but analyse different time periods and target groups than this study does.

Stephan et al. (2006) distinguish three alternatives of short-term training, skill training courses within companies and in classrooms as well as work tests. They only find positive effects for men in skill training courses within companies on the probability of leaving unemployment. Stephan (2008) and Wolff/Jozwiak (2007) differentiate between short classroom and within-company training courses. Stephan (2008) reports substantial positive employment effects for within-company training. This is in line with Wolff/Jozwiak (2007) who find positive employment effects for both programme types, but substantially larger effects for within-firm training for UB II recipients. While within company training raises the employment probability for participants compared to non-participation by around 15 percentage points it is only about three percentage points for classroom training.

Two studies that analyse different training programmes also compare different short-term training programmes directly in a pair-wise comparison. Stephan/Pahnke (2008) compares classroom and within-company training. The latter clearly outperforms classroom training showing positive regular employment effects in the direct comparison. Wunsch/Lechner (2008) analyse three types of short-term training. They state zero effects for unsubsidised employment integration for short combined measures as well as short training. Jobseeker assessment even has negative effects on the regular employment rate.

Most studies concentrate on treatment effects for unemployment insurance recipients. Only few international papers concentrate on target groups such as welfare recipients for training or activation programmes (Dahl/Lorentzen 2005; Dahlberg et al. 2009; Giertz 2004). Fromm/Sproß (2008) give an overview of the international studies emphasising on programme effects for welfare recipients and show that most of the few existing studies do not evaluate treatment effects. There are only two German studies that analyses short-term training for welfare recipients (Huber et al. 2009; Wolff/Jozwiak 2007), while Huber et al. (2009) do not differentiate different training programmes.

Furthermore, there is a lack of studies that analyse the heterogeneity of short training programmes. While there is a variety of sub-programmes, only two to three sub-programmes are differentiated.

This is the first evaluation study that distinguishes and compares seven homogeneous sub-programmes of short-term training. Moreover, such a detailed evaluation has also not yet been issued for the target group of welfare benefit UB II recipients. Therefore, this study adds to the literature of programme heterogeneity and the effects of activation programmes for welfare recipients.

5 Data and samples

The data in use are constructed from different administrative data sources of the German Federal Employment Agency. I use samples of the "Integrated Employment Biographies" (IEB) and information from a new administrative dataset, the "Unemployment Benefit II Receipt History" ("Leistungshistorik Grundsicherung", LHG). Moreover, for the outcome variables, additional information on contributory employment from an additional data set, the so-called "Verbleibsnachweise" is used in order to extend the observation window.

The use of data that are rich in terms of information on all variables potentially influencing the selection process as well as the outcome is crucial in non-experimental studies. These data give the opportunity to take more important variables into account than most German evaluation studies, i.e. not only individual characteristics but also partner and household characteristics.

Following Heckman et al. (1999) the choice of outcome variables is important for evaluating treatment effects. The aim of short-term training programmes is to integrate participants directly or indirectly, e.g., through further programme participations, into the regular labour market. Therefore, I use "regular unsubsidised employment" as the primary outcome indicator. This indicator is computed for the first (calendar) day of the months and is computed up to 28 months after the programme started. Furthermore, outcome indicators on job stability are included. One is the number of months in regular unsubsidised employment in the first six, twelve and 28 months. Another indicator is the employment stability of the first regular job. This is measured by two variables, one indicating the first regular job lasted at least six months and another indicating the first regular job lasted at least twelve months. There is only a 28 months time window for regular employment after programme start. Thus, in order to observe an uninterrupted employment duration of at least twelve months, only employment spells are considered that started in the first 17 months after programme start.[3]

[3] Also other indicators without that exclusion restriction have been used, and the results aim in the same direction.

The samples consist of participants in seven sub-programmes and a non-participation or waiting group who does not participate in the programme in a given timeframe. The group of participants is the total inflow into short-term training programmes from February to April 2005 of individuals who were both registered unemployed and recipients of the welfare benefit UB II on 31st of January 2005. Since older UB II recipients do nearly never enter short-term training programmes in the observation period, only individuals between 15 to 57 years are considered.

The group of non-participants (waiting group) stems from a 20 percent random sample of unemployed UB II recipients on the 31st of January 2005 and who did not enter any short-term training programme from February to April 2005. This group is called the waiting group as they could start a short-term training programme at a later point in time.

The sample sizes of the different groups and sub-programmes are available in Table 1. There are 66,000 participants in the different sub-programmes, and more than 400,000 individuals in the waiting group. Aptitude tests, skill training courses and combinations are more common classroom training programmes. Application training and work tests are more prevalent in Western Germany. Within-company training programmes are mostly aptitude tests. As short-term training programmes are heterogeneous with respect to their design and their aims, I am especially concerned with programme heterogeneity and distinguish between seven sub-programmes.

6 Methodology

Estimation Strategy

I investigate the effect of seven different short-term training programmes: application training, work tests, aptitude tests, skill training courses, combinations within classrooms, and aptitude tests, skill training/combinations within firms.

Evaluating the effects of these programmes, the problem of non-observable possible outcomes arises. Every individual can potentially be in two states, participation in or the other sub-programme, with a possibly different outcome. As no individual can be observed in two states at the same time, there is always a non-observed state or a counterfactual. The potential outcome model introduced by, e.g., Roy (1951) and Rubin (1974) gives a standard framework for this problem. Based on this basic model, Imbens (2000) and Lechner (2001) came up with an extension of this model for multiple states, which fits better to the case of analysing seven sub-programmes.

Let *D* be an indicator for the assignment to a specific treatment starting at time *t*, $D_t \in \{0,1,...,7\}$. A value of 0 means non-participation at *t* in any of the programmes, which means waiting. In the general case *N* instead of seven treatments are possible. Y_{t+x}^{s} is the potential outcome of treatment s at time *t+x*. The assignment happens in *t* (in this case from February to April 2005), and the outcome is measured every month after the treatment started.

I am interested to assess the average effect for participants of participating in sub-programme s compared to participating in a different sub-programme s'.

$$\tau_{ATT} = E(Y^s - Y^{s'} \mid D = s) = E(Y^s \mid D = s) - E(Y^{s'} \mid D = s) \text{ for } s, s' \in \{0,1,...,7\}, s \neq s' \quad (1)$$

While $E(Y^s \mid D = s)$ is observed in the data, $E(Y^{s'} \mid D = s)$ is unobservable. This identification problem needs to be resolved and identifying assumptions have to be invoked. Under these assumptions, a comparison of the outcomes of participants in *s* with similar participants in *s'* identify the average treatment effect on the treated (ATT).

First, the definition of potential outcomes implicitly assumes the stable unit treatment value assumption (SUTVA) (Rubin 1980). That means that an individual's potential outcome only depends on his/her own participation and not on the treatment status of other individuals in the population. Also peer-effects and general equilibrium effects are ruled out by this assumption (Holland 1986). This assumption is unlikely to be invalidated if the programme scope is not too large (Frölich 2004), which should be the case evaluating seven sub-programmes.

Second, the treatment has to satisfy some form of exogeneity and fulfil the so-called unconfoundedness assumption (Rosenbaum/Rubin 1983). This assumption implies that systematic differences in the outcomes between similar participants in s and s' can be attributed to the programme. Conditional on the value of observable characteristics *X*, the counterfactual average $Y^{s'}$ for individuals joining sub-programme *s* is the same as the observed average $Y^{s'}$ for those participating in sub-programme *s'*:

$$E(Y^{s'} \mid D = s, X = x) = E(Y^{s'} \mid D = s', X = x) \text{ for } s, s' \in \{0,1,...,S\}, s \neq s' \quad (2)$$

Methods such as matching generate a matched group from *s'* in which the distribution of observable pre-treatment characteristics *X* is similar to the distribution in group *s*.[4]

Further requirements are the existence of a common support (weak version according to Lechner 2000) as well as the overlap. $P(D = s \mid X) < 1$ has to hold which means that persons with the same values of *X* must have a probability smaller than 1 of participating in *s* as well as in *s'*. Furthermore, the distributions of the probabilities for participants in *s* $P(D = s \mid X, D = s)$ and for participants in *s'* $P(D = s \mid X, D = s')$ have to overlap. All participants in *s'* must have a comparable counterpart in group *s*.

In order to make the assumptions for the selection on observables plausible, rich data is needed. The set of covariates *X* should contain all the variables that affect

[4] The method depends on the research question and the available data (Heckman et al. 1999). In the following, I argue why matching is useful in this context.

the participation as well as the outcomes. Hence, I use several administrative datasets that provide a rich set of covariates: local labour market conditions, characteristics of the job seeker and his/her partner, such as human capital or labour market characteristics and unemployment periods. Moreover, I have detailed knowledge on which factors influence the programme participation process as we conducted a survey asking case managers on the selection and assignment process of short-term training programmes (Achatz et al. 2009). This information is used for the choice of variables in the selection equations. Unemployed individuals can ask for participation in programmes. However, it is up to the case worker to decide if one should participate. Moreover, it is more often the case for short-term training programmes that case workers propose a certain programme to the welfare recipients.

A large proportion of case managers think that employment chances and also motivation in general are important assignment criteria (Achatz et al. 2009). Therefore, I control for a set of variables characterising the individual's past employment history, e.g., job characteristics such as pre-unemployment wage or professional position, duration of last employment or the time since the last job. Furthermore, the health status and disabilities influence employment chances, and therefore they are taken into the models. Moreover, information on human capital, such as school and professional education is included as this reflects future labour market chances, too. Additionally, I also rely on information on human capital and the employment history of the partner, which also reflects ones motivation. Such information on partners has not been taken into account in most evaluation studies in the past. Moreover, these variables are also supposed to affect outcomes, such as regular employment.

Less case managers, but still a considerable number, think that German language competences or compatibility with family obligations are important selection issues. Therefore, I include information on the nationality and the migration background. Moreover, household information is taken into account. That means that there is information on the number of children and on the existence of a partner. Moreover, older individuals are less prone to participate in training programmes (Bernhard et al. 2006). Therefore, I use age as another important socio-demographic attribute.

Local labour market conditions are a key variable to be controlled for (Heckman et al. 1997). Thus, I control for variables describing the local labour market situation on district level: the local unemployment rate, the percentage in long-term unemployment as well as the vacancy-unemployment ratio. Furthermore, I consider the trend of all variables, i.e. the total percentage change during the last year. Moreover, variables indicating a regional classification of twelve labour market types according to Rüb/Werner (2007) are included.

Furthermore, unemployment duration plays an important role. Therefore, I include pre-programme unemployment duration when comparing individuals from two different sub-programmes or the control group. Next, the participation decision could differ if individuals have participated in any ALMP before. Thus, the number of former

ALMP participation as well as type of the last ALMP are included. Moreover, not only unemployment duration is important in this special case. Having installed a new benefit system in January 2005, many individuals who have neither worked nor have been registered unemployed, e.g., formal social assistance recipients or individuals from the "hidden labour force" as the difference between the potential and the actual labour force, now receive the new welfare benefit UB II. This is the reason why I also take out-of-labour force periods into account. Most variables in use are shown in one example of the probit estimates for the largest analysed group in Table 2.[5]

Summing up, conditioning on this huge set of important covariates for the assignment and the outcome variables, the assignment should be unrelated to the outcomes. That means that assignment is random conditioning on this rich set of observable covariates.

On top of that, if one may still argue that there are unobserved factors remaining that influence the selection process and the outcomes. However, this study deals explicitly with the introduction period of a large reform. New public employment services have been installed in January 2005 with a huge amount of new case workers and employees. A large number of new clients arrived who had not been available to public employment services before and also not yet registered. Therefore, the workload in this starting period has been especially high for case managers. That means that the selection into short-term training should have been closer to randomness than in another period where a case manager is really able to choose a defined target group because of less time restrictions.

Another reason why matching is especially suitable for this research question is that in general the analysis becomes more complex in the multi-treatment case compared to the case with single treatments. Other identification strategies, such as the difference-in-difference and the instrumental variable approach, often only identify the effect of participation versus non-participation and in many cases do not allow a pair-wise comparison between different sub-programmes (Frölich 2004). Given the available data, propensity score matching is especially suitable here.

Implementation

One approach to identify effects of short-term training programmes is propensity score matching. Rosenbaum/Rubin (1983) have shown for the binary treatment case that if the unconfoundedness assumption holds conditional on the covariates X, it also holds conditional on the propensity score *p(X)*. According to this condition, observations with the same propensity score have the same distribution of observables; given pre-treatment characteristics, treatment is random and treatments and control units do on average not differ with respect to pre-treatment characteristics. The advantage of the propensity score is its feasibility because it avoids the curse of dimensionality if too many covariates play an important role. Lechner (2001) and

[5] A complete list of all covariates and descriptive results are available on request.

Sianesi (2008) show that these properties also hold for the multi-treatment case. One needs to find a *p(X)* such that the following holds:

$$D \perp X \mid p(X), D \in \{s, s'\} \tag{3}$$

It is shown that the multiple treatments can be ignored so far, because unemployed persons who do not participate in a considered programme are not needed for identification (Lechner 2001). Moreover, Lechner (2002) shows in an application that the estimation results are basically the same albeit deriving the conditional probabilities from a multinomial model or estimating pair-wise directly.

I apply binary probit models for each pair-wise comparison to estimate the propensity score *p(X)*. I use appropriate sampling weights for the comparisons to the group of non-participants (waiting group) as this potential control group represents a 20 percent random sample of the population whereas the treatment groups who participate in the sub-groups consist of the population of the treated. The covariate sets of the probit models are rich in terms of attributes and cover the relevant aspects determining the programme selection process and the outcomes, as mentioned above.

In order to choose the exact model in each case and take the variables into account that influence the selection into the treatment, first Wald tests are applied. Therefore, the models may differ for the different sub-groups and pair-wise comparisons. Moreover, I assess the quality of matching as well as the common support region in order to decide for a specification of *p(X)* and a matching estimator. Different matching algorithms are therefore applied.[6] The final decision for one algorithm depended on the matching quality of the pair-wise comparison and can differ for each model.

Moreover, I use analytic standard errors. Bootstrapped standard errors would also be appropriate (Abadie/Imbens 2006) but it is shown that the asymptotic theory for $\hat{\beta}$ is reliable for a setting with samples from around 300 observations on and that bootstrapped and asymptotic standard errors agree (Heckman et al. 1998). This is also shown in other empirical applications (Gerfin/Lechner 2002, Lechner 2002).

Furthermore, I consider participants' heterogeneity and analyse samples for men and women in Eastern and Western Germany separately. Reasons are different attitudes towards labour market participation as well as clearly different unemployment rates and therefore resulting integration chances. Wolff/Jozwiak (2007) estimated short-term training effects for more groups but not for the detailed subprogrammes, e.g., by age, household composition or unemployed persons who have not worked for a long time period. Such a variety of groups is ignored here, as this paper concentrates on the effects of heterogeneous short-term training programmes.

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[6] I applied different nearest neighbour matching algorithms with and without oversampling as well as radius matching with different radius calipers. The results are robust when different algorithms are feasible.

The outcome variables are measured every month after programme start. As there are no programme starts for those who are waiting and not yet participating in any short-term training programme during the months February to April 2005 I calculate random programme starts for the waiting group. The basis is the distribution of programme starts for the months February, March and April for every sub-programme. The programme starts are generated differently for each sub-programme/waiting pair.

Quality of Matching

Relying on a rich set of covariates explaining the selection into short-term training programmes, there should be a comparable and very similar control group to the treatment group. This balancing of covariates after matching can be tested. There are several measures, such as joint significance and Pseudo-R^2, the mean standardised bias (Rosenbaum/Rubin 1985) and t-tests for differences in covariate averages between the treatment and control group. The mean standardised bias of all the covariates before and after matching is displayed in Table 3 and 4. After the matching procedure, the mean standardised bias is substantially reduced. Using the waiting group as a control group, the bias after matching is reduced to below three percent in all samples, which is a fairly good reduction compared to other evaluation studies (Caliendo/Kopeinig 2008). Concerning the pair-wise comparisons, there are only a few cases where the mean standardised bias slightly exceeds three. Furthermore, the balancing quality for nearly all single covariates shows that there is no significant difference between the means of treated and matched controls after trying out several matching procedures. Moreover, the common support region is shown in Table 3 and 4. Only few cases in the treatment groups are not in the common support region. The amount of off support treated is always below 20 percent and in the most cases below ten percent. Therefore, the matching procedures find statistical twins for nearly all treatment individuals.

Furthermore, we have to assume that both groups lie in a common support region. That means that the propensity score distributions of both groups overlap and the participation probabilities are lower than one. Figures 1 to 7 display the propensity score distribution of each sub-programme versus waiting. They show that the distributions for control and treatment group are quite similar. This also holds for the pair-wise comparisons that are not displayed here given the large number of comparisons. They are available on request.

Moreover, the estimation of treatment effects with propensity score matching is based on the conditional independence assumption. If there are unobserved factors that affect treatment assignment and the outcome variable, a 'hidden bias' may arise. Rosenbaum bounds, a sensitivity test, help to determine how strongly an unobserved variable must influence the assignment process to undermine the implications of the matching analysis. Unfortunately, Rosenbaum bounds are only implemented as a Stata command for nearest neighbour matching with one nearest neighbour and without replacement (Becker/Caliendo 2007). As nearest neighbour

matching without replacement is not appropriate in this case and I rather use radius caliper matching, Rosenbaum bounds cannot be displayed here.

7 Results

What drives the selection?

Case workers may place different unemployed to the different sub-programmes for several reasons, which may also influence the sub-programme effectiveness. Table 6 shows the different employment rates for unmatched and matched individuals from the controls in the waiting group. The difference is especially apparent for both within-firm types, but also noticeable for skill training or combinations.

Therefore, it is worth looking at the factors driving the selection into the sub-programmes of short-term training. One example may be that harder to place individuals are placed more often in aptitude tests than in skill training courses. Some remarkable selection results are discussed here shortly. One example of the probit estimates for the largest estimation group (Western German men in within-firm aptitude tests) is displayed in Table 2.[7]

It is considerable that young unemployed under the age of 25 have the highest probability to participate in each of the short-term training programme types compared to the older age groups. But when comparing different sub-programmes, it turns out that individuals over the age of 25 participate with a higher likelihood in skill training than in application training or combinations. One reason may be longer unemployment periods from older unemployed individuals while younger unemployed potentially recently finished their education and more search skills are essential and not certain job specific skills.

In general, foreigners are not especially targeted with programmes (Hohmeyer/Kopf 2009). It can be shown here that the classroom training combination, as the longest short-term training programme, is the only type where foreigners and migrants as a special target group have higher participation propensities than Germans. However, this is only the case for Eastern Germany where the percentage is remarkably lower than in the Western part. Also, persons with health impairments are not especially targeted by one of the different programme types.

Most sub-programmes overrepresent persons with a relative high education. There are probably different predominantly longer and more intense programmes, such as One-Euro-Jobs, that are designed for lower educated unemployed. One exception is the use as a work test where education does not have any significant coefficients. Testing ones motivation may not be dependent on education. Comparing classroom skill training and combinations, higher educated individuals have a higher likelihood to participate in skill training courses. These are longer and more occupation specific and may require certain skills or education in advance.

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[7] The entire results are not displayed but are available on request.

It can be shown that also the employment and unemployment history matters. Unemployed persons have a lower probability to participate in classroom combinations in Eastern Germany, classroom aptitude tests as well as classroom work tests if they spent longer periods in regular employment during the last five years. Being out-of-labour-force for a longer period of time decreases the participation probability in classroom application and skill training, especially for men. Therefore, mostly long-term unemployed are especially targeted with several sub-programmes. This can be also confirmed by the fact that unemployed who have already participated in ALMPs have a higher probability to take part in short-term training. Especially former short-term training participation increases the probability for a new training participation. However, this does not hold for classroom application training.

Furthermore, household characteristics matter for the selection probability. Western German single women have a higher propensity to take part in classroom aptitude tests and within-company training. Western German singles join application training more likely. However, Eastern German single men have a lower likelihood to participate in within-company skill training and combinations. Moreover, partner characteristics are relevant for the programme selection. Individuals whose partner has a low or no education have a higher likelihood to take part in classroom combinations. On the contrary, unemployed with a skilled partner participate more likely in within-company and classroom aptitude tests.

This shows that different variables are important for the selection into different short-term training programmes. Conditioning on these variables is therefore important for the analysis.

Treatment effects: sub-programmes versus waiting

The average treatment effects on the treated individuals on their employment probability are presented in Figures 8 to 14 (sub-programme versus waiting) in percentage points with 95 percent confidence bands. Figure 15 to 21 show the effects on the probability to participate in any ALMP. Table 5 displays the effects on employment stability.

Classroom training programmes

Classroom application training should improve the application and search process in order to integrate the unemployed into the labour market. There are negative effects for all four groups, which are longest for Eastern German men with up to one year. That means that there is not only a locking-in effect during the programme participation as application training only lasts up to two weeks but an extended catch-up period. It can be shown that application training participants have a higher probability to participate in other programmes than non-participants (Figure 15)[8]. This shows

[8] The effects on the "any ALMP" outcome are shown from the third month after programme start onwards as the participants are participating in short-term training for a maximum duration of twelve weeks. Showing this share would increase the scale tremendously.

that application training is used as a stepping stone or preparation for other activities. After three to five months the negative effects disappear in Western Germany and for Eastern German women and stay insignificant (Figure 8). There are even small negative effects concerning the employment stability for East German men (Table 5). Participants in application training have a three percentage points lower probability to be at least six or twelve months in the first regular job than comparable non-participants.

Work tests are not primarily designed to enhance skills in order to enable the integration into the labour market. They are used in order to test ones readiness and motivation to work. As one rather expects ex ante effects of this programme type, the ex post effects are not expected to be significant. The results show that the initial negative effects are only slightly longer than the actual programme duration as work tests are supposed to last no longer than two weeks.[9] This is a surprising result if one compares the estimated effects of the work test with those of application training. Both programmes are quite similar in contents while the latter is especially designed to test ones readiness to work while application training should also enhance ones search process. The results even become significantly positive for men in Western Germany (with three to five percentage points) after 18 months (Figure 9). The same holds also even for the minimum duration of six months of the first regular job (Table 5).

Classroom aptitude tests last up to four weeks and should test ones aptitudes for a certain occupation or a programme. The initial negative effects are shorter in Eastern than in Western Germany and last up to five months (Figure 10). Therefore, one gets the impression that aptitude tests are not used too often to prepare the participants for another programme, e.g., for longer training. This cannot be shown with the effects on the outcome "any ALMP" as there are positive effects also for this outcome (Figure 17). However, the effects decline after six months and quickly become insignificant in Eastern Germany. The employment effects become positive for three groups and lie between two and four percentage points. The effects for Western German women are not significant and the effects for Eastern German men turn insignificant at the end of the observation window (Figure 10). A positive effect can be also shown for employment stability for these three groups (Table 5).

Classroom skill training courses have locking-in effects up to two months in Eastern Germany. These courses are supposed to have a maximum duration of eight weeks. In Western Germany, the initial negative effects exceed locking-in effects during the participation with up to five months. Thereafter, the effects turn to be significantly positive with two to five percentage points for all four groups. Such an effect has been expected as skill training can theoretically lead to an employment ef-

[9] The planned programme duration cannot be shown as this variable is incorrectly coded for the majority of cases. The compulsory maximum durations for each sub-programme are explained in the institutional setting.

fect through more than one channel, e.g., human capital improvement, certain certificates or provision of information (Figure 11). As the employment effects are consistently positive it is interesting to understand if the same holds for employment stability. There are small positive effects for the for the probability of being employed six or twelve months in the first regular job for Eastern Germans as well as for Western German men.

The longest analysed classroom training programme is the one of classroom combination that may last up to twelve weeks. The initial negative effect in Eastern Germany lasts exactly this maximum duration while it is longer in Western Germany. From the 18th month onwards, the effects become significantly positive for Western German men with two percentage points. On the contrary, there are no significant effects for Eastern German men and Western German women. The effects for Eastern German women are only positive from the sixth to the 13th month and at the end of the observation window (Figure 12). Since often aptitude tests and skill training courses are combined in classroom combinations such effects have not been expected as skill training itself has positive effects. Possibly, the participants differ in these sub-programmes. Effects on the job stability can only be shown for Eastern German women (Table 5).

Table 6 shows the different employment rates of sub-programme participants and the waiting group. It is noticeable that the employment rates for participants in Western Germany are higher than in Eastern Germany with around 20 up to almost 30 percent. The male employment rates are generally higher than the female employment rates.

Within-company training programmes

Contrary to the classroom short-term training programmes, both within-company training measures have substantial positive effects. The results are shown in Figure 13 and 14. There is only a very short locking-in period during programme participation that is directly followed by significantly positive effects of 13 up to 20 percentage points. The reason for this high effect can be the direct contact to a potential employer of the participants in such internships. Moreover, participants learn firm-specific human capital additional to general human capital or sector specific human capital. Therefore, it is also beneficial for the employer to appoint the participant afterwards. The effects on the probability of participating in any ALMP are insignificant (Figures 20 and 21). However, these results could also point to the existence of deadweight losses. This cannot be clarified in this study with these datasets.

Moreover, it is noticeable that the effects of both programme types are quite similar. However, skill training and combinations have much larger confidence intervals than aptitude tests. Moreover, the effects for women are slightly higher for within-company aptitude tests than for the other programme type.

Having such large positive employment effects it is important to look at an outcome variable describing the employment stability (Table 5). The results show that the

probability of having a stable job (six or twelve months) is increased considerably (13 to 24 percentage points). This confirms the effectiveness of this instrument not only to be a stepping stone for employment in general but to be a stepping stone to more stable employment.

Treatment effects: pair-wise comparisons

In the following, I present the key results of the pair-wise comparisons.[10] These are selected according to the following criteria: First, I show the results of classroom application training as one typical example of a short-term training programme compared to the other classroom training programmes. Application training courses represent one sub-programme that is closest to the international job search assistance. Second, I show the results for classroom skill training compared to other classroom training programmes as this is the sub-programme in classrooms with the most consistent positive treatment effects compared to the waiting group. Moreover, it is one of the largest sub-programmes. Moreover, both sub-programmes are relatively large and therefore important short-term training programmes. Third, I compare both within-company training programmes directly to each other. The results are displayed in Figure 22 to 31.

Classroom Application training versus other classroom training programmes

Comparing classroom application training directly to other classroom training programmes, they have either negative or no effects. There are hardly any significant effects when comparing application training and work tests (Figure 22). There are sporadic small negative effects for Eastern German men. This result is astonishing because application training should enhance the search efficiency. However, both programmes are quite similar in their contents. Comparing application training and aptitude tests, there are small negative effects in Eastern Germany and no effects in Western Germany (Figure 23). The pair-wise comparison to skill training yields mostly negative effects (Figure 24). However, there are nearly no effects for Western German women. They would not have had any advantages if they had participated in skill training instead of application training. The results are quite similar comparing application training and combinations (Figure 25). There are mostly negative effects in Eastern Germany and no effects in Western Germany.

Therefore, application training has no positive effects neither compared to non-participation nor to participation in other sub-programmes. That means that the participants of application training would also not have been better off if they had taken part in another programme in some of the cases.

Classroom skill training versus other classroom training programmes

On the contrary, comparing classroom skill training courses to other classroom training programmes, the effects are either positive or zero. Only for women in Eastern Germany, there are positive effects from three to five percentage points from the

[10] All pair-wise comparisons have been estimated and are available on request.

sixth months onwards for the pair-wise comparison between skill training and work tests (Figure 26). This is astonishing, as one would have expected clear positive effects for all four groups as there are several channels in skill training that would lead to an employment effect on the contrary to work tests. There are mostly positive effects of skill training compared to application training for men as expected (Figure 27). However, only a few of the estimated effects are significant for women. Comparing skill training to aptitude tests or combinations there are no effects of skill training (Figure 28 and 29). The only exceptions are Western German women compared to combinations at the end of the observation window, where the effect gets positive.

Therefore, in contrast to the comparison to the non-participation case, classroom skill training courses are not always beneficial compared to other sub-programme participations. That means that participating in skill training is better for the participants than waiting; however it is not better for them than participating in aptitude tests or combinations.

Comparing two types of within-company training
There are hardly any differences for both types of within-company training comparing them to the non-participation group. What are the results comparing both types directly to each other? There are also hardly any effects when comparing within-company aptitude tests and within-company skill training or combinations and vice versa (Figure 30 and 31). There are only a few exceptions. Aptitude tests are beneficial in the short run compared to skill training/combinations for Western German women. One reason could be the shorter duration of aptitude tests. Moreover, skill training/combinations show some sporadic negative effects for Eastern German women compared to aptitude tests. However, one has to take into account that most within-company training programmes are aptitude tests. There are merely no differences in the effects and a slight advantage of aptitude tests compared to skill trainings or combinations.

8 Conclusions

This study investigates the different performance of seven sub-programmes of short-term training relative to one another as well as compared to the non-participation case. The analysed target group consists of German welfare benefit recipients. The period under review is the time period directly after a reform of the German means-tested benefit system in January 2005, which aims at activating benefit recipients in needy households.

I estimated the treatment effects for short-term training inflow samples from February to April 2005. The non-participation or waiting group stems from the unemployment stock receiving welfare benefit UB II. The samples are drawn from large and rich administrative data sets. I am able to include a large set of characteristics that are likely to affect on the one hand the sub-programme participation decision and on the other hand the outcomes.

The results suggest that only some sub-programmes yield positive employment effects when participation is compared to waiting. This is an important finding given that other authors find generally positive effects of short-term training not distinguishing between different types (Biewen et al. 2007; Hujer et al. 2006) or they find positive effects of classroom training in general while not differentiating between various classroom training types (Stephan 2008; Stephan/Pahnke 2008; Wolff/ Jozwiak 2007).

The general positive effect of short-term training appears to be driven by the large consistent effect of aptitude tests and skill trainings or combinations within companies. Both within-firm trainings have employment effects up to 20 percentage points and increase employment stability. That means that within-company training in general is beneficial compared to non-participation. Nevertheless, these positive effects could also reflect deadweight losses as firms may be involved in the selection process and job centres could have provided them with trainees who the firms would have employed anyway. On the other hand, the improved employment stability hints to the point that the prolonged screening process through the programme installs a more stable employer-employee match than without such an internship. Therefore, it stays an open question if there are deadweight losses of within-firm training or not.

The positive effect of short-term classroom training seems to be mostly driven by the consistent positive effect of skill training courses. Also aptitude tests and classroom combinations have positive employment effects for some groups. These courses are more occupation specific than, e.g., application training and potentially effective through several channels, such as human capital improvement, certain certificates or the provision of information.

The employment effects of application training and work tests are less promising compared to international studies that mostly find positive employment effects of job search assistance. One explanation could be that most international job search assistance programmes are individually oriented mentoring programmes. Therefore, they may be more intensive which could lead to the positive effects (van den Berg/ van der Klaauw 2006). Moreover, such more intense programmes may be used for different target groups and less for the work test purpose. However, a new law that has been implemented in January 2009 in Germany actually goes partly in this direction emphasising programme flexibility and also individually oriented counselling. Moreover, this study cannot reveal if such sub-programmes work as a work test. This will be a future task where different data are needed.

Nevertheless, it is noteworthy that parts of such a short programme cause positive employment effects for welfare recipients and long-term unemployed, who are a specific group that has not worked for a long time period and should have extreme difficulties of getting jobs. Therefore, the short-term training is a short and relatively inexpensive programme that does not harm participants and even facilitates chances to get a stable job, at least for some, mostly occupation specific, sub-programmes.

Comparing sub-programmes directly to each other, the results differ from those in the comparison with the non-participating group. Comparing classroom application training to other classroom short-term training programmes, there are no groups that have benefited from application training. Participants in Eastern Germany would have been clearly better off (with up to five percentage points) if they had participated in aptitude tests, skill training or combinations. This also partly holds for Western German men. Thus, treating some of the application training participants by one of these alternatives would improve the effectiveness of short-term training.

While classroom skill training courses are clearly favoured compared to non-participation, the effects are not the same in contrast to participation in other classroom training programmes. They are either positive or zero. Therefore, it would not be better to reallocate classroom skill training participants to any of the other programmes. None of the other comparisons between sub-programmes provide substantial evidence that a shift of participants from one programme type to another implies major changes in the effectiveness of short-term training. These results do not imply other effects such as macro effects.

The results are only partly consistent with the international literature. Internationally, training is mostly beneficial for the re-employment chances. However, such results are mostly only shown for a different group of unemployed, the UI recipients. This study shows comparable positive effects for within-company trainings, classroom skill training courses and partly for aptitude tests and combinations even being shorter than most programmes in other countries. On the contrary, many international studies also find positive effects of job search assistance while I do not find such positive effects for application training. However, these programmes and the participants are not entirely comparable. The application training programme which is analysed in this study does not mainly consist of individual job search assistance but mainly of courses that are held for groups. Moreover, JSA is mainly analysed for UI recipients in the international context. This also makes results even less comparable. However, a new law has been introduced in January 2009 in Germany where job search assistance is designed to be more individually oriented than before. Future research will have to evaluate the more individual JSA and also compare individual JSA and application training courses directly with each other to shed some more light in the working and effects of these programmes for welfare recipients.

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Appendix

Table 1
Sample sizes

	Eastern Germany		Western Germany		
	Men	**Women**	**Men**	**Women**	**Overall**
Classroom training					
Application training	835	782	2,078	1,660	5,355
Work tests	739	674	1,784	1,137	4,334
Aptitude tests	3,505	2,868	3,640	2,142	12,155
Skill training courses	2,554	2,310	3,823	2,916	11,603
Combinations	2,545	2,036	4,668	2,952	12,201
Within-company training					
Aptitude tests	3,943	2,507	6,048	2,243	14,741
Skill training/combinations	990	703	2,752	1,157	5,602
Overall	15,111	11,880	24,793	14,207	65,991
Waiting group	82,162	69,214	145,011	106,384	402,771

Table 2
Probit estimates for Western German men in within-company aptitude tests (robust standard errors in parantheses)

	Coefficient	
Age in years		
25-29	-0.122	(0.024)
30-34	-0.167	(0.026)
35-39	-0.230	(0.026)
40-44	-0.322	(0.027)
45-57	-0.461	(0.026)
Foreigners or German with migration background	-0.061	(0.017)
Partner and children		
no partner	-0.029	(0.034)
One child	0.028	(0.022)
Two and more children	0.004	(0.021)
Education		
Secondary school, vocational education	0.133	(0.016)
GCSE, no vocational education	0.067	(0.029)
GCSE or A-levels, vocational education or college	0.168	(0.020)

Table 2 continued
Probit estimates for Western German men in within-company aptitude tests (robust standard errors in parantheses)

	Coefficient	
Unemployment history		
Cumulated duration of unempl., 02/2004 to 01/2005:		
7 to 9 months	0.020	(0.023)
10 to 12 months	-0.048	(0.023)
Cumulated duration of unempl., 02/2000 to 01/2005:		
1 to 6 months	0.073	(0.034)
7 to 18 months	-0.031	(0.034)
19 to 24 months	-0.079	(0.039)
25 to 48 months	-0.169	(0.041)
Cum. dur. of UI receipt from 02/2000 to 01/2005:		
1 to 12 months	0.133	(0.027)
> 12 months	0.163	(0.031)
Cum. dur. of UA receipt from 02/2000 to 01/2005:		
1 to 12 months	0.049	(0.034)
13 to 24 months	-0.016	(0.038)
25 to 60 months	-0.061	(0.043)
UI receipt yes, 31st December 2004	0.156	(0.036)
UA receipt yes, 31st December 2005	0.090	(0.028)
Employment history		
Cumulated dur. of regular employment 01/2000 to 12/2004:		
1 to 6 months	0.057	(0.044)
7 to 12 months	0.038	(0.045)
13 to 18 months	0.035	(0.044)
19 to 30 months	0.059	(0.045)
31 to 60 months	0.084	(0.048)
ALMP history		
Time since end of last ALMP:		
One	0.151	(0.023)
Two	0.097	(0.024)
Three	0.034	(0.025)
Number of ALMPs in last five years:		
One	0.014	(0.023)
Two or three	0.096	(0.025)
Four and more	0.158	(0.031)

Table 2 continued
Probit estimates for Western German men in within-company aptitude tests (robust standard errors in parantheses)

	Coefficient	
Information on the last regular job		
White-collar worker	0.012	(0.023)
part-time	-0.088	(0.029)
No job yet	0.050	(0.063)
Last regular monthly real wage (deflated with CPI, 2000=100):		
>500 to 1000 Euro	0.017	(0.029)
>1000 to 1500 Euro	0.047	(0.027)
>1500	0.079	(0.026)
Time since end of last contributory job:		
1 to 6 months	0.254	(0.037)
7 to 12 months	0.189	(0.038)
13 to 24 months	0.143	(0.035)
25 to 48 months	0.079	(0.033)
Average duration of contributory jobs between 01/2000 and 12/2004:		
7 to 12 months	-0.076	(0.020)
13 to 24 months	-0.113	(0.024)
25 to 60 months	-0.243	(0.034)
missing	0.009	(0.063)
Partner variables		
Partner's cum. dur. neither empl. nor job-seeker nor unemployment benefit receipt (proxy for out-of-labour force), 01/2000 to 12/2004		
13 to 30 months	-0.061	(0.028)
Partner's regular employment, 02/2000 to 01/2005:		
13 to 60 months	0.031	(0.026)
Partner education:		
Secondary school, vocational education	0.071	(0.031)
GCSE or A-levels, vocational education or college	0.040	(0.025)
missing partner id	0.087	(0.032)
Regional variables		
Local unempl. rate in January 2005	0.011	(0.003)
%age change in local unempl. rate in January 2005	0.003	(0.001)
Percentage of LTU in Jan. 2005	-0.005	(0.002)
total %age change of percentage of LTU in Jan. 2005	0.006	(0.001)
Vacancy-unemployment ratio in January 2005	-0.885	(0.277)
Cities in West Germany with average labour market conditions	-0.173	(0.034)
Cities in West Germany with above-average labour market conditions	0.127	(0.039)
Urban areas with average labour market cond.	0.155	(0.025)
Rural areas with average/below avereage LM conditions	0.265	(0.027)
Rural areas with above average/very favourite LM conditions	0.177	(0.040)
Rural areas in W. G., very favourite LM cond. and low LTU	0.210	(0.039)
missing sector	-0.152	(0.052)
Trade, transport, communication	0.015	(0.019)
Services for companies	-0.068	(0.020)
Other services	-0.097	(0.023)
Constant	-2.703	
Number of observations	115742	
Pseudo R^2	0.0869	

Table 3
Matching Quality for participating versus waiting

sub-programme	group	MSB before	MSB after	R^2 before	R^2 after	Treated on support	Controls on support	Treated off support	% off support
classroom	1: Men, East Germany	13.90	2.19	0.0664	0.0040	636	70689	0	0%
application training	2: Women, East Germany	9.61	1.29	0.0434	0.0014	633	59670	0	0%
	3: Men, West Germany	9.76	0.91	0.0672	0.0010	1442	117130	0	0%
	4: Women, West Germany	7.89	0.71	0.0471	0.0006	1118	81218	0	0%
classroom	1: Men, East Germany	12.54	2.00	0.0584	0.0027	596	70689	0	0%
w ork tests	2: Women, East Germany	9.73	1.64	0.0456	0.0018	556	59670	0	0%
	3: Men, West Germany	12.49	1.45	0.0509	0.0026	1214	117130	0	0%
	4: Women, West Germany	7.44	1.34	0.0309	0.0024	747	81218	0	0%
classroom	1: Men, East Germany	11.18	0.38	0.1088	0.0004	2684	70689	1	0%
aptitude tests	2: Women, East Germany	8.89	0.32	0.0825	0.0003	2296	59670	3	0%
	3: Men, West Germany	11.25	0.70	0.0846	0.0024	2524	117130	5	0%
	4: Women, West Germany	9.47	0.78	0.0607	0.0020	1505	81218	3	0%
classroom	1: Men, East Germany	8.70	0.42	0.0603	0.0003	1967	70689	0	0%
skill training	2: Women, East Germany	9.08	0.25	0.0601	0.0001	1813	59670	2	0%
	3: Men, West Germany	7.87	0.27	0.0562	0.0002	2639	117130	0	0%
	4: Women, West Germany	9.60	0.36	0.0594	0.0005	1962	81218	0	0%
classroom	1: Men, East Germany	12.08	0.36	0.0892	0.0003	2044	70689	1	0%
combination	2: Women, East Germany	8.76	0.31	0.0708	0.0003	1640	59670	0	0%
	3: Men, West Germany	12.05	0.31	0.1035	0.0012	3327	117130	0	0%
	4: Women, West Germany	12.15	0.57	0.0855	0.0028	1950	81218	4	0%
w ithin-company	1: Men, East Germany	14.58	0.32	0.1324	0.0002	2713	70689	6	0%
aptitude tests	2: Women, East Germany	14.05	0.42	0.1323	0.0003	1776	59670	4	0%
	3: Men, West Germany	13.13	0.26	0.1128	0.0001	3856	117130	3	0%
	4: Women, West Germany	17.27	0.54	0.1389	0.0006	1394	81218	1	0%
w ithin-company	1: Men, East Germany	17.76	1.62	0.0877	0.0018	673	70689	0	0%
skill training/combination	2: Women, East Germany	20.21	2.07	0.0912	0.0027	479	59670	0	0%
	3: Men, West Germany	17.92	0.73	0.0851	0.0004	1814	117130	0	0%
	4: Women, West Germany	22.77	1.49	0.1046	0.0015	761	81218	0	0%

Table 4
Matching Quality for the pair-wise comparisons

sub-programmes	group	MSB before	MSB after	R^2 before	R^2 after	Treated on support	Controls on support	Treated off support	% off support	matching algorithm
Classroom within group comparison										
skill training	1: Men, East Germany	8.33	1.92	0.0395	0.0041	1885	2045	82	4%	radius matching, caliper 0.001
vs.	2: Women, East Germany	9.27	2.07	0.0477	0.0041	1803	1640	12	1%	radius matching, caliper 0.005
combination	3: Men, West Germany	10.49	2.02	0.0742	0.0027	2617	3327	22	1%	radius matching, caliper 0.001
	4: Women, West Germany	9.05	2.22	0.0629	0.0055	1961	1954	1	0%	radius matching, caliper 0.005
skill training	1: Men, East Germany	7.19	1.71	0.0347	0.0029	1924	2685	43	2%	radius matching, caliper 0.001
vs.	2: Women, East Germany	9.82	1.91	0.0558	0.0025	1749	2299	66	4%	radius matching, caliper 0.001
aptitude tests	3: Men, West Germany	8.92	1.30	0.0421	0.0018	2601	2529	38	1%	radius matching, caliper 0.001
	4: Women, West Germany	15.23	2.41	0.0696	0.0057	1948	1508	14	1%	radius matching, caliper 0.005
skill training	1: Men, East Germany	9.43	2.49	0.0484	0.0078	1944	596	23	1%	radius matching, caliper 0.005
vs.	2: Women, East Germany	9.29	2.07	0.0289	0.0023	1811	556	4	0%	radius matching, caliper 0.05
work tests	3: Men, West Germany	6.97	1.26	0.0195	0.0008	2612	1214	27	1%	radius matching, caliper 0.005
	4: Women, West Germany	13.77	2.32	0.0503	0.0031	1804	747	158	8%	radius matching, caliper 0.001
skill training	1: Men, East Germany	13.45	2.37	0.0664	0.0050	1940	636	27	1%	radius matching, caliper 0.005
vs.	2: Women, East Germany	11.23	2.25	0.0606	0.0036	1775	633	40	2%	radius matching, caliper 0.005
application training	3: Men, West Germany	8.54	1.91	0.0303	0.0025	2437	1442	202	8%	radius matching, caliper 0.0005
	4: Women, West Germany	11.77	2.33	0.0734	0.0055	1792	1118	170	9%	radius matching, caliper 0.001
application training	1: Men, East Germany	8.01	2.33	0.0436	0.0040	623	2045	13	2%	radius matching, caliper 0.005
vs.	2: Women, East Germany	6.35	1.55	0.0379	0.0030	630	1640	3	0%	radius matching, caliper 0.005
combination	3: Men, West Germany	11.04	1.63	0.0582	0.0017	1314	3327	128	9%	radius matching, caliper 0.0005
	4: Women, West Germany	14.83	2.46	0.1024	0.0067	1109	1954	9	1%	radius matching, caliper 0.005
application training	1: Men, East Germany	9.96	2.09	0.0613	0.0031	635	2685	1	0%	radius matching, caliper 0.005
vs.	2: Women, East Germany	8.17	1.22	0.0466	0.0027	629	2299	4	1%	radius matching, caliper 0.005
aptitude tests	3: Men, West Germany	12.47	1.27	0.0904	0.0020	1359	2529	83	6%	radius matching, caliper 0.001
	4: Women, West Germany	10.40	2.75	0.0325	0.0019	1114	1508	4	0%	radius matching, caliper 0.005
application training	1: Men, East Germany	11.68	2.62	0.0603	0.0068	628	1967	8	1%	radius matching, caliper 0.005
vs.	2: Women, East Germany	11.23	2.03	0.0606	0.0030	622	1815	11	2%	radius matching, caliper 0.005
skill training	3: Men, West Germany	10.81	1.92	0.0875	0.0039	1436	2639	6	0%	radius matching, caliper 0.005
	4: Women, West Germany	11.77	1.48	0.0734	0.0029	1109	1962	9	1%	radius matching, caliper 0.005
application training	1: Men, East Germany	6.63	2.16	0.0430	0.0043	627	596	9	1%	radius matching, caliper 0.005
vs.	2: Women, East Germany	9.26	2.87	0.0495	0.0044	614	556	19	3%	radius matching, caliper 0.005
work tests	3: Men, West Germany	7.97	1.49	0.0307	0.0011	1438	1214	4	0%	radius matching, caliper 0.005
	4: Women, West Germany	8.42	1.65	0.0286	0.0020	1107	747	11	1%	radius matching, caliper 0.005
Within-company within group comparison										
aptitude tests	1: Men, East Germany	9.60	2.72	0.0677	0.0085	2263	673	456	17%	radius matching, caliper 0.0005
vs.	2: Women, East Germany	9.12	3.41	0.0777	0.0109	1529	479	251	14%	radius matching, caliper 0.001
skill training/combination	3: Men, West Germany	4.68	0.79	0.0214	0.0006	3854	1814	5	0%	radius matching, caliper 0.005
	4: Women, West Germany	5.24	1.49	0.0249	0.0034	1392	761	3	0%	radius matching, caliper 0.005
skill training/combination	1: Men, East Germany	9.60	1.45	0.0677	0.0031	671	2719	2	0%	radius matching, caliper 0.005
vs.	2: Women, East Germany	9.12	3.13	0.0777	0.0073	474	1780	5	1%	radius matching, caliper 0.005
aptitude tests	3: Men, West Germany	4.68	0.60	0.0214	0.0003	1805	3859	9	0%	radius matching, caliper 0.005
	4: Women, West Germany	5.24	1.03	0.0249	0.0016	755	1395	6	1%	radius matching, caliper 0.005

Table 5
Effects on employment stability

Outcome	Men East		Women East		Men West		Women West	
classroom application training versus waiting								
at least 6 months employed	-0.03	***	-0.01		0.00		0.00	
at least 12 months employed	-0.03	***	-0.01		0.00		0.00	
classroom work test versus waiting								
at least 6 months employed	0.00		0.00		0.02	*	0.02	
at least 12 months employed	0.00		-0.01		0.01		0.01	
classroom aptitude test versus waiting								
at least 6 months employed	0.02	***	0.04	***	0.02	**	-0.01	
at least 12 months employed	0.02	***	0.03	***	0.01	*	-0.01	
classroom skill training versus waiting								
at least 6 months employed	0.02	**	0.03	***	0.03	***	0.01	
at least 12 months employed	0.01	*	0.02	***	0.02	***	0.01	
classroom combination versus waiting								
at least 6 months employed	0.01		0.03	***	0.00		0.00	
at least 12 months employed	0.00		0.01	*	0.00		0.00	
within-company aptitude test versus waiting								
at least 6 months employed	0.17	***	0.24	***	0.17	***	0.18	***
at least 12 months employed	0.14	***	0.19	***	0.13	***	0.16	***
within-company skill training/combination versus waiting								
at least 6 months employed	0.19	***	0.22	***	0.17	***	0.16	***
at least 12 months employed	0.15	***	0.17	***	0.13	***	0.15	***

Table 6
Employment rates (regular unsubsidised employment) for treated and controls (participation versus waiting)

			Men East		Women East		Men West		Women West	
classroom:			Treated	Controls	Treated	Controls	Treated	Controls	Treated	Controls
application	12 months	unmatched	7.1	9.0	7.9	8.4	12.6	11.7	11.4	12.6
training		ATT	7.1	10.1	7.9	9.3	12.6	13.0	11.4	12.9
	24 months	unmatched	15.4	14.4	12.2	11.7	20.1	17.9	17.5	16.2
		ATT	15.4	15.9	12.2	13.1	20.1	20.2	17.5	17.2
w ork	12 months	unmatched	11.4	9.0	7.9	8.4	15.8	11.7	15.4	12.5
test		ATT	11.4	9.9	7.9	8.8	15.8	14.2	15.4	13.6
	24 months	unmatched	16.1	14.4	13.7	11.7	25.9	17.9	19.5	16.2
		ATT	16.1	15.9	13.7	12.2	25.9	22.1	19.5	17.5
aptitude	12 months	unmatched	13.7	9.0	8.4	5.3	17.4	11.7	14.1	12.6
test		ATT	13.7	11.6	10.7	3.0	17.4	15.9	13.9	14.4
	24 months	unmatched	21.6	14.3	11.6	6.1	27.1	17.9	20.6	16.2
		ATT	21.6	19.2	14.8	2.8	27.1	24.9	20.5	18.9
skill	12 months	unmatched	13.0	9.0	13.4	8.5	17.8	11.7	15.7	12.6
training		ATT	13.0	11.0	13.5	11.1	17.8	15.5	15.7	15.4
	24 months	unmatched	21.5	14.4	19.3	11.7	28.5	17.9	23.6	16.2
		ATT	21.5	18.1	19.2	15.8	28.5	23.8	23.6	20.6
combination	12 months	unmatched	11.7	9.0	13.0	8.5	17.7	11.7	16.5	12.6
		ATT	11.7	11.0	13.0	10.4	17.7	17.2	16.5	16.0
	24 months	unmatched	18.0	14.4	16.8	11.7	29.1	17.9	22.6	16.2
		ATT	18.0	18.3	16.8	14.8	29.1	26.5	22.6	21.4
w ithin-firm:	12 months	unmatched	32.5	9.0	38.4	8.4	36.7	11.7	39.6	12.5
aptitude		ATT	32.5	15.1	38.5	14.9	36.7	19.5	39.6	20.7
test	24 months	unmatched	42.3	14.4	41.1	11.7	45.9	18.0	42.5	16.2
		ATT	42.4	25.6	41.1	20.5	45.9	29.7	42.5	27.1
skill	12 months	unmatched	34.6	9.0	33.6	8.4	35.9	11.7	35.1	12.6
training/		ATT	34.6	14.2	33.6	13.8	35.9	18.6	35.1	19.7
combination	24 months	unmatched	43.4	14.3	38.2	11.7	44.8	17.9	40.9	16.2
		ATT	43.4	23.0	38.2	19.1	44.8	27.8	40.9	25.5

Figure 1: Propensity score distribution of classroom application training vs. waiting

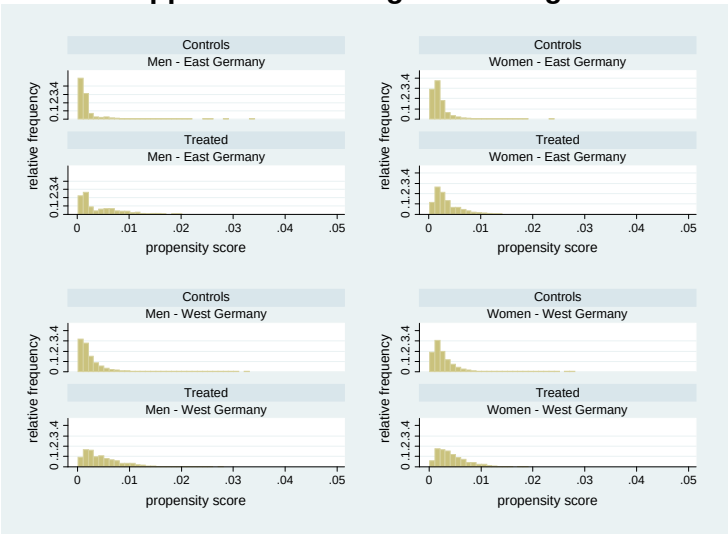


Figure 2: Propensity score distribution of classroom work test vs. waiting

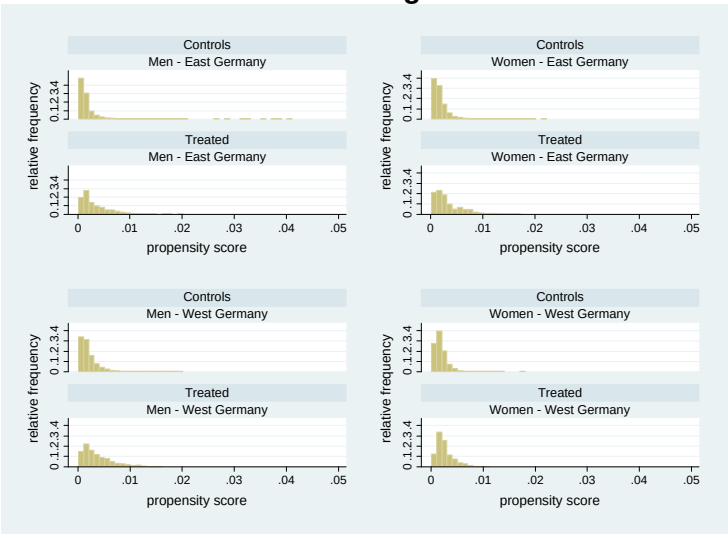


Figure 3: Propensity score distribution of classroom aptitude test vs. waiting

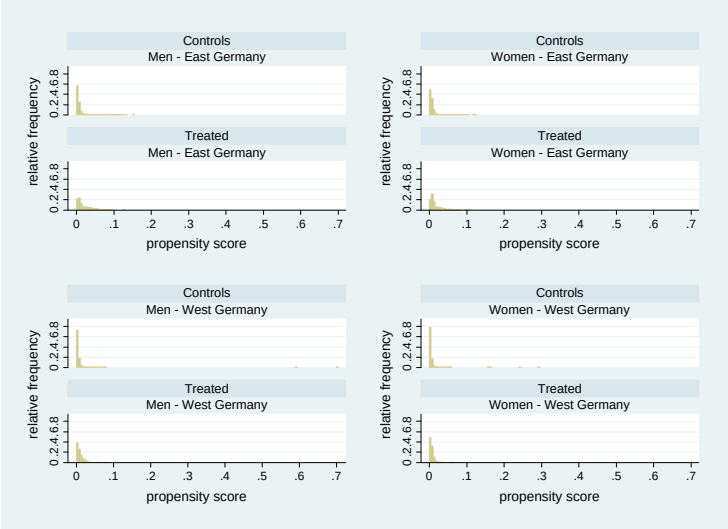


Figure 4: Propensity score distribution of classroom skill training vs. waiting

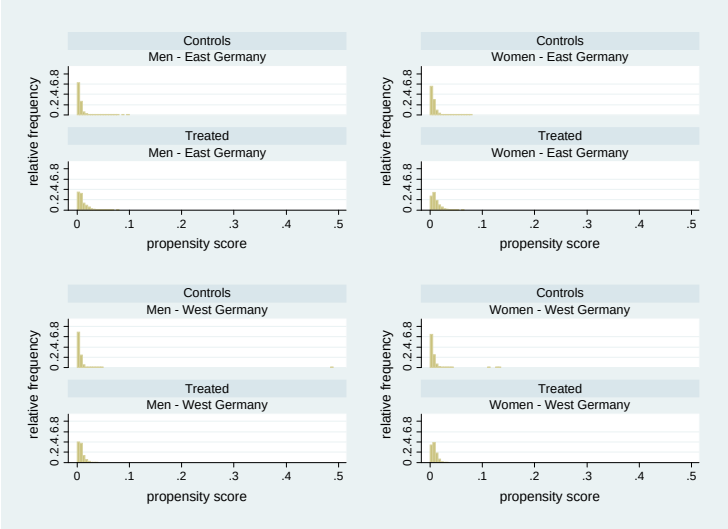


Figure 5: Propensity score distribution of classroom combination vs. waiting

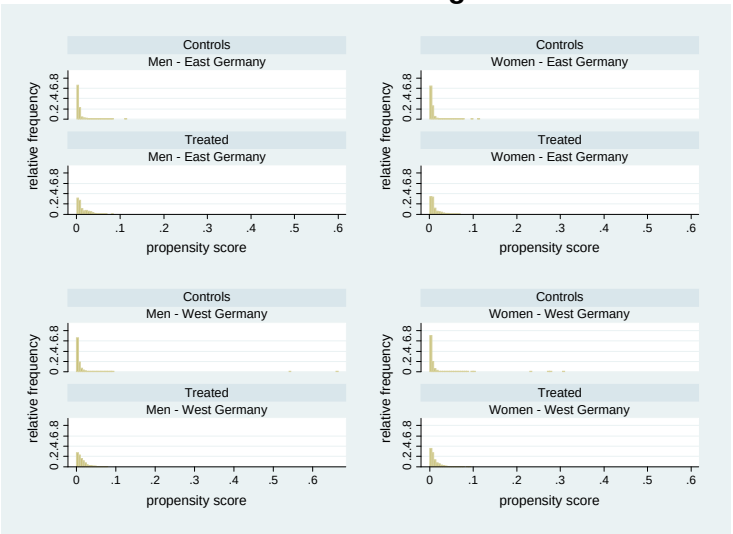


Figure 6: Propensity score distribution of within company aptitude test vs. waiting

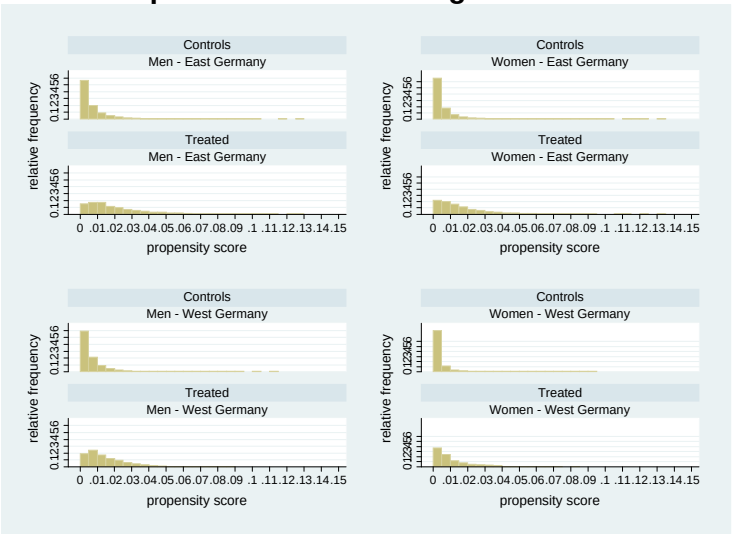


Figure 7: Propensity score distribution of within company skill training/combination vs. waiting

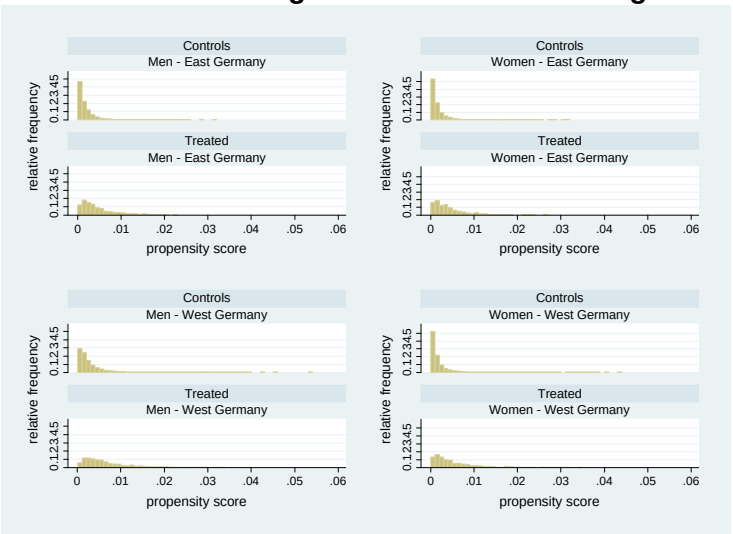


Figure 8: ATTs for classroom application training (radius matching, caliper 0.001), outcome regular employment

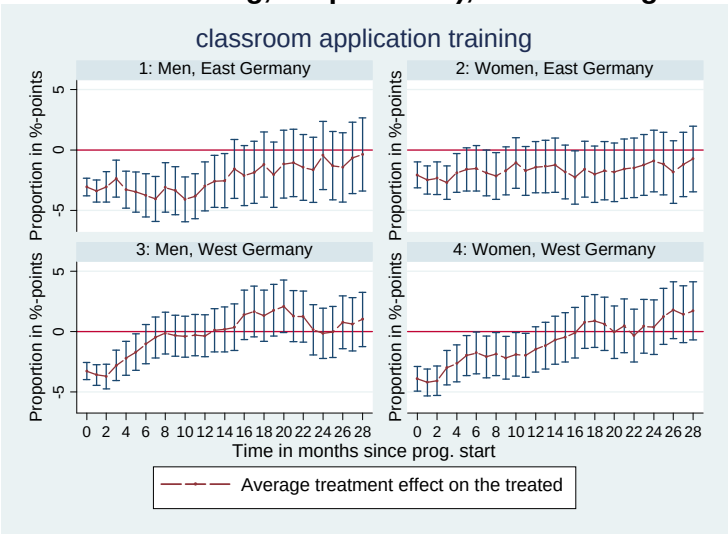


Figure 9: ATTs for classroom work tests (radius matching, caliper 0.001), outcome regular employment

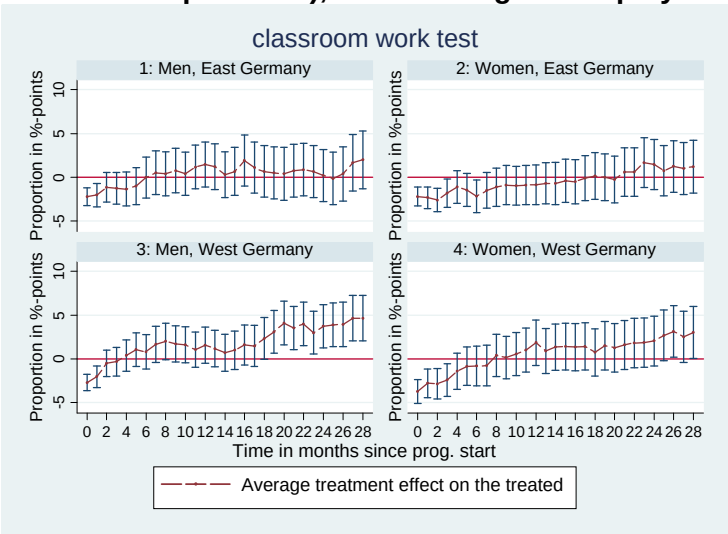


Figure 10: ATTs for classroom aptitude tests (radius matching, caliper 0.001), outcome regular employment

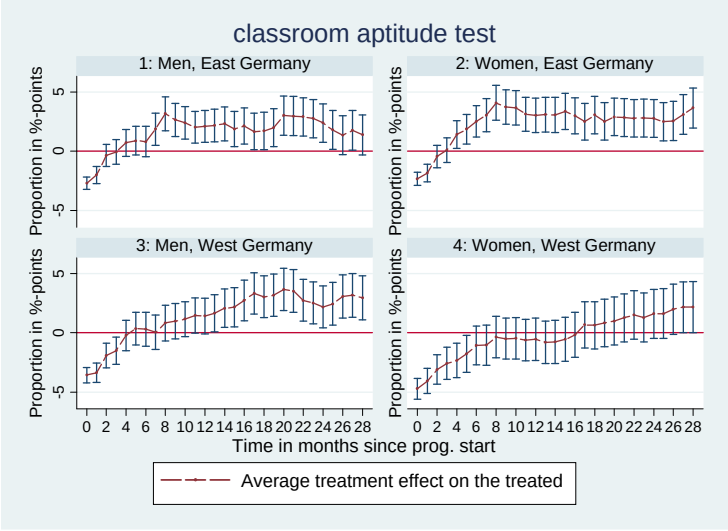


Figure 11: ATTs for classroom skill training (radius matching, caliper 0.001), outcome regular employment

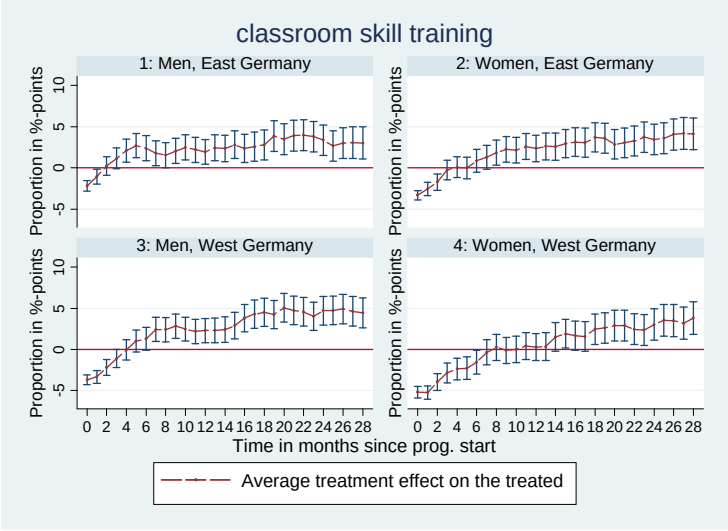


Figure 12: ATTs for classroom combinations (radius matching, caliper 0.001), outcome regular employment

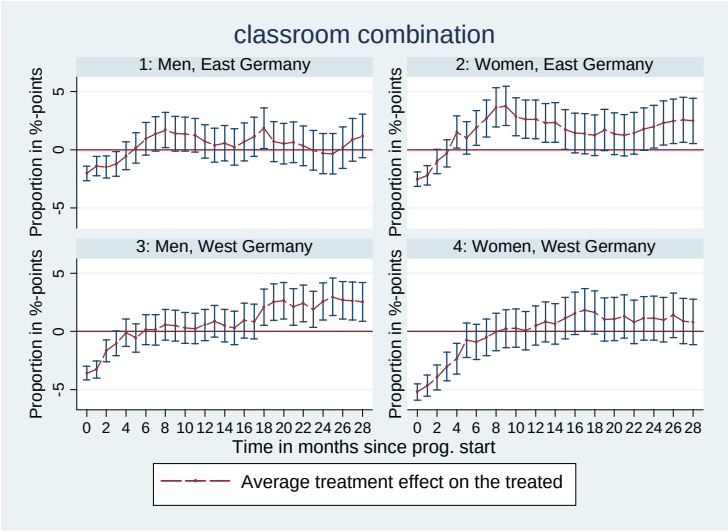


Figure 13: ATTs for within-company aptitude tests (radius matching, caliper 0.001), outcome regular employment

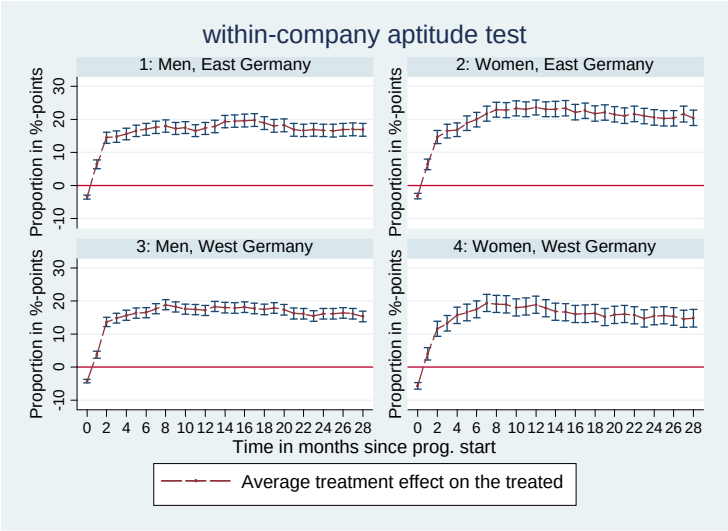


Figure 14: ATTs for within-company skill training and combinations (radius matching, caliper 0.001), outcome regular employment

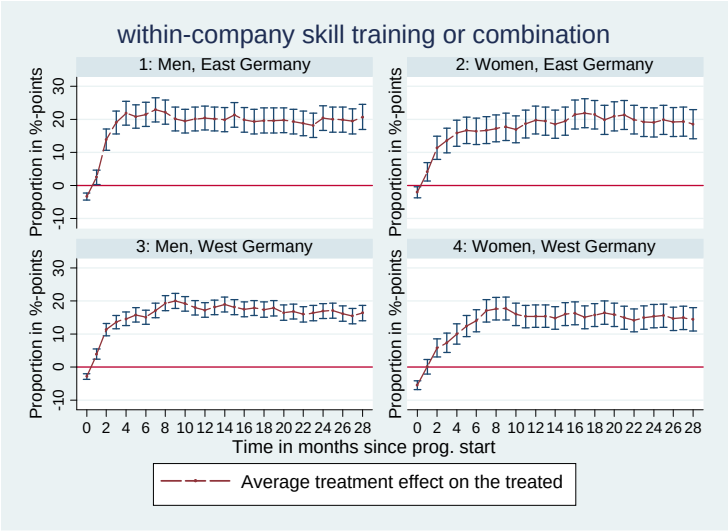


Figure 15: ATTs for classroom application training, outcome any ALMP

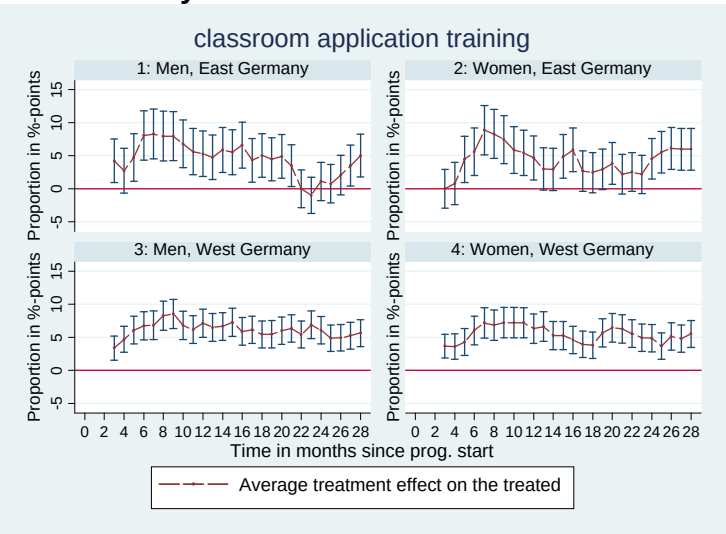


Figure 16: ATTs for classroom work test, outcome any ALMP

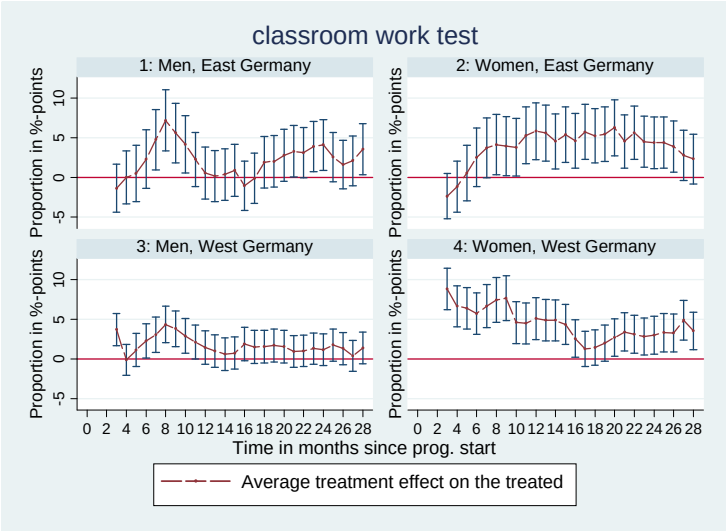


Figure 17: ATTs for classroom aptitude test, outcome any ALMP

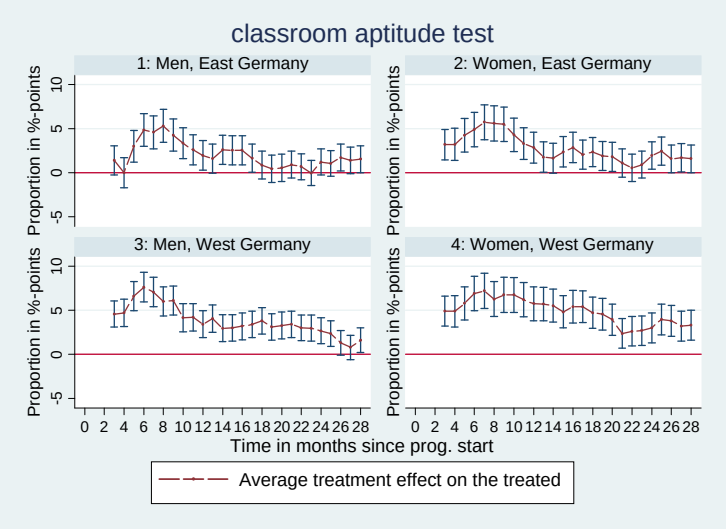


Figure 18: ATTs for classroom skill training, outcome any ALMP

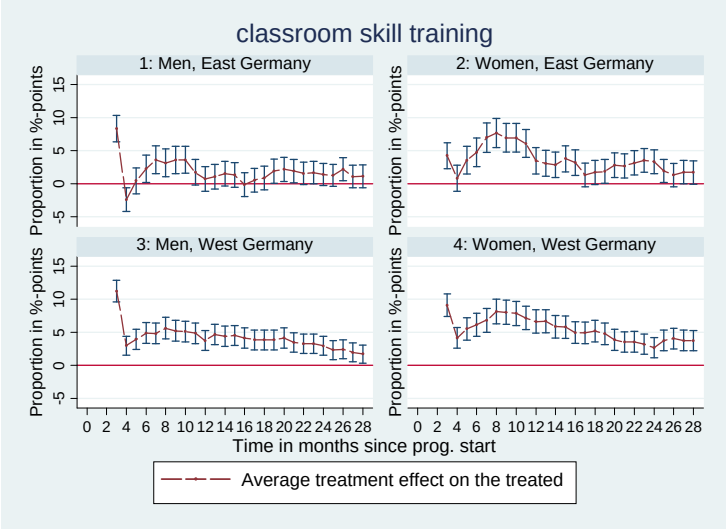


Figure 19: ATTs for classroom combination, outcome any ALMP

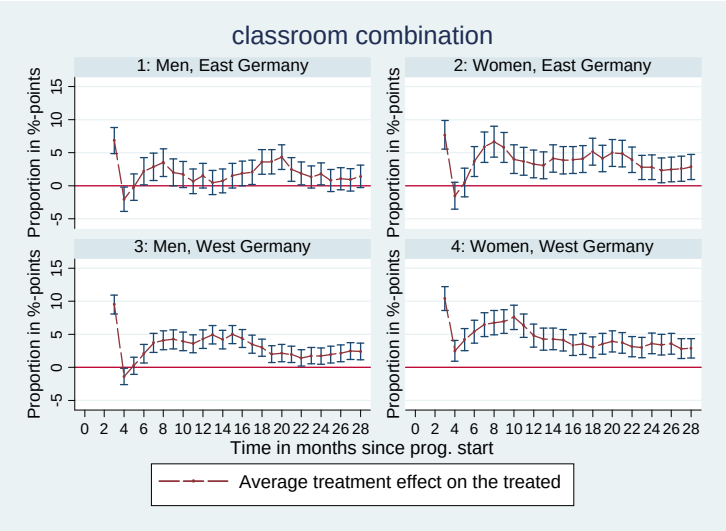


Figure 20: ATTs for within company aptitude test, outcome any ALMP

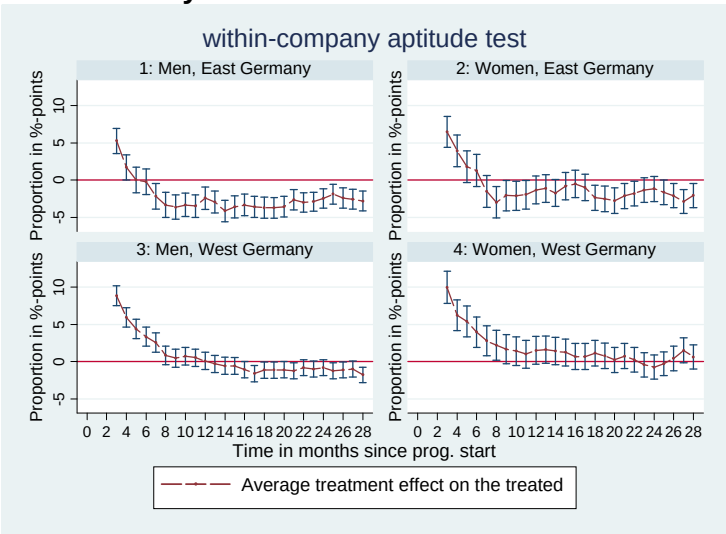


Figure 21: ATTs for within company skill training/ combination, outcome any ALMP

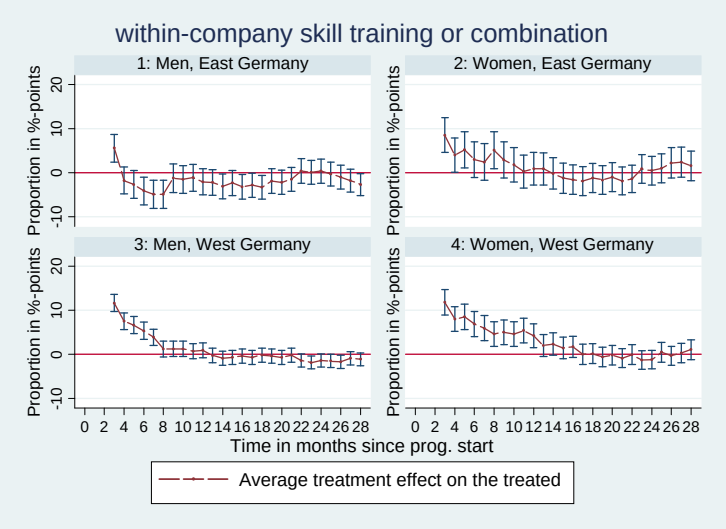


Figure 22: ATTs for classroom application training vs. classroom work test, outcome regular employment

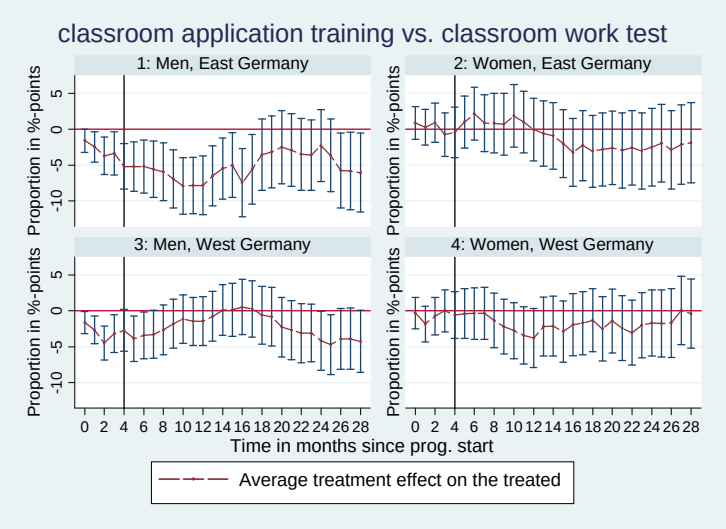


Figure 23: ATTs for classroom application training vs. classroom aptitude test, outcome regular employment

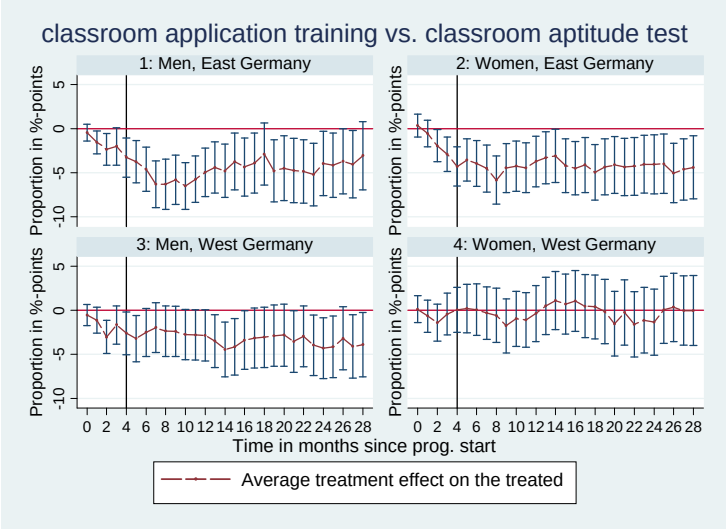


Figure 24: ATTs for classroom application training vs. classroom skill training, outcome regular employment

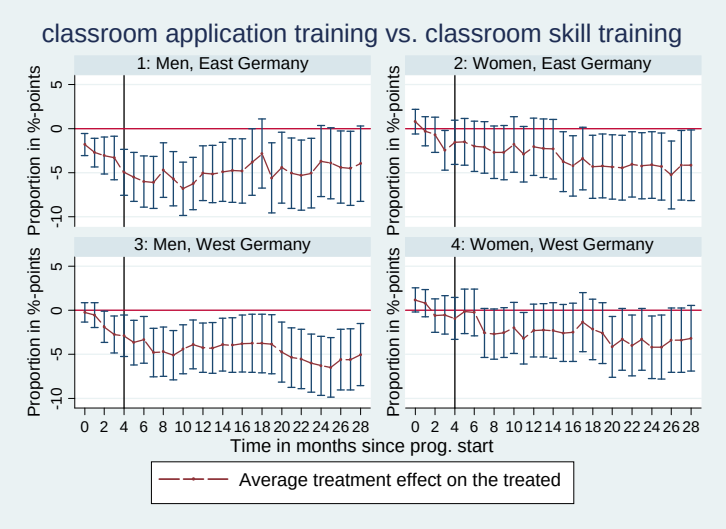


Figure 25: ATTs for classroom application training vs. classroom combination, outcome regular employment

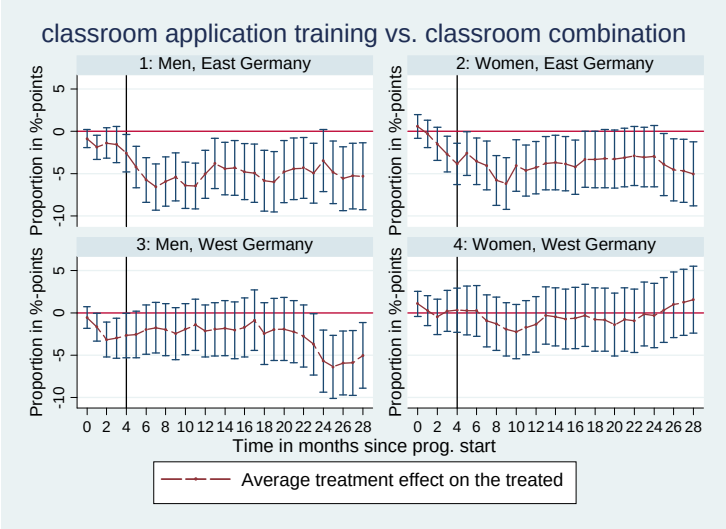


Figure 26: ATTs for classroom skill training vs. classroom work test, outcome regular employment

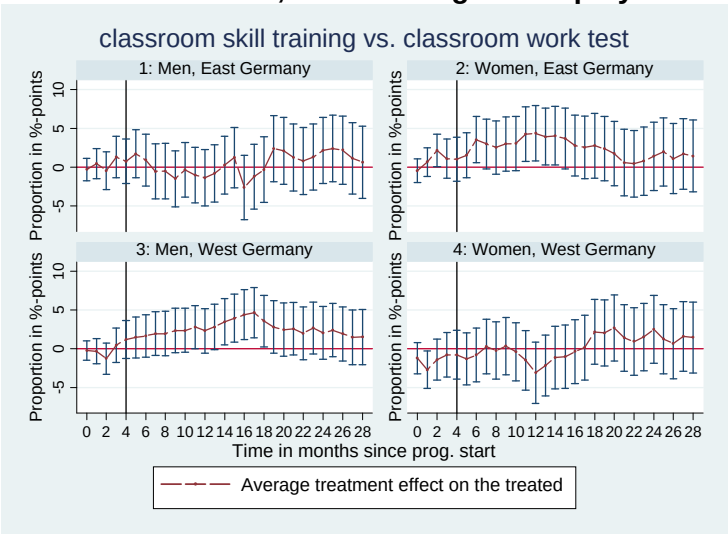


Figure 27: ATTs for classroom skill training vs. classroom application training, outcome regular employment

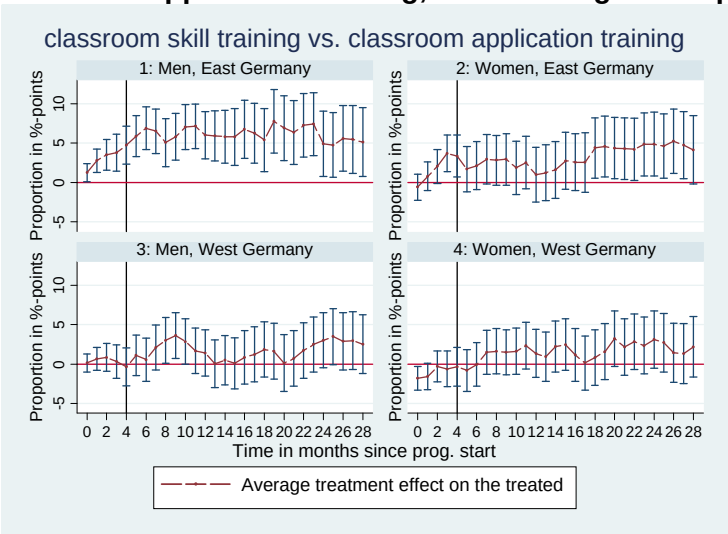


Figure 28: ATTs for classroom skill training vs. classroom aptitude tests, outcome regular employment

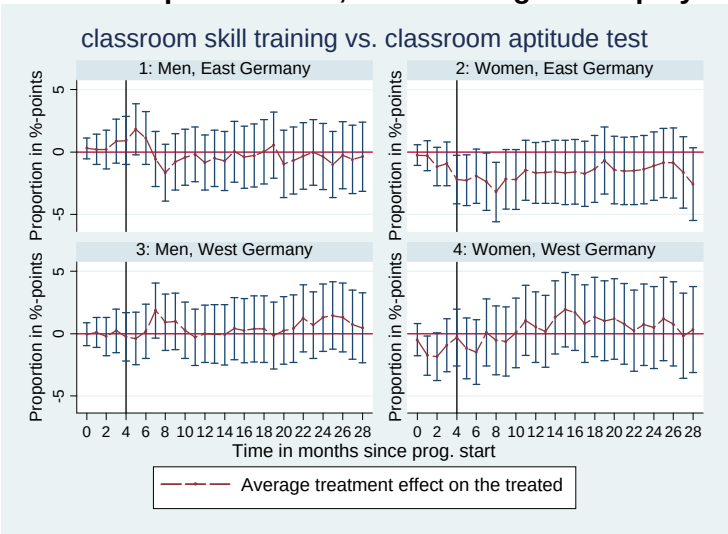


Figure 29: ATTs for classroom skill training vs. classroom combination, outcome regular employment

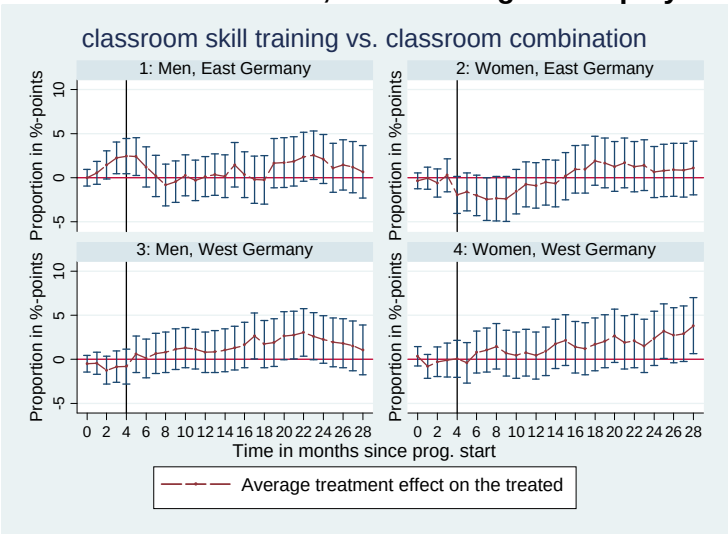


Figure 30: ATTs for within-company aptitude tests vs. within-company skill training/company aptitude - tests, outcome regular employment

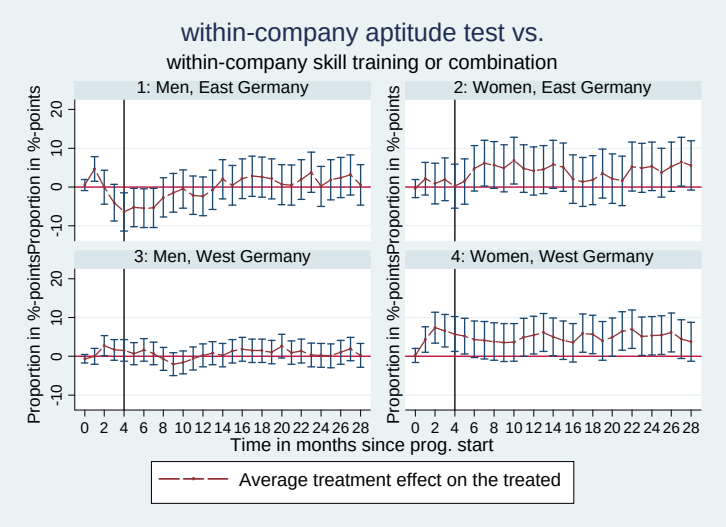
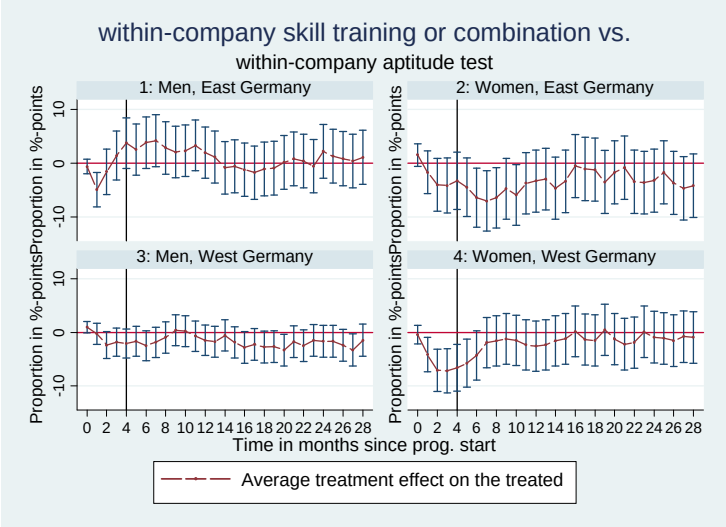


Figure 31: ATTs for within-company skill training/combination vs. within-combination, outcome regular employment



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IAB-Discussion Paper 17/2009

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