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DISCUSSION PAPER SERIES

IZA DP No. 17612

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ABSTRACT

Do Early Active Labor Market Policies Improve Outcomes of Not-Yet-Unemployed Workers? Findings from a Randomized Field Experiment*

Inequality is a dynamic phenomenon, and the relative and absolute positions of individuals are subject to frequent shocks. It is important to know if preventive interventions mitigate adverse inequality effects of labor market shocks. We consider individuals up to three months before the envisaged termination of their employment and we study effects of pre-unemployment participation in active labor market programs (ALMP) on labor market outcomes using a randomized controlled trial (RCT). This complements the vast literature on ALMP for unemployed workers. Policies include signing an integration agreement (IA), preparing an action plan (AP) before the first meeting with a caseworker, and the combination of both. Results suggest that the IA - particularly when combined with the AP - increases the probability of employment around 4 months after registration as soon-to-be unemployed. This is driven by workers with a relatively high unemployment risk following registration. Thus, the policies contribute to reducing societal inequality.

JEL Classification: J68, J64, C93

Keywords: inequality, unemployment, work, job-to-job transitions, integration agreements, action plans, randomized controlled trial, job search, monitoring, counseling, machine learning

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1 Introduction

Rising socio-economic inequality in society can be seen as undesirable from a moral as well as from an efficiency point of view. At the same time, the design of a policy to counter rising inequality without generating major side-effects appears to be a herculean task. In this vein it is useful to recognize that macro-level inequality reflects many transitions at the individual level, some of which involve an upward jump in an individual's relative or absolute position and some of which involve a downward jump. Among the latter, involuntary job losses feature prominently. Accordingly, there may be a scope for inequality-reducing micro-level policies that prevent job loss, or that induce individuals under threat of unemployment to switch employment without intervening displaced-worker losses, or that shorten a post-displacement unemployment spell by activating job search shortly before unemployment.

In this paper we consider individuals up to a maximum of three months before the envisaged termination of their employment, and we study effects of pre-unemployment participation in several active labor market programs (ALMP) on labor market outcomes. The study design is a randomized controlled trial (RCT). We exploit that in Germany, workers are required to register as job seekers three months before the end of their employment relationship to be eligible for UI benefits. A first meeting with their caseworker may be scheduled before their unemployment spell begins.

Our analysis complements the vast literature on ALMP for unemployed workers, notably on job search assistance, counseling and monitoring (see Crépon and van den Berg, 2016, and Le Barbanchon et al., 2025 for recent extensive overviews). The scarce literature on effects of pre-unemployment interventions has mainly focused on workers affected by mass layoffs (Csillag et al., 2018).[1]

Rationales of pre-unemployment interventions are that (i) they may incentivize the unemployed to find another job before the envisaged start of unemployment, (ii) they may mentally, financially and logistically prepare the worker for the job search and policy environment in unemployment, and (iii) they may educate the workers regarding UI guidelines and job search assistance by providing information that can be applied from the first day of unemployment. All this serves to prevent or reduce prolonged unemployment and displacement losses. This approach can

[1] Notably, Cavaco et al. (2013) investigate the effects of a French training program for displaced workers during the 1990s, while Winter-Ebmer (2006) analyzes a program that combined job search assistance, occupational reorientation, and professional training implemented in Austra during the large-scale restructuring of the steel industry in the 1980s. Both studies rely on non-experimental designs. A concurrent paper by Homrighausen and Oberfichtner (2024) considers caseworker meetings before entering unemployment. In their setting, employed job seekers are offered either an immediate meeting or a first meeting after un-employment entry. They find that this did not have an effect on entry into unemployment or on employment outcomes within one year.

potentially reduce individual costs, such as stigma effects and the loss of human capital, while also lowering societal costs, including productivity loss and rising social inequality.

In this paper, we evaluate what we call *early activation interventions*; specifically, integration agreements (IAs), action plans (APs) and their combination. For this we use a field experiment or *randomized controlled trial* (RCT) conducted in five jointly representative German labor agencies and containing well over 6,000 workers. The design of the interventions is inspired by interventions with the same names (IA and AP) for unemployed workers. An IA is a written contract that stipulates the rights and obligations of an unemployment insurance (UI) recipient (van den Berg et al., 2025).[2] It is supposed to be signed by the client and the caseworker of the employment agency that takes care of benefits and job search counseling. The contract aims to increase transparency and accountability for both parties involved. The agreement should also document the integration strategy, thus contributing to quality assurance and quality control (Deutscher Bundestag, 2001, p. 31). Ultimately, it should help to avoid long-term unemployment (Deutscher Bundestag, 2001, p. 7). An AP, developed in collaboration with the German Public Employment Service (PES) for this experiment, is a form that job seekers complete before their first meeting with a caseworker. In this form, job seekers are asked to outline their goals, identify potential obstacles, and describe concrete steps for their job search process. The AP thus aims to enhance job seekers' role and encourage greater personal responsibility in the job placement process. In sum, we may hypothesize that IAs and APs improve labor market outcomes. Specifically, they may increase the probability of being employed, a number of days after the intervention. Whether beneficial effects are quantitatively sizeable or not is an open question. Also, individuals with negative reciprocity as a personality trait may actually reduce their search effort or abstain from applying for UI benefits in response to the stringency of an IA (Black et al., 2003, van den Berg et al., 2024), possibly leading to a lower employment probability.

Individuals in the RCT were randomly assigned to one of four treatment groups, with randomization occurring upon registration as job seekers at PES. The first treatment involves an early IA signed during the first meeting with the caseworker before the start of the unemployment spell. The second treatment consists of both an early IA and an AP. In the third treatment arm, job seekers receive an AP but do not sign an IA during that first meeting; instead, the IA is signed later, during their unemployment spell. The fourth treatment involves an IA signed after entry into unemployment, without an AP. As our key outcome variables we focus on the employment status at specific numbers of days after the RCT assignment. Notice that employed workers who register as soon-to-be unemployed face a number of intermediate outcomes and competing risks before the employment status at a later point in time is measured. In particular, they may stay in their current job if the dismissal is reversed, or they may take up a new job without intervening

[2] Similar contracts exist in many other OECD countries although they tend to be less formal and with less emphasis on obligations of the client (Knotz, 2018, van den Berg et al., 2025).

unemployment, or they may enter unemployment and take up employment later. The RCT only involves a single randomization. Therefore, additional assumptions would be needed to identify the causal pathway from the assigned treatment status towards the later employment status. We provide some evidence but leave a comprehensive analysis for future research.

The results suggest that an early AP does not have an effect on later employment outcomes. However, an early IA - particularly when combined with an AP - increases the employment probability at least temporarily. We use machine learning (in particular, random forest classification, trained on a different sample) to distinguish effect sizes by the risk score of entering unemployment following the pre-unemployment registration. For those with a high risk score, effects tend to be larger. Interestingly, the results are not heavily at odds with those found in the literature on IA effects for openly unemployed individuals in Germany.[3]

The outline of the paper is as follows: Section 2 describes the institutional background. Section 3 details the field experiment, and Section 4 presents the data, descriptive statistics and information about the implementation of the treatments. Section 5 presents the results, and Section 6 concludes.

2 Institutional background

In Germany, unemployed individuals receive UI benefits if they meet the eligibility criteria. If they are not entitled to UI benefits and fulfill certain needs criteria, they can receive tax-funded basic income support. Our field experiment took place within the UI system. In this system, the replacement rate amounts to 60–67 percent of the previous wage, depending on whether dependent children are in the household. The maximum benefit duration depends on the age and employment history of workers and can last up to 24 months.

As noted above, German law requires individuals to register as job seekers three months before the end of an employment relationship if they know it in advance, or within three days of receiving notice of the end of the employment relationship at the latest. Registration can be completed in person, by telephone, in writing, or via an online service offered by the Federal Employment

[3] van den Berg et al. (2025) analyze an RCT among UI recipients and find that IAs early in the unemployment spell have a positive effect on entering employment within one year. This is primarily driven by individuals with adverse labor market prospects. This in turn aligns with results from a survey in which caseworkers were asked about IAs (van den Berg et al., 2014). The reported usefulness of IAs increases if the client is perceived to need support. Schiprowski et al. (2024) provide descriptive evidence that unemployed job seekers increase the time spent on job search after meeting with a caseworker if an IA has been concluded, while meetings without IAs do not increase individuals' search time. Abel et al. (2019) analyze a policy that is similar to our AP, among young unemployed in South Africa, and find results that are not straightforwardly aligned to ours. Specifically, completing a job search plan influences the number of applications submitted and the channels used for job search. As a result, the plan-making group received more job offers and had higher employment rates.

Agency (in which case personal registration must be scheduled by appointment). Violations of the registration obligation result in a one-week cut-off period for UI benefits.

Employees are informed about the expected end date of their employment relationship if they have a temporary contract or as soon as they receive a dismissal notice. The statutory periods of protection against dismissal are regulated in the German Civil Code. An employer can terminate the employment relationship with four weeks' notice by the fifteenth or the end of a calendar month. The notice period increases with tenure: it extends to one, two, and three months at the end of the calendar month if the employment relationship lasts two, five, and eight years, respectively, and more than three months if it lasts over ten years. During a trial period, an employment relationship can be terminated with two weeks' notice. Small businesses may negotiate exceptions in individual contracts, and collective bargaining agreements can shorten or extend the notice periods. It is expected that employers will fully utilize the existing deadlines to avoid demotivating effects on employees.[4]

Labor market agencies offer an appointment for an early meeting soon after registration—before the entry into unemployment—for those who register as job seekers. However, it is accepted that job seekers may excuse their absence from this meeting for valid reasons, such as not wanting to miss work with their current employer.

During the first meeting, caseworkers may conclude the first IA with the (typically) not-yet-unemployed job seeker. This concerns the first element of the placement process we investigate. Ideally, both parties should collaboratively develop these agreements, documenting the rights and responsibilities of each side in the agreement. The agreement should be signed by both the caseworker and the job seeker. The Appendix provides a typical example of such an agreement. If the job seeker denies his or her signature, the caseworker may enforce the document unilaterally. van den Berg et al. (2025) argue extensively that the IA shares more features with monitoring than with counseling. If unemployment benefit recipients fail to fulfill their obligations under the integration agreement, a cut-off period for benefits can be imposed. The duration can range from two weeks for insufficient job search efforts to up to 12 weeks if a benefit recipient refuses to participate in an activation program.

The second element we investigate, the AP, was developed by the headquarters of the Federal Labor Agency exclusively for this research project. Individuals who registered as job seekers received the AP form as part of a working package in advance of their initial meeting with a caseworker. They were expected to use the AP form to formulate their considerations for integrating into the labor market. Specifically, the plan aims to encourage job seekers to develop more specific ideas about their professional goals, personal strengths and weaknesses, possible

[4] Stephan (2016) shows that only a small share of job seekers with permanent contracts have more than eight years of tenure (and thus a notice period of at least three months), while a relatively large proportion of those with temporary contracts continue to work for the same employer.

qualification needs, and suitable search strategies before the initial interview with their placement specialist (see the Appendix for the detailed design). This active preparation for the initial interview is intended to enhance the feeling of personal responsibility for the job search and make the search process more efficient.

3 Experimental design

To carry out the RCT we cooperated closely with the responsible department at the headquarters of the PES and the participating employment agencies. The field experiment was conducted in five large German labor market agencies—two located in West Germany and three in East Germany. The experiment included individuals who registered in person or by telephone as job seekers between June and December 2013. Only individuals who would be eligible for UI benefits upon entering unemployment, aged 25 to 65, and without disabilities were included in the experiment.[5]

Table 1 presents the four treatment arms. Assignment to the treatment arms was based on a computer program that randomized potential study participants into different groups. Randomization was conducted by PES employees in the entry zones of employment agencies for in-person registrations and in service centers for registrations by phone. This was necessary because the AP had to be handed out or sent to job seekers before their first meeting with a caseworker. During the first meeting, the caseworker was expected to check the assignment to the four groups by searching for the job seeker's registration number in the database underlying the randomization computer program and to act according to the experimental protocol. The IAB conducted brief training sessions for team leaders in entry zones and service centers, as well as for all caseworkers in the participating agencies.

Half of the job seekers described above were randomly selected to enter our experiment.[6] As outlined, an IA is a written and signed agreement between the unemployed individual and their caseworker regarding the rights and duties of the unemployed. APs consist of a form in which job seekers outline potential job strategies and support measures before their first meeting with a caseworker. We randomized a) the timing of the IA (immediately after registering as a job seeker or after six months of unemployment) and b) the use of APs (receipt of a form or no receipt of a form at the time of registration). Each of the four groups comprised 25 percent of the job seekers participating in our experiment. It is important to note that caseworkers were instructed to keep

5 Note that workers may also register as job seekers even if they are not facing the end of an employment relationship. Unfortunately, we do not have data on the reasons for registering.

6 During the time our experiment began, the PES introduced the program "Interne ganzheitliche Integrationsberatung" (INGA) to promote the reintegration of hard-to-place unemployed individuals into the labor market. INGA consisted of an assignment to specialized teams of caseworkers with a reduced caseload, providing intensive in-house placement services. Individuals who entered our experiment could not participate in the INGA program for hard-to-place unemployed persons during the first six months of their unemployment.

all other components of the placement process unchanged, including the frequency of meetings and assignment to ALMPs.

During the field experiment, qualitative researchers from the IAB conducted expert interviews with caseworkers in the participating agencies, focusing specifically on the APs (see also van den Berg et al. 2018). The interviewed caseworkers mentioned both advantages and challenges in the practical use of the instrument. From their perspective, the open questions in the AP help job seekers reflect on their work situation, identify potential difficulties in their job search, and seek suitable solutions even before their first meeting with a caseworker. This can be particularly beneficial for individuals who need to reorient themselves professionally. Furthermore, the AP helps caseworkers gather more information about the job seekers' (labor market) situation early on, which can enhance the counseling process. However, this information might also be used to the disadvantage of a job seeker if, for example, a person reveals that they are not willing to consider particular types of jobs, even when such a stance is reasonable from a legislative perspective. The experts also argue that the AP, with its focus on job seekers' perspectives, could potentially complicate the counseling situation. For instance, job seekers might develop ideas that are difficult to implement.

4 Data and implementation

4.1 Data, balancing, and outcome variables

For the basic analysis, we use process-generated data made available by the Data and IT Management (DIM) unit of the IAB. We merge the Integrated Employment Biographies (IEB V13.01.01 – 190111) with the results of the random assignment tool. The IEB contains anonymized individual-level information on periods of employment, unemployment, job search, and program participation. Employment spells encompass periods of employment due to social security payments and marginal employment but exclude periods of self-employment and civil service. Furthermore, we merge additional variables related to the timing of integration agreements (ASU-EEI V06.10.00 – 201804) and employment contracts (BeH V10.03.00). We also incorporate information from the meeting schedule database of the Federal Employment Agency (FEA), which has been directly extracted from the operative systems on a monthly basis. Information about the preparation of the dataset can be found in the Appendix.

Table 2 displays descriptive statistics for our analysis sample, which contains 6,674 individuals assigned to experimental groups 1 to 4. Columns (1) to (4) show mean values for the four treatment groups. About 43 percent of participants are female, and 90 percent hold German nationality; their mean age is 42. The mean daily wage (censored at the threshold for social security contributions) in the last job was 65 euros. Approximately 36 percent of those registering were on a temporary contract, and 24 percent of job seekers worked part-time. The largest share of those

registering had previously worked in manufacturing, followed by the trade, maintenance, and repair sector. Over the last five years, measured at the time of randomization, participants spent an average of around 3.7 years in employment (due to social security contributions), with mean tenure at the last employer being around 2.1 years. 27 percent had experienced a recall (defined as working again for an employer during an interruption of at least 30 days) during that period. Column (5) of Table 1 displays results from F-tests on equal means for non-categorical variables and χ^2-tests for categorical variables. The hypothesis of zero differences can be rejected for all variables under consideration at $\alpha = 0.05$. Thus, random assignment worked well.

With our discussion of outcome measures in Section 1 in mind, the full set of outcome variables includes a) being registered as an unemployed job seeker (including participation in ALMP), b) receiving benefits (UI or basic income support), c) being employed due to social security contributions, and d) daily earnings (zero for individuals who are not employed).[7] At the time of random assignment, each individual in the analyzed sample is registered as a job seeker and is still employed. The administrative data do not contain information on the expected end date of the employment relationship with the current employer. Note that not every registered unemployed person receives benefits, and not every benefit recipient is necessarily registered as unemployed. Specifically, individuals may work while also receiving basic social welfare if their earnings do not meet their household's needs. We present graphical results for these outcomes up to 360 days after random assignment. Additionally, we provide regression estimates for these outcomes, controlling for a large set of covariates, for 90, 120, and 180 days after assignment. In the regression analyses, we use treatment arm 3, which involves a late IA without an AP, as the reference group. While group 1 (early IA) reflects current practices at labor market agencies, group 3 represents the least invasive intervention, as individuals received neither an early integration agreement nor an action plan.

In addition to the administrative data, we conducted a telephone survey for a subgroup of participants in our experiment. The interviews took place approximately six weeks after randomization, from mid-July 2013 until February 2014. A total of 3,529 individuals participated in the interviews. Of these, 80 percent (2,813 individuals) agreed to merge the survey data with the administrative data. Conditioning on our criteria for final sample selection—which includes being employed at the date of randomization—leaves us with a sample of 1,413 individuals. It turns out that participation in the survey is not independent of treatment status (Table A.1 in the Appendix): taking group 3 (late IA) as the reference group, the participation probability is around five percentage points higher (significant) for individuals allocated to group 1 (early IA and AP). This implies that we cannot use the survey results to estimate causal effects of the treatment.

[7] Notice that observation of outcomes such as earnings depends on the employment status of the individual. This creates a dynamic selection bias. The same applies to outcomes in competing risks settings. See e.g. Abbring and van den Berg, 2005, for an exposition. Causal inference then requires further assumptions, which is why the paper does not focus on such outcomes.

While we do not have administrative data on the expected date of dismissal, quit, or end of contract, we can gain some insights from the survey data. For this subsample, Figure A.1 presents survival functions for the expected date of dismissal, resignation, or end of their contract (measured from the assignment day). Clearly, one-third of the sample actually registers exactly three months before the end of the employment relationship.

4.2 Implementation of the experimental protocol

The institutional setting in which our experiment took place presents some challenges in assessing the implementation of the experimental protocol. IAs should be concluded during the first meeting for groups 1 and 2 and after six months of unemployment for groups 3 and 4. In principle, the first meeting with a caseworker is supposed to occur soon after registering as a job seeker. However, if individuals become unemployed on short notice, the first meeting may be scheduled for a date after their entry into unemployment. Job seekers can also postpone the first meeting until after entering unemployment for a valid reason (see Section 2). Thus, the timing of the first meeting varies among individuals. Furthermore, if all individuals were to enter unemployment three months after registering, late integration agreements (for groups 3 and 4) would need to be concluded approximately nine months after registration. However, many individuals are not aware of a dismissal three months in advance of their entry into unemployment (see Figure A.1 in the Appendix).

A simple cross-tabulation (Table 3) shows that around two-thirds of those assigned to groups 1 and 2 concluded their first IA during their initial meeting. However, approximately 40 percent of those in groups 3 and 4 did the same. Furthermore, Table 3 indicates that around 40 percent of individuals in groups 1 and 2 signed their first IA before entering unemployment, while about 20 percent of those in groups 3 and 4 did the same. When taking into account the timing of any eventual unemployment, the share of individuals concluding an IA increases to approximately 65 percent for groups 1 and 2 and 50 percent for groups 3 and 4 (Table 3). To provide more insights into the timing of IAs, Figure 1 presents Kaplan-Meier survival functions, restricted to those still at risk at any given point in time. We censor durations at the time of prolonging the current employment relationship, when terminating the registration as a job seeker, upon exiting unemployment, or when entering a new employment relationship. The figure demonstrates significant differences between those who were supposed to receive an early versus a late IA. However, a relatively large share of individuals who were meant to sign their IA only after six months of unemployment had already concluded an agreement six months after randomization (including the period as registered job seekers who had not yet become unemployed).

Overall, we observe incomplete compliance with the experimental protocol, and our subsequent results should be interpreted as intention-to-treat effects. This is likely due to the fact that randomization was carried out in service centers and entry zones. Caseworkers were instructed to

check for the assignment result before or during the first meeting with a job seeker, but they evidently forgot or ignored this requirement in some instances. It should be kept in mind that incomplete compliance is an inherent feature of many field experiments related to active labor market policies. For instance, in an experiment comparing private and public provision of counseling to job seekers, Behaghel et al. (2014) observed a 40 percent compliance rate for both treatments, while in an experiment on the private provision of counseling services, Bennmarker et al. (2013) reported a compliance rate of 28 percent.

Assessing compliance regarding the APs is more challenging. Caseworkers were instructed to record in the randomization computer program whether job seekers brought a completed action plan to the first meeting. However, these entries are missing for 79 percent of individuals assigned to groups 2 or 4. For the remaining cases, caseworkers indicated that 7 percentage points of job seekers filled out the AP, while 14 percentage points did not. Caseworkers were asked to collect completed APs and send them to the IAB. We received about 600 action plans, which amounts to around 9 percent of those assigned to the action plan groups (a quarter of all assignments). Additional descriptive information can be obtained from a survey of a subset of participants. According to the survey, 27 percent of those assigned to groups 3 and 4 completed the action plan. Of those who filled it out, 81 percent brought it to the first meeting, and 63 percent discussed the action plan with their caseworker. Approximately half of those who completed the AP reported that it helped them prepare for the meeting and their job search. Overall, there was a degree of compliance, the extent of which, however, cannot be determined precisely.

To investigate whether other elements of the placement process differed by assignment group, Figures A.2 and A.3 show the corresponding survival functions for the timing of the first meeting with a caseworker and for the receipt of the first vacancy referral. Clearly, the differences between the curves are much smaller, which is consistent with the experimental protocol. Furthermore, the timing of the first meeting closely resembles the timing of the first IA for groups 1 and 2.

5 Results

5.1 Average effects

Figures 2 to 5 present results for the four main outcome variables for the first year after registering as a job seeker. Figure 2 displays the share of individuals registered as unemployed, while Figure 3 shows the share of job seekers receiving unemployment benefits or basic social benefits. Both figures are quite similar, but the share of individuals receiving benefits is slightly higher than the share of those registered as unemployed. Three months after randomization, 38 percent of all individuals are unemployed and 41 percent are receiving benefits. Around 120 days after randomization, the share of those unemployed appears to be slightly higher among individuals who were supposed to receive a late IA. After this point, the shares of unemployment and benefit receipt decline, reaching 17 percent and 20 percent one year after randomization.

At the time of randomization, everyone in the sample was employed and registered as a job seeker. Figure 4 illustrates how shares in employment develop during the first year after registration. The shares decline, reaching a minimum of 51 percent 120 days after randomization. After this point, the shares rise again, and one year after registering as a job seeker, 70 percent are employed. Around 120 days after registration, we observe small but significant differences between individuals with early and late treatments—approximately 3 percentage points more among those with an early IA (with or without an action plan) are employed. Figure 5 displays mean daily earnings for the four experimental groups, accounting for zero wages in the absence of employment. While individuals, on average, earned about 65 euros per day at the time of registration as job seekers, mean daily earnings fall to around 34 euros 120 days after registration. Mirroring the shares in employment, average earnings increase again thereafter. Additionally, 120 days after registration, we see slightly higher earnings for individuals who received an early IA (with or without an AP).

Table 4 presents regression results for the impact of the treatments on the four main outcome variables 90, 120, and 180 days after random assignment, controlling for the covariates used in the balancing test (see Table 2). We do not find significant effects of the treatments on periods of registered unemployment, and we observe only a weakly significant effect of combined early activation (IA and AP) on the share of benefit recipients. However, in line with the visual evidence, we find (weakly) significant effects of around 4 percentage points of early activation on shares in employment 120 days after registration. This also translates into effects on daily earnings of around 2 to 3 euros per day, 120 days after assignment. Thus, there seems to be, on average, a weak, transitory effect of early activation on employment outcomes.[8]

Estimated covariate effects on the main outcome variables, 120 days after random assignment, are displayed in Table A.2. By far, the strongest effects on the analyzed probabilities are found for age and temporary contracts. Older individuals are more likely to enter unemployment and receive benefits, while their shares in employment and daily earnings are lower. In contrast, individuals with temporary contracts are less frequently unemployed and on benefits, and they also have higher employment shares and daily earnings (due to their higher employment rates). This is not unexpected, as individuals on temporary contracts are often required to register three months before the end of their employment relationship, and their contracts may be extended with the current employer. Furthermore, we find more positive outcomes for individuals with a university degree, as well as correlations with several aspects of their labor market biography and the month of registering as a job seeker, which display seasonal effects.

[8] We do not find any significant effects of the random assignment on transitions into unemployment or out of employment. The aforementioned policy report with qualitative evidence (van den Berg et al., 2018) also considers cumulative outcomes over the first full year and does not find average effects either. Notice, however, that small per-period differences may not be reflected in outcomes that aggregate over a long period.

5.2 Heterogeneous effects by propensity to become unemployed

A main objective of early activation is to prevent still employed workers to become unemployed. Even if we find in average weak treatment effects of early activation components, they might still work for those with a particularly high risk of entering unemployment.

To analyze this further, we use a sample of individuals who registered as job seekers within the same agencies one year before our experiment took place. Note that the macroeconomic environment was very similar in both 2012 and 2013. We apply restrictions mirroring those from the experiment. For the resulting sample of individuals registering as not-yet-unemployed job seekers, we use the pre-experiment data as a training dataset to estimate a random forest model that predicts the probability of being registered as unemployed 90 days after registration in our experimental dataset. [9] Based on this prediction, we distinguish two groups of equal size: one with a lower predicted probability of unemployment and one with a higher predicted probability. Tables A.3 and A.4 in the Online Appendix show the composition of both groups. The latter group is characterized by a lower share of women, a higher share of individuals with foreign nationality, less formal education, lower daily wages, fewer temporary contracts, less part-time work, less work in manufacturing, and more temporary agency work, along with more work in helper activities and less favorable labor market biographies. Additionally, individuals registering in November and December are more often predicted to be unemployed 90 days after registration.

The results of the separate estimates are displayed in Tables 5 and 6. In line with predictions, the share of individuals who are unemployed (or receiving benefits) at each point in time investigated is substantially lower in the group with the lower predicted probability. Additionally, the share in employment and daily wages are higher in this group.

We do not find any significant effects of early activation elements for the group with a low predicted probability of unemployment. The results clearly indicate that the effects of early IAs found for the entire sample are driven by the group with a high predicted probability of unemployment. Specifically, 120 days after assignment, the effect of early activation (IA or IA and AP) on the share in employment is about 4 to 5 percentage points and weakly significant (compared to a base rate of 42 percent). Note that the power of these estimates is lower than that for the entire sample, as the subsample contains only half the number of observations.

[9] We applied the Stata ado file rforest (Schonlau and Zou, 2020). After tuning the model, we estimated the model with 200 iterations, a random selection of 7 variables at each split, a maximum tree depth of 26, and a minimum of 5 observations per leaf node. For the heterogeneity analysis, we chose the median prediction (0.3) as the threshold for predicting unemployment. This approach yields two samples of equal size. With this threshold, the model's accuracy is 0.62; the true positive rate is 0.76, and the true negative rate is 0.59. We estimate a regression model for a dichotomous outcome. Note that we would obtain the highest sum of the true positive and true negative rates (1.26) if we set the threshold at 0.32, which is very close to the median. An importance plot shows that the three most important variables for the sample split are related the labor market biography at the time of registering (actual daily wage rate, the share of the previous 5 years spent in employment as well as the share registered as unemployed).

5.3 Additional estimates

We present two sets of additional estimates. First, we examine the additional outcome variables mentioned earlier. Second, we analyze whether we can obtain a clearer picture of the main findings by distinguishing between the use of early activation components (groups 1 and 2 combined) versus not using early activation components (groups 3 and 4 combined).

Figures A.4 and A.5 in the Online Appendix separately show how the shares of recipients of unemployment benefits and basic income support evolve over time. On average, 120 days after registering as a job seeker, the share of unemployment benefits recipients reaches a maximum of 40 percent (the average across all experimental groups). At this point, graphical inspection shows differences of about 3 percentage points between the groups with early and late activation components. Afterward, the share declines to 17 percent 360 days after registration, and the difference between groups disappears. Similarly, the share of individuals receiving basic income support increases to about 5 percent around 120 days after registration and remains at this level thereafter. However, differences between groups are not evident. Table 7 presents results from a regression analysis, where we additionally control for an extensive set of covariates. It confirms that the effects on benefit receipt shares, which we found earlier, stem solely from differences in unemployment benefit receipt.

Figure A.6 in the Online Appendix displays shares in three important German active labor market programs: short internships in firms, short activation measures (e.g., application training), and longer vocational training measures. On average, the share in these programs does not exceed 3 percent, which is not surprising since only a portion of those registered as job seekers actually enter unemployment. The figure does not show large differences across groups; however, Table 7 indicates that 120 days after registration, slightly more individuals with a late IA and an AP participated in such programs. Another important active labor market program in Germany is wage subsidies. To investigate whether these subsidies might interfere with our previous results, Figure A.7 in the Online Appendix displays the shares of unsubsidized employment. The results are very similar to those in Figure 4, which relates to time spent in both unsubsidized and subsidized employment. A comparison of Table 4 and Table 7 also shows that the share of subsidized employment is generally very small, as the constants from the models without covariates are quite similar. The employment effects of the early activation components appear to be even more pronounced for unsubsidized employment shares.

Finally, to increase the power of our estimates, we merge groups 1 and 2 as groups with early integration agreements (IAs) and groups 3 and 4 as groups without such early IAs. Table 8 displays the regression results from this exercise, controlling once again for a broad set of covariates. Panel I presents findings for the entire sample. We observe economically small but statistically significant differences for all four main outcome variables, mostly restricted to 120 days after registering as a job seeker.

Panels II and III distinguish again between individuals with a low versus high predicted probability of being unemployed 90 days after registering. The results confirm our earlier finding that these effects are driven by individuals with a high predicted probability of unemployment. For this group, we find a decreased probability of being unemployed and receiving benefit payments. Furthermore, the probability of being employed significantly increases by 4.2 and 5.1 percentage points 90 and 120 days after randomization, respectively. These effects are substantial and reflect increases in employment rates of 10.5 and 12.2 percent. In line with this, we also observe significantly higher effects on daily earnings 90 and 120 days after randomization. Taken together, these findings suggest that early activation based on IAs improves employment outcomes for individuals at high risk of entering unemployment in the short run. However, 180 days after randomization, the effects are no longer statistically significant.

6 Conclusions

We find that early IAs (with or without additional AP) have a positive effect on employment probabilities around 4 months after registering as a currently employed job seeker. These effects are driven by individuals with a high predicted risk score of becoming unemployed. Furthermore, when we distinguish between two groups - those with and without early activation components - we find that early activation have significantly negative effects on shares of unemployment and benefit receipt, again concentrated in the time interval around 90 to 120 days after registration. These results suggest that early integration agreements encourage individuals at high risk of becoming unemployed to find new jobs earlier.

From the perspective of this evidence, concluding early IAs with every newly registered employed job seeker - as currently required by German law - likely involves a waste of valuable resources in terms of caseworker time. We do not conduct a fiscal cost-benefit analysis as we do not have all information required for that. However, we may conclude that it is more efficient to focus early activation activities on individuals who we identify as benefitting from them; specifically, those with a high predicted probability of entering unemployment. A reallocation of resources allows caseworkers to dedicate more effort to those individuals who on average truly benefit from their support. Ultimately, this contributes to reducing inequalities in society.

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Appendix: Integration agreement, action plan, and data preparation

Example for the contents of an integration agreement

Objective: Taking up employment as a physio-therapist through nationwide job search

Next appointment: After 2 months at the latest

Bindingly agreed activities of the customer until the next appointment:

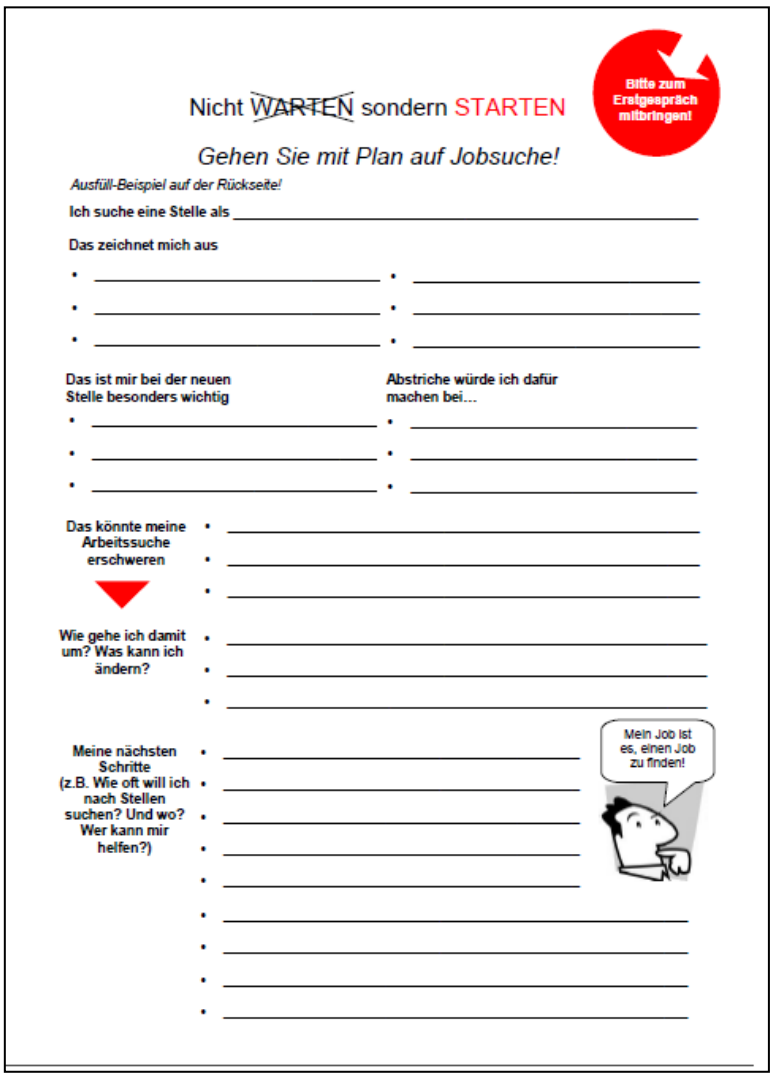
- Check your recently created and published profile at www.arbeitsagentur.de with the reference number,
- Inform yourself about application strategies on the internet (e.g. www.bewerbungsdschungel.de),
- Create a qualification plan with the contents, which are in your opinion missing for a successful integration and send it to me by mail until (...),
- Apply nationwide as a physio-therapist for at least 10 vacancies per month.
- In your applications, offer to work as a training- qualification intern for up to 8 weeks. Before starting the internship, contact the service center by phone (...), so we can complete all required formalities.
- Until the next consultation create an action plan, which includes how and until when you want to undertake other activities to quit unemployment and bring this to the consultation.
- Continue using internet job search engines, for example at www.arbeitsagentur.de.
- Please conduct an overview on your application activities and send it to me by e-mail every month or leave it in the entrance zone of the labor market agency. The overview should contain the date of application, the organization, the kind of application and the state of the application (you find an example at ...). The first date for this is (...).
- To all personal consultations, please bring with you the actual complete overview of your application activities.
- If your address, e-Mail, phone number or mobile phone number changes, please let us know as soon as possible. We will call you when we have found an appropriate vacancy.

Activities of the labor market agency:

- We publish your applicant profile on the internet at www.arbeitsagentur.de. You will find it under the reference number (...)
- Should we have found an appropriate vacancy for a physio-therapist for you, we will call you. In single cases we directly send you a job offer.
- we support you financially during your internship in a company-based training program (max. 8 weeks).
- Under certain conditions, financial support can be granted, e.g. for applications, travel expenses for personal interviews within Germany.
- Computers can be used free of charge in the labor market agency during the following opening hours (...). Here you can also write and print your applications.

The integration agreement was discussed with me and I received a copy. I undertake complying with the agreed activities and reporting the results at the next consultation.

The action plan



Nicht ~~WARTEN~~ sondern STARTEN

Bitte zum Erstgespräch mitbringen!

Gehen Sie mit Plan auf Jobsuche!

Ausfüll-Beispiel auf der Rückseite!

Ich suche eine Stelle als _____

Das zeichnet mich aus

- _____
- _____
- _____
- _____
- _____
- _____

Das ist mir bei der neuen Stelle besonders wichtig

- _____
- _____
- _____

Abstriche würde ich dafür machen bei...

- _____
- _____
- _____

Das könnte meine Arbeitssuche erschweren

- _____
- _____
- _____

Wie gehe ich damit um? Was kann ich ändern?

- _____
- _____
- _____

Meine nächsten Schritte (z.B. Wie oft will ich nach Stellen suchen? Und wo? Wer kann mir helfen?)

- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____
- _____

Mein Job ist es, einen Job zu finden!

Translation into English:

Don`t WAIT, but START
Search for your job with a plan!
Please bring this to your first meeting
Example on the back side!

I look for a job as a …
This distinguishes me …
This is important for me at my new job …
I would make concessions regarding…
This could hinder my job search activities…
How do I work on that? Can I change that? …
My next steps (e.g. How often will I look for a new job? Where? Who can help me?)

My job is to find a job!

Data preparation

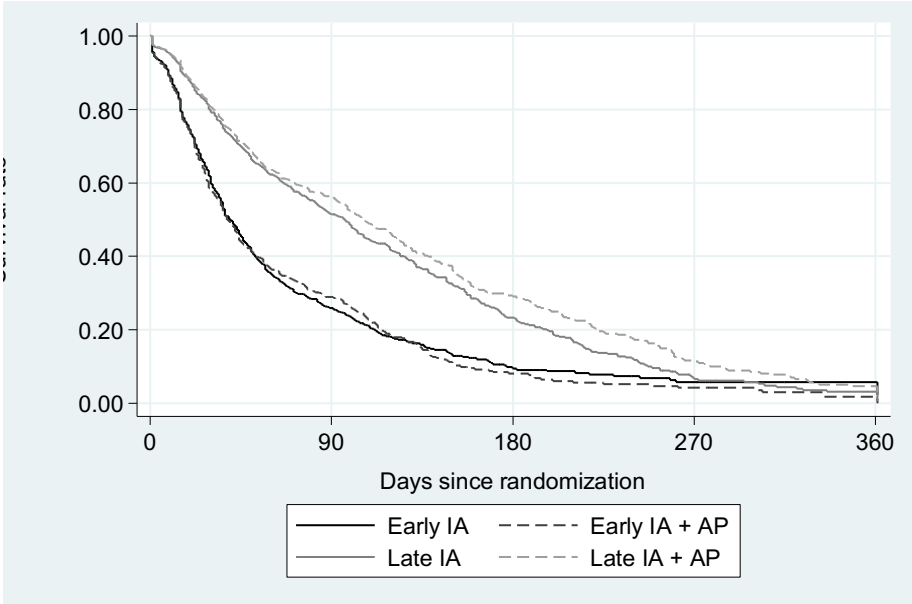
In the following, we describe how we prepared the data and how we selected the observations for our empirical investigation.

We corrected the original spell data in the following ways: We imputed the education variable and replaced missing information with valid data from previous spells (and, if not available, from subsequent spells). Regarding employment, we do not consider periods of marginal employment or (in our main outcome specification) time spent in subsidized employment not related to social security contributions. Furthermore, we excluded employment spells with a daily wage rate of less than 5 euros and capped daily wages at the 99th percentile (180 euros/day). When computing our outcome variables, we do not account for periods of registered unemployment during which we observe a concurrent spell of employment due to social security contributions. The meeting schedule data required some corrections, as the calendar month and day were sometimes interchanged (a clear issue since this data came in monthly files). Furthermore, 589 individuals concluded an integration agreement on a day for which we found no data in the meeting database. A plausible interpretation is that these individuals were assigned to an immediate meeting (not scheduled beforehand) when registering as job seekers in person at the labor market office. For these individuals, we imputed the meeting date based on the date of the integration agreement.

Caseworkers used the randomization tool to assign 25,582 individuals to five groups. After merging these with the Integrated Employment Biographies (IEB), we have observations for 25,464 individuals. We retained only those who a) were not unemployed on the day of random assignment and b) had their assignment take place on the day of registration as a job seeker or within seven calendar days. After this step, 17,502 individuals remain in our dataset. Furthermore, we only keep individuals who were employed on the day of random assignment (15,433 individuals left), were aged 25 to 65 on that day (13,768 individuals left), were registered as job seekers in one of our participating agencies (13,532 individuals left), and were registered in the unemployment insurance system, not in the welfare benefit system (13,123 individuals left). We also exclude individuals who registered during an interrupted unemployment spell (13,113 individuals left), those who had been unemployed or participated in a labor market program during the 30 calendar days preceding the random assignment (13,046 individuals left), and finally, a few individuals with missing information about the sector in which they previously worked (13,042 individuals left). Of the remaining sample, 6,568 individuals were assigned to group 5 and could potentially participate in the INGA program (see footnote 6). We do not consider this group in our analysis. Thus, our remaining analysis sample contains 6,674 individuals assigned to the experimental core groups 1 to 4.

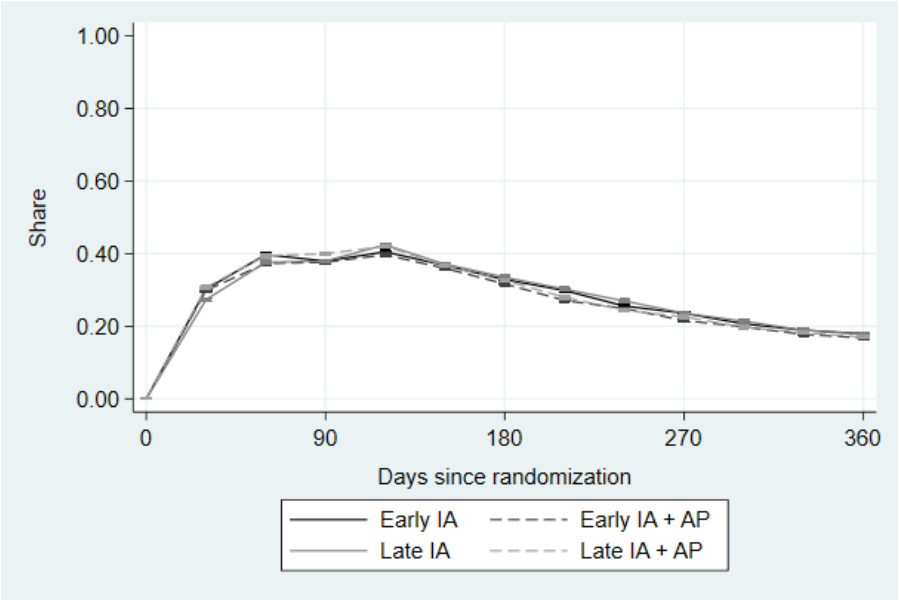
Figures

Figure 1 Kaplan-Meier estimates of survival functions until signing the first integration agreement



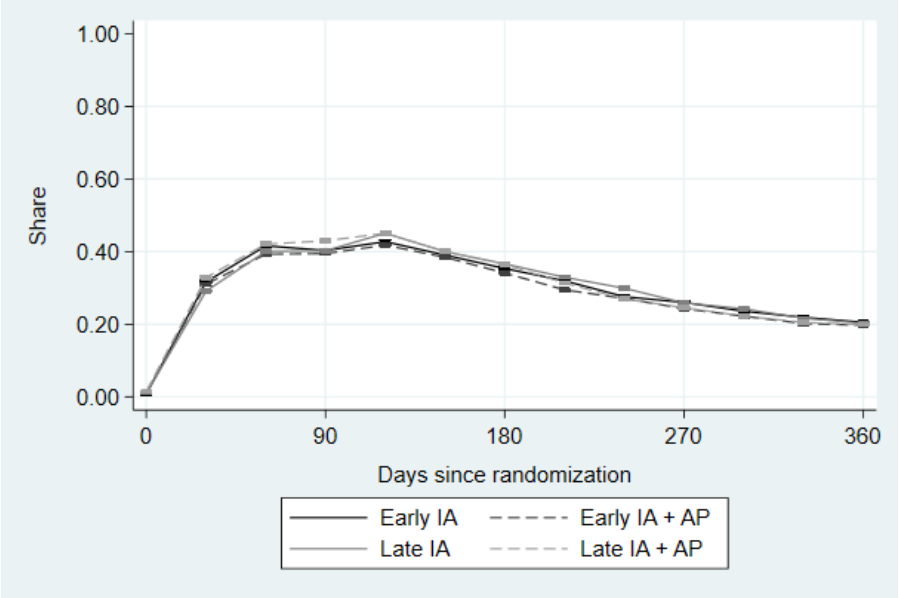
Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Log rank test for equality of survival functions: Pr>chi2 = 0.00.
Observations are right-censored at prolonging the current relationship while terminating the registration as a job seeker, at unemployment exit, and at taking-up a new job.

Figure 2 Shares registered as unemployed



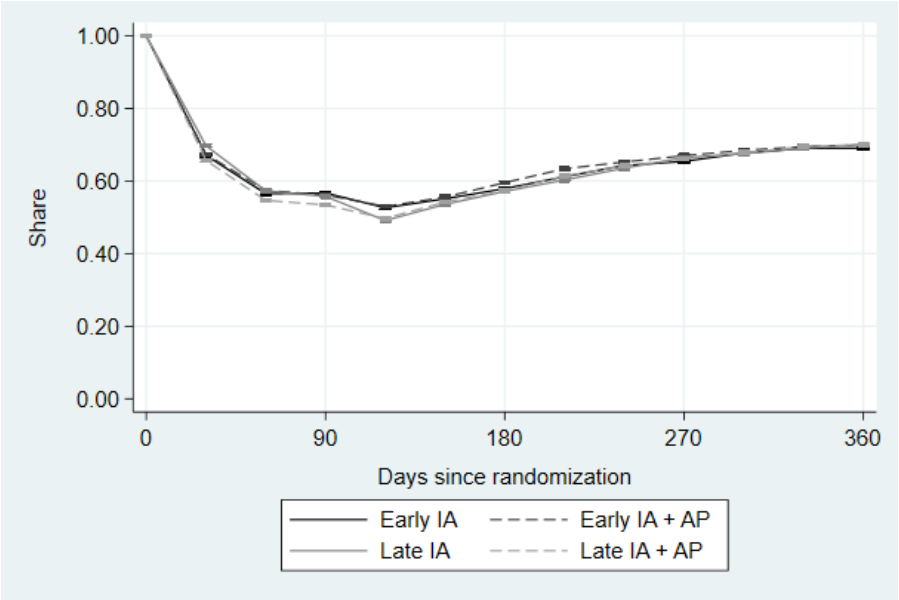
Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure 3 Shares with benefit receipt



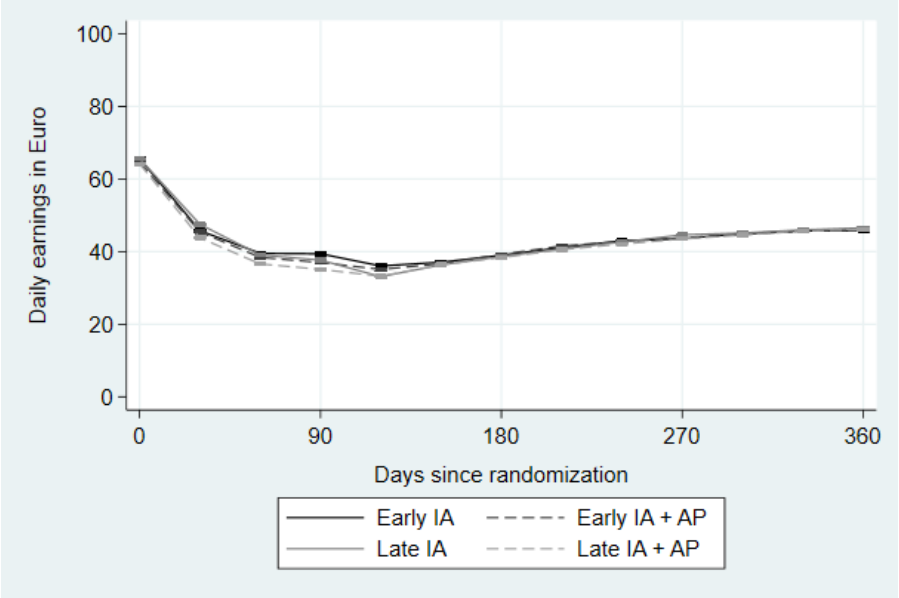
Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure 4 Shares in employment due to social security contributions



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure 5 Daily earnings from employment due to social security contributions



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Tables

Table 1 Experimental groups and assignment shares (in parenthesis)

	No action plan as part of working package	Action plan as part of working package
Early integration agreement during first meeting after registration	Group 1 (25%)	Group 2 (25%)
Late integration agreement during month 6 of unemployment	Group 3 (25%)	Group 4 (25%)

Table 2 Balancing – means of observed characteristics for the four experimental groups and p-values for tests on equal means (F-test and χ^2-tests)

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Gender (1=female)	0.43	0.43	0.43	0.43	1.00
Nationality (1=foreign)	0.10	0.10	0.10	0.10	1.00
Age group					
25-34	0.32	0.33	0.34	0.33	0.31
34-44	0.23	0.21	0.23	0.23	
45-54	0.27	0.28	0.25	0.28	
55 and older	0.18	0.18	0.18	0.16	
Education					
No occupational degree	0.05	0.06	0.05	0.05	0.87
Occupational degree	0.77	0.79	0.78	0.79	
University degree	0.17	0.16	0.17	0.16	
Labor market agency					
A	0.24	0.22	0.23	0.21	0.40
B	0.28	0.30	0.30	0.31	
C	0.12	0.11	0.10	0.11	
D	0.14	0.15	0.14	0.15	
E	0.22	0.22	0.23	0.22	
Characteristics last job					
Daily wage during last job	66	65	66	64	0.51
Temporary contract	0.35	0.36	0.37	0.36	0.51
Part-time in last job	0.24	0.24	0.24	0.24	1.00
Sector last job					
Agriculture, fishing, mining	0.03	0.02	0.02	0.02	0.54
Manufacturing	0.15	0.14	0.13	0.14	
Energy, water, waste	0.01	0.01	0.01	0.01	
Construction	0.09	0.09	0.09	0.09	
Trade, maintenance, repair	0.14	0.14	0.13	0.14	
Transport and storage	0.07	0.07	0.07	0.07	
Hospitality	0.06	0.07	0.09	0.08	
Information and communication	0.02	0.02	0.02	0.03	
Financial and insurance services	0.01	0.01	0.01	0.01	
Real estate activities	0.01	0.01	0.02	0.01	
Scientific and technical services	0.05	0.04	0.06	0.05	
Other business services	0.09	0.09	0.08	0.10	
Public administration, defense	0.02	0.02	0.03	0.02	
Education	0.04	0.04	0.03	0.03	
Health and social care	0.07	0.09	0.08	0.08	
Art, Entertainment and Recreation	0.01	0.01	0.01	0.01	
Other services, private households	0.03	0.03	0.03	0.02	
Temporary agency work	0.08	0.09	0.09	0.08	
Activity last job					
Helper	0.20	0.22	0.20	0.22	0.58
Professional	0.60	0.59	0.60	0.59	
Complex specialist	0.11	0.11	0.11	0.10	
Highly complex	0.09	0.08	0.10	0.09	

Table 2 continued

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Employment history last 5 years					
Share of years in employment	3.79	3.74	3.70	3.72	0.17
Share of years with last employer	2.3	2.09	2.02	1.99	0.06
Share of years in unemployment	0.49	0.52	0.54	0.52	0.11
Share of years with unemployment benefits	0.34	0.36	0.37	0.38	0.19
Share of years with basic income support	0.38	0.39	0.42	0.41	0.48
Recall (1 = yes)	0.27	0.27	0.28	0.26	0.70
Active labor market program (1 = yes)	0.25	0.26	0.26	0.27	0.66
Month of assignment in 2013					
June	0.12	0.12	0.11	0.09	0.21
July	0.15	0.14	0.15	0.16	
August	0.14	0.13	0.15	0.13	
September	0.18	0.21	0.19	0.19	
October	0.15	0.17	0.15	0.17	
November	0.18	0.15	0.17	0.17	
December	0.08	0.09	0.07	0.09	
Number of observations	1649	1560	1657	1608	

Notes: IA = integration agreement, AP = action plan. Register data.

Table 3 Timing of integration agreements

	Early IA	AP + early IA	Late IA	AP + late IA
IA at date of first meeting (share)	0.67	0.66	0.39	0.39
IA while not-yet unemployed (share)	0.41	0.39	0.22	0.19
IA until end of unemployment (share)	0.66	0.64	0.51	0.48
Days until IA (median)	34	31	83	100
Observations	1649	1560	1657	1608
Observations with IA	1307	1223	1155	1105

Notes: IA = integration agreement, AP = action plan. Register data.

Table 4 Effects of the random assignment on outcomes after 90, 120, and 180 days

Day	**90**	**120**	**180**	**90**	**120**	**180**
	Unemployed			**Benefit receipt**		
Early IA	-0.002	-0.017	-0.003	-0.002	-0.021	-0.009
	(0.016)	(0.017)	(0.016)	(0.016)	(0.017)	(0.016)
Early IA + AP	-0.005	-0.027	-0.014	-0.010	-0.033*	-0.021
	(0.016)	(0.017)	(0.016)	(0.016)	(0.017)	(0.016)
Late IA + AP	0.014	-0.001	-0.001	0.021	0.003	0.007
	(0.016)	(0.017)	(0.016)	(0.016)	(0.017)	(0.016)
Constant from model without covariates	0.380***	0.424***	0.335***	0.403***	0.451***	0.366***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
	Employed			**Daily earnings (in Euro)**		
Early IA	0.012	0.032*	0.003	1.693	2.746**	0.106
	(0.016)	(0.017)	(0.017)	(1.233)	(1.289)	(1.289)
Early IA + AP	0.006	0.038**	0.019	-0.080	2.437*	0.774
	(0.017)	(0.017)	(0.017)	(1.250)	(1.307)	(1.307)
Late IA + AP	-0.018	0.001	-0.008	-1.420	0.521	-0.306
	(0.016)	(0.017)	(0.017)	(1.241)	(1.297)	(1.297)
Constant from model without covariates	0.558***	0.491***	0.572***	37.679***	33.111***	38.644***
	(0.012)	(0.012)	(0.012)	(1.018)	(0.996)	(0.990)

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from linear probability models / OLS. Standard errors in parentheses. IA = integration agreement, AP action plan. Reference group = group 3 with late IA. Further controls: See Table. N = 6,464.

Table 5 Effects of the random assignment on outcomes after 90, 120, and 180 days for individuals with a low predicted probability to be unemployed after 90 days

Day	90	120	180	90	120	180
	Unemployed			Benefit receipt		
Early IA	0.015	-0.009	-0.001	0.021	-0.015	-0.008
	(0.021)	(0.023)	(0.022)	(0.022)	(0.023)	(0.022)
Early IA + AP	0.019	-0.023	0.004	0.030	-0.018	0.001
	(0.021)	(0.023)	(0.022)	(0.022)	(0.023)	(0.023)
Late IA + AP	0.016	-0.018	-0.000	0.029	-0.003	0.011
	(0.022)	(0.023)	(0.022)	(0.022)	(0.023)	(0.023)
Constant from model without covariates	0.248***	0.367***	0.312***	0.262***	0.386***	0.336***
	(0.015)	(0.016)	(0.016)	(0.015)	(0.017)	(0.016)
	Employed			Daily earnings (in Euro)		
Early IA	-0.008	0.017	-0.001	0.541	2.252	0.521
	(0.022)	(0.024)	(0.023)	(1.768)	(1.904)	(1.905)
Early IA + AP	-0.026	0.027	0.006	-1.330	1.990	0.157
	(0.022)	(0.024)	(0.023)	(1.781)	(1.917)	(1.919)
Late IA + AP	-0.023	0.013	-0.000	-1.412	2.211	0.792
	(0.023)	(0.024)	(0.023)	(1.791)	(1.928)	(1.930)
Constant from model without covariates	0.704***	0.560***	0.599***	49.318***	39.394***	42.450***
	(0.016)	(0.017)	(0.017)	(1.469)	(1.481)	(1.467)

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from linear probability models / OLS. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA. Further controls: See Table. N = 3,237.

Table 6 Effects of the random assignment on outcomes after 90, 120, and 180 days for individuals with a high predicted probability to be unemployed after 90 days

Day	90	120	180	90	120	180
	Unemployed			Benefit receit		
Early IA	-0.026	-0.022	-0.008	-0.034	-0.028	-0.016
	(0.024)	(0.024)	(0.023)	(0.024)	(0.024)	(0.023)
Early IA + AP	-0.031	-0.028	-0.031	-0.051**	-0.042*	-0.042*
	(0.025)	(0.025)	(0.024)	(0.025)	(0.025)	(0.024)
Late IA + AP	0.009	0.016	0.001	0.009	0.009	0.005
	(0.024)	(0.025)	(0.023)	(0.024)	(0.024)	(0.024)
Constant from model without covariates	0.517***	0.484***	0.359***	0.549***	0.519***	0.398***
	(0.018)	(0.018)	(0.017)	(0.018)	(0.018)	(0.017)
	Employed			Daily earnings (in Euro)		
Early IA	0.037	0.046*	0.009	3.080*	3.042*	-0.304
	(0.024)	(0.024)	(0.024)	(1.693)	(1.726)	(1.728)
Early IA + AP	0.037	0.045*	0.029	1.418	2.613	1.187
	(0.024)	(0.025)	(0.024)	(1.727)	(1.761)	(1.763)
Late IA + AP	-0.010	-0.011	-0.017	-1.284	-1.301	-1.448
	(0.024)	(0.024)	(0.024)	(1.695)	(1.728)	(1.730)
Constant from model without covariates	0.405***	0.420***	0.543***	25.509***	26.540***	34.664***
	(0.017)	(0.017)	(0.017)	(1.299)	(1.290)	(1.312)

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from linear probability models / OLS. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA. Further controls: See Table. N = 3,237.

Table 7 Effects of the random assignment on additional outcomes after 90, 120, and 180 days

Day	90	120	180	90	120	180
	Unemployment benefits			**Basic income support**		
Early IA	-0.013	-0.029*	-0.013	0.010	0.012*	0.002
	(0.016)	(0.017)	(0.016)	(0.006)	(0.007)	(0.007)
Early IA + AP	-0.015	-0.035**	-0.023	0.000	0.002	-0.004
	(0.016)	(0.017)	(0.016)	(0.007)	(0.007)	(0.007)
Late IA + AP	0.016	-0.001	0.006	0.007	0.011	0.010
	(0.016)	(0.017)	(0.016)	(0.007)	(0.007)	(0.007)
Constant from model w/o covariates	0.390***	0.434***	0.342***	0.035***	0.039***	0.046***
	(0.012)	(0.012)	(0.012)	(0.005)	(0.005)	(0.005)
	Labor market program			**Unsubsidized employment**		
Early IA	0.000	0.004	-0.007	0.014	0.036**	0.005
	(0.005)	(0.005)	(0.006)	(0.016)	(0.017)	(0.017)
Early IA + AP	-0.002	0.000	-0.008	0.004	0.039**	0.016
	(0.005)	(0.005)	(0.006)	(0.017)	(0.017)	(0.017)
Late IA + AP	0.009*	0.009*	0.003	-0.021	0.000	-0.013
	(0.005)	(0.005)	(0.006)	(0.017)	(0.017)	(0.017)
Constant from model w/o covariates	0.018***	0.020***	0.030***	0.553***	0.483***	0.565***
	(0.003)	(0.004)	(0.004)	(0.012)	(0.012)	(0.012)

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from linear probability models. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA. N = 6,464.

Table 8 Effects of the random assignment to an early activation component on outcomes after 90, 120, and 180 days

Day	90	120	180	90	120	180
I. Entire sample						
	Unemployed			**Benefit receipt**		
Early activation	-0.010	-0.021*	-0.008	-0.016	-0.028**	-0.019
	(0.012)	(0.012)	(0.011)	(0.012)	(0.012)	(0.012)
Constant from model without covariates	0.390***	0.422***	0.330***	0.416***	0.451***	0.366***
	(0.009)	(0.009)	(0.008)	(0.009)	(0.009)	(0.008)
	Employed			**Daily earnings (in Euro)**		
Early activation	0.018	0.035***	0.015	1.531*	2.338**	0.582
	(0.012)	(0.012)	(0.012)	(0.880)	(0.920)	(0.920)
Constant from model without covariates	0.546***	0.494***	0.572***	36.422***	33.175***	38.509***
	(0.009)	(0.009)	(0.009)	(0.726)	(0.710)	(0.705)
II. Individuals with a low predicted probability to be unemployed after 90 days						
	Unemployed			**Benefit receipt**		
Early activation	0.010	-0.007	0.002	0.012	-0.015	-0.009
	(0.015)	(0.016)	(0.016)	(0.016)	(0.017)	(0.016)
Constant from model without covariates	0.255***	0.355***	0.305***	0.275***	0.381***	0.335***
	(0.011)	(0.012)	(0.011)	(0.011)	(0.012)	(0.012)
	Employed			**Daily earnings (in Euro)**		
Early IA	-0.005	0.016	0.003	0.294	1.066	-0.037
	(0.016)	(0.017)	(0.017)	(1.268)	(1.365)	(1.366)
Constant from model without covariates	0.693***	0.571***	0.606***	48.107***	40.335***	42.958***
	(0.011)	(0.012)	(0.012)	(1.060)	(1.069)	(1.058)
III. Individuals with a high predicted probability to be unemployed after 90 days						
	Unemployed			**Benefit receipt**		
Early activation	-0.033*	-0.033*	-0.020	-0.047***	-0.039**	-0.031*
	(0.017)	(0.017)	(0.016)	(0.017)	(0.017)	(0.017)
Constant from model without covariates	0.524***	0.489***	0.356***	0.556***	0.520***	0.396***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
	Employed			**Daily earnings (in Euro)**		
Early activation	0.042**	0.051***	0.027	2.931**	3.494***	1.145
	(0.017)	(0.017)	(0.017)	(1.206)	(1.229)	(1.231)
Constant from model without covariates	0.400***	0.418***	0.539***	24.801***	26.054***	34.085***
	(0.012)	(0.012)	(0.012)	(0.914)	(0.907)	(0.922)

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from linear probability models / OLS. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA. Further controls: See Table. N = 6,464 for the entire sample and N = 3,237 for both subsamples.

Online Appendix

Figure A.1 Kaplan-Meier estimates of survival functions until the expected date of dismissal, quit, or end of contract

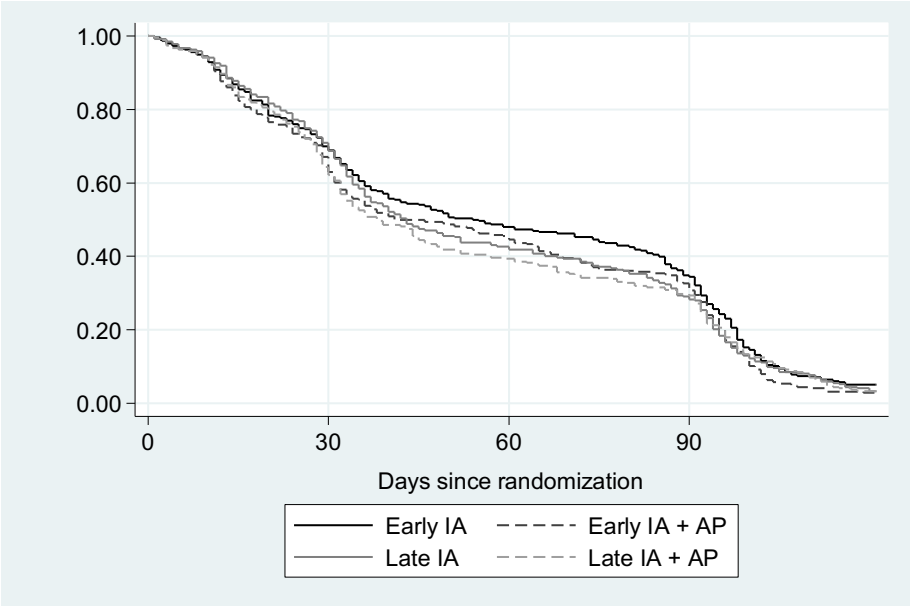
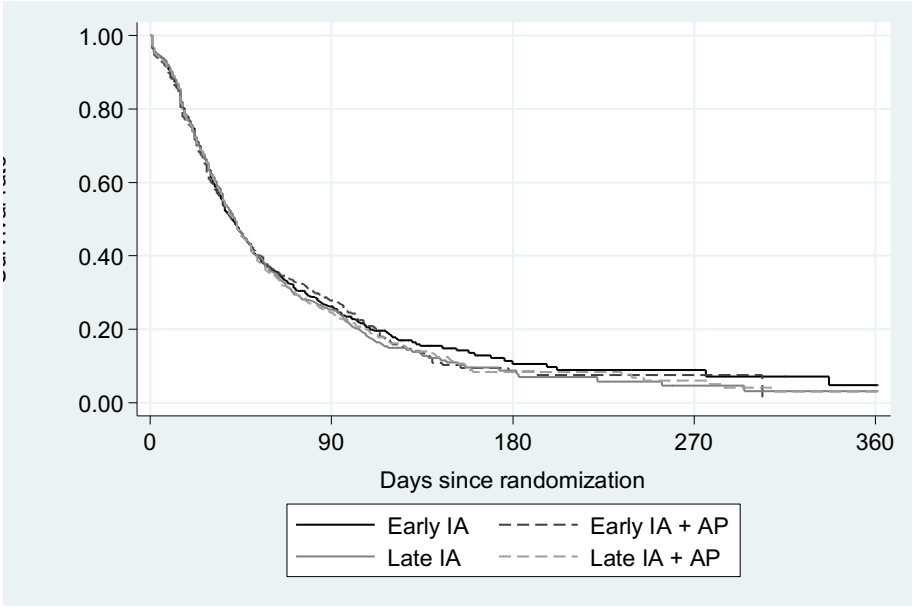
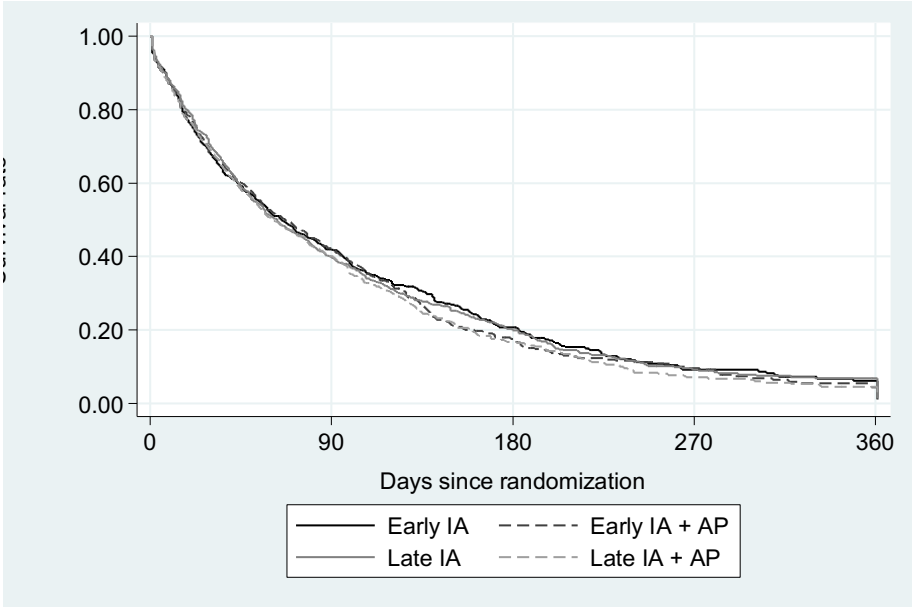


Figure A.2 Kaplan-Meier estimates of survival functions until the first meeting



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Log rank test for equality of survival functions: Pr>chi2 = 0.95.
Observations are right-censored at prolonging the current relationship while terminating the registration as a job seeker, at unemployment exit, and at taking-up a new job.

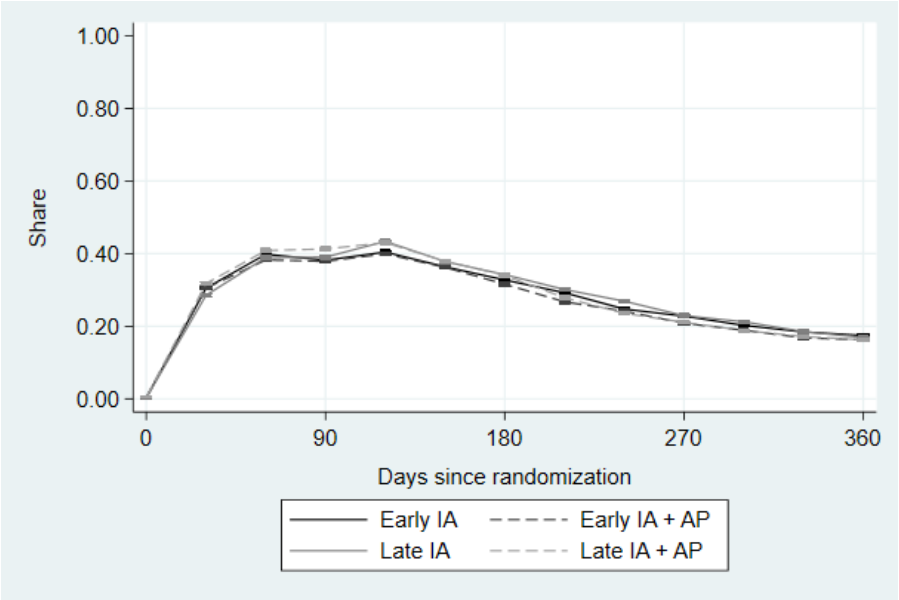
Figure A.3 Kaplan-Meier estimates of survival functions until receiving the first vacancy referral



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Log rank test for equality of survival functions: Pr>chi2 = 0.62.
Observations are right-censored at prolonging the current relationship while terminating the registration as a job seeker, at unemployment exit, and at taking-up a new job.

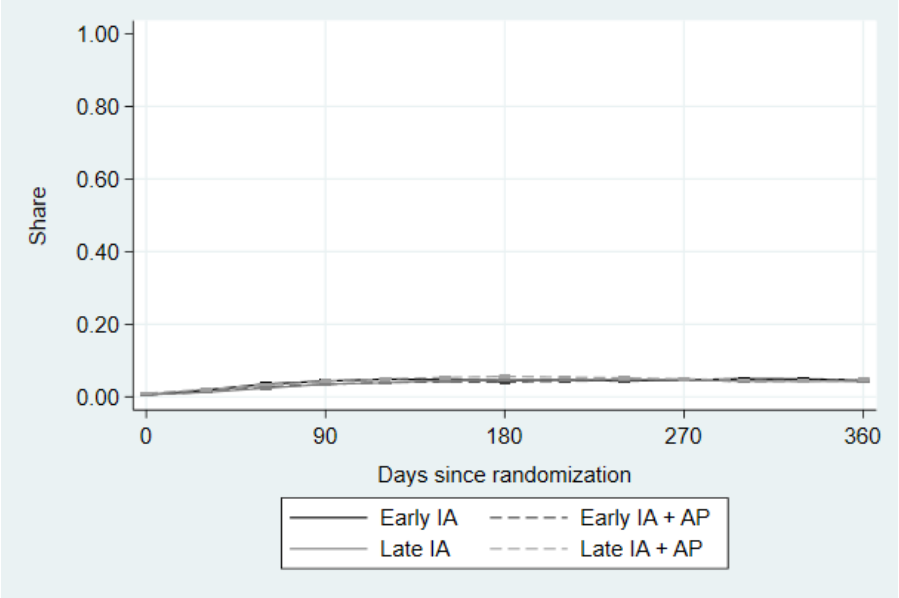
Notes: IA = integration agreement, AP = action plan. Survey data. N = 1,162. Only individuals participating in the survey who indicate a job search start within a 30-day-window around the assignment days and providing a date about the expected date of their employment relationship after the assignment day. Observations not right-censored.

Figure A.4 Shares with unemployment benefits



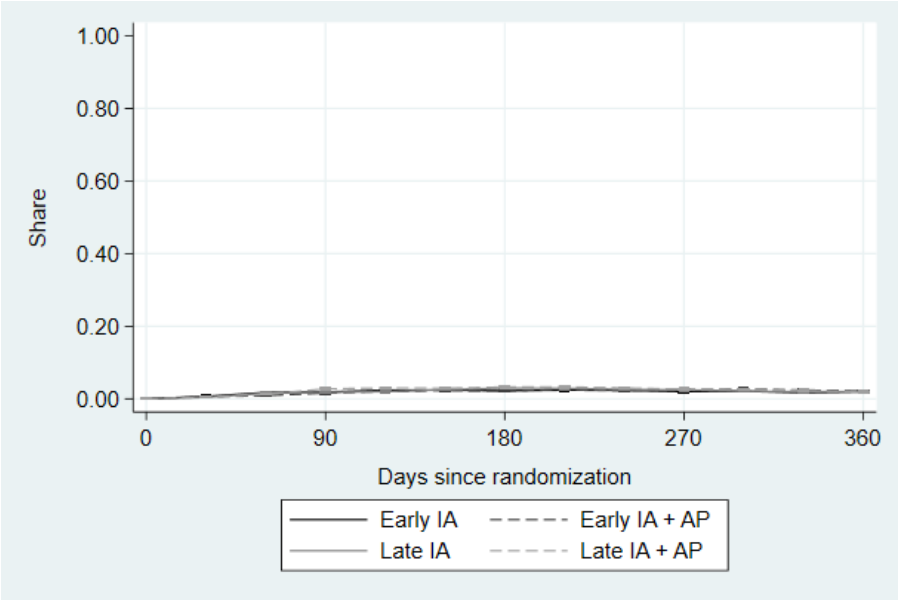
Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure A.5 Shares with basic income support



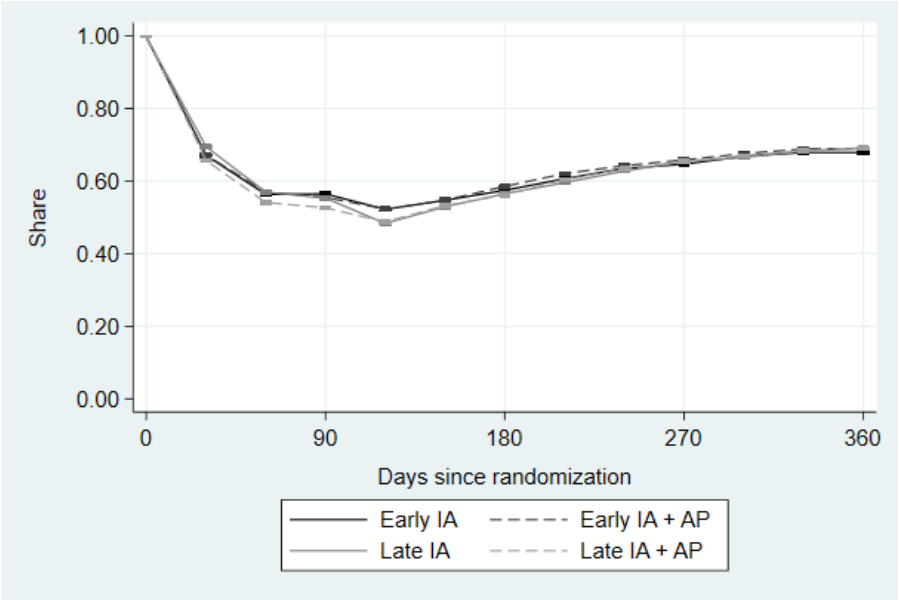
Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure A.6 Shares in active labor market programs



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Figure A.7 Shares in unsubsidized employment due to social security contributions



Notes: IA = integration agreement, AP = action plan. Register data. N = 6,474.
Measured at 30-day-intervals; with 5-percent-confidence-intervals at measurement points.

Table A.1 Effects of the treatment on survey participation

Early IA	0.014
	(0.014)
Early IA + AP	0.049***
	(0.015)
Late IA + AP	0.001
	(0.014)
Constant	0.203***
	(0.010)
Observations	6,474
R-squared	0.002

Notes: Results from linear probability model. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA.

Table A.2 Effects of all covariates on outcomes 120 days after random assignment

	Unemployed	Benefit receipt	Employed	Daily earnings (in Euro)
Treatment group				
Early IA	-0.017	-0.021	0.032*	2.746**
	(0.017)	(0.017)	(0.017)	(1.289)
Early IA + AP	-0.027	-0.033*	0.038**	2.437*
	(0.017)	(0.017)	(0.017)	(1.307)
Late IA + AP	-0.001	0.003	0.001	0.521
	(0.017)	(0.017)	(0.017)	(1.297)
Gender and nationality				
Gender (1=female)	-0.006	-0.010	0.019	-0.628
	(0.014)	(0.014)	(0.014)	(1.075)
Nationality (1=foreign)	0.008	0.039*	-0.019	-2.689
	(0.023)	(0.023)	(0.023)	(1.742)
Age group (reference 25-34)				
35-44	0.031*	0.026	-0.022	-1.723
	(0.017)	(0.017)	(0.017)	(1.280)
45-54	0.064***	0.065***	-0.050***	-4.981***
	(0.016)	(0.016)	(0.016)	(1.250)
55 and older	0.128***	0.115***	-0.120***	-10.806***
	(0.019)	(0.019)	(0.019)	(1.454)
Education (reference: occupational degree)				
No occupational degree	0.046	0.048*	-0.044	-2.200
	(0.029)	(0.029)	(0.029)	(2.224)
University degree	0.045**	0.058***	-0.054***	1.713
	(0.020)	(0.020)	(0.020)	(1.548)
Labor market agency (reference: A)				
Agency B	-0.014	-0.025	0.058***	3.616***
	(0.017)	(0.017)	(0.017)	(1.317)
Agency C	0.016	0.015	0.034	0.570
	(0.023)	(0.023)	(0.023)	(1.746)
Agency D	0.007	-0.001	-0.030	-1.728
	(0.021)	(0.021)	(0.022)	(1.647)
Agency E	0.034*	0.027	-0.012	1.412
	(0.020)	(0.020)	(0.020)	(1.522)
Characteristics last job				
Daily wage during last job	-0.000**	-0.001***	0.001***	0.416***
	(0.000)	(0.000)	(0.000)	(0.019)
Temporary contract	-0.086***	-0.087***	0.109***	8.809***
	(0.014)	(0.014)	(0.014)	(1.073)
Part time	-0.017	-0.018	0.011	-0.427
	(0.016)	(0.016)	(0.016)	(1.255)

Table A.2 continued

Sector last job (reference: manufacturing)				
Agriculture, fishing, mining	0.031	0.041	-0.019	-0.518
	(0.044)	(0.044)	(0.044)	(3.388)
Energy, water, waste	-0.064	-0.089	0.049	0.699
	(0.059)	(0.059)	(0.060)	(4.539)
Construction	0.068**	0.068**	-0.049*	-4.734**
	(0.027)	(0.027)	(0.027)	(2.061)
Trade, maintenance, repair	0.034	0.037	-0.021	-2.221
	(0.023)	(0.023)	(0.023)	(1.776)
Transport and storage	-0.034	-0.028	0.038	0.235
	(0.028)	(0.028)	(0.028)	(2.169)
Hospitality	0.066**	0.071**	-0.067**	-4.924**
	(0.028)	(0.029)	(0.029)	(2.185)
Information and communication	0.037	0.077*	-0.087**	-5.258
	(0.042)	(0.043)	(0.043)	(3.267)
Financial and insurance services	-0.078	-0.111*	0.079	10.724**
	(0.060)	(0.061)	(0.061)	(4.642)
Real estate activities	0.007	0.009	-0.054	2.490
	(0.058)	(0.058)	(0.058)	(4.446)
Scientific and technical services	0.035	0.029	-0.063**	-3.884
	(0.031)	(0.032)	(0.032)	(2.423)
Other business services	-0.002	-0.020	0.021	-0.837
	(0.027)	(0.027)	(0.027)	(2.050)
Public administration, defense	-0.037	-0.037	0.043	7.631**
	(0.045)	(0.045)	(0.046)	(3.475)
Education	-0.035	-0.056	0.072*	8.262***
	(0.038)	(0.039)	(0.039)	(2.952)
Health and social care	-0.063**	-0.073***	0.074***	4.986**
	(0.028)	(0.028)	(0.028)	(2.155)
Art, Entertainment and Recreation	0.100*	0.124**	-0.121**	-7.677*
	(0.056)	(0.056)	(0.056)	(4.307)
Other services, private households	-0.003	0.011	-0.019	-1.458
	(0.040)	(0.040)	(0.041)	(3.095)
Temporary agency work	-0.015	-0.026	0.028	0.141
	(0.027)	(0.027)	(0.027)	(2.079)
Activity last job (reference: professional)				
Helper	0.005	0.003	-0.001	-0.911
	(0.016)	(0.016)	(0.016)	(1.258)
Complex specialist	0.020	0.017	-0.033	-0.354
	(0.021)	(0.021)	(0.021)	(1.624)
Highly complex	-0.015	-0.020	-0.013	-0.845
	(0.026)	(0.027)	(0.027)	(2.039)

Table A.2 continued

Employment history last 5 years				
Share of years in employment	-0.034***	-0.030***	0.046***	2.833***
	(0.006)	(0.006)	(0.006)	(0.484)
Share of years with last employer	0.020***	0.023***	-0.025***	-0.921***
	(0.005)	(0.005)	(0.005)	(0.348)
Share of years in unemployment	0.020	-0.000	-0.012	-1.184
	(0.016)	(0.016)	(0.016)	(1.238)
Share of years with unemployment benefits	0.061***	0.070***	-0.055***	-2.973**
	(0.019)	(0.019)	(0.019)	(1.430)
Share of years with basic income support	0.013	0.045***	-0.011	-0.743
	(0.010)	(0.010)	(0.010)	(0.732)
Recall (1 = yes)	0.022	0.024*	-0.027*	-1.141
	(0.015)	(0.015)	(0.015)	(1.128)
Active labor market program (1 = yes)	-0.015	-0.017	0.027*	1.178
	(0.016)	(0.016)	(0.016)	(1.229)
Month of assignment in 2013 (reference: September)				
June	-0.116***	-0.112***	0.119***	6.022***
	(0.023)	(0.023)	(0.023)	(1.764)
July	-0.051**	-0.058***	0.076***	3.106*
	(0.021)	(0.021)	(0.021)	(1.595)
August	-0.042**	-0.052**	0.064***	4.301***
	(0.021)	(0.021)	(0.021)	(1.627)
October	0.019	0.015	0.010	2.251
	(0.020)	(0.020)	(0.021)	(1.566)
November	-0.052**	-0.054***	0.081***	6.119***
	(0.020)	(0.020)	(0.021)	(1.570)
December	-0.115***	-0.115***	0.120***	8.881***
	(0.025)	(0.025)	(0.025)	(1.940)
Constant	0.508***	0.530***	0.295***	-3.993
	(0.043)	(0.043)	(0.043)	(3.273)
Observations		6,474		
R-squared	0.057	0.064	0.069	0.178

*** p<0.01, ** p<0.05, * p<0.1

Notes: Results from Results from linear probability models / OLS. Standard errors in parentheses. IA = integration agreement, AP = action plan. Reference group = group 3 with late IA. N = 6,464.

Table A.3 Balancing – means of observed characteristics for the four experimental groups and p-values for tests on equal means for individuals with a lower predicted probability to enter unemployment (F-test and χ^2-tests)

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Gender (1=female)	0,53	0,55	0,52	0,52	0,51
Nationality (1=foreign)	0,07	0,08	0,07	0,08	0,89
Age group					
25-34	0,34	0,36	0,36	0,34	0,01
34-44	0,24	0,18	0,24	0,24	
45-54	0,25	0,28	0,23	0,28	
55 and older	0,17	0,17	0,17	0,14	
Education					
No occupational degree	0,04	0,05	0,04	0,04	0,85
Occupational degree	0,76	0,77	0,77	0,78	
University degree	0,20	0,19	0,19	0,18	
Labor market agency					
A	0,21	0,20	0,23	0,20	0,29
B	0,29	0,33	0,32	0,35	
C	0,13	0,11	0,10	0,09	
D	0,16	0,15	0,14	0,14	
E	0,21	0,21	0,21	0,22	
Characteristics last job					
Daily wage during last job	72	68	70	69	0,16
Temporary contract	0,59	0,57	0,59	0,61	0,60
Part-time in last job	0,30	0,30	0,27	0,30	0,47
Sector last job					
Agriculture, fishing, mining	0,02	0,01	0,01	0,01	0,82
Manufacturing	0,18	0,19	0,17	0,17	
Energy, water, waste	0,01	0,00	0,01	0,01	
Construction	0,02	0,03	0,03	0,03	
Trade, maintenance, repair	0,15	0,14	0,16	0,15	
Transport and storage	0,06	0,05	0,05	0,07	
Hospitality	0,06	0,06	0,08	0,06	
Information and communication	0,02	0,02	0,02	0,02	
Financial and insurance services	0,02	0,02	0,01	0,01	
Real estate activities	0,01	0,01	0,01	0,01	
Scientific and technical services	0,04	0,04	0,05	0,05	
Other business services	0,09	0,09	0,08	0,10	
Public administration, defense	0,03	0,04	0,04	0,03	
Education	0,05	0,06	0,05	0,06	
Health and social care	0,12	0,14	0,13	0,13	
Art, Entertainment and Recreation	0,02	0,02	0,01	0,01	
Other services, private households	0,03	0,04	0,04	0,02	
Temporary agency work	0,05	0,06	0,06	0,05	
Activity last job					
Helper	0,17	0,19	0,16	0,23	0,05
Professional	0,60	0,60	0,61	0,55	
Complex specialist	0,11	0,11	0,10	0,11	
Highly complex	0,12	0,11	0,12	0,12	

Table A.3 continued

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Employment history last 5 years					
Share of years in employment	3,94	3,90	3,89	3,91	0,84
Share of years with last employer	2,15	2,13	2,08	2,05	0,55
Share of years in unemployment	0,35	0,38	0,42	0,38	0,10
Share of years with unemployment benefits	0,27	0,27	0,30	0,29	0,39
Share of years with basic income support	0,26	0,30	0,33	0,32	0,28
Recall (1 = yes)	0,23	0,21	0,23	0,23	0,64
Active labor market program (1 = yes)	0,23	0,22	0,23	0,22	0,85
Month of assignment in 2013					
June	0,11	0,11	0,12	0,09	0,36
July	0,19	0,18	0,18	0,19	
August	0,17	0,14	0,18	0,17	
September	0,21	0,24	0,23	0,22	
October	0,18	0,18	0,16	0,19	
November	0,10	0,11	0,09	0,09	
December	0,03	0,03	0,04	0,05	
Number of observations	815	794	847	781	

Table A.4 Balancing – means of observed characteristics for the four experimental groups and p-values for tests on equal means for individuals with a higher predicted probability to enter unemployment (F-test and χ^2-tests)

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Gender (1=female)	0,33	0,30	0,33	0,34	0,41
Nationality (1=foreign)	0,12	0,12	0,13	0,12	0,93
Age group					
25-34	0,29	0,29	0,32	0,32	0,90
34-44	0,23	0,24	0,22	0,21	
45-54	0,28	0,28	0,27	0,28	
55 and older	0,19	0,19	0,19	0,18	
Education					
No occupational degree	0,07	0,06	0,07	0,06	0,95
Occupational degree	0,79	0,81	0,79	0,80	
University degree	0,15	0,13	0,14	0,14	
Labor market agency					
A	0,26	0,24	0,24	0,22	0,15
B	0,27	0,28	0,29	0,28	
C	0,11	0,10	0,09	0,13	
D	0,12	0,15	0,13	0,17	
E	0,24	0,23	0,25	0,21	
Characteristics last job					
Daily wage during last job	60	61	61	60	0,88
Temporary contract	0,11	0,13	0,15	0,13	0,19
Part-time in last job	0,18	0,18	0,21	0,19	0,36
Sector last job					
Agriculture, fishing, mining	0,04	0,04	0,03	0,04	0,14
Manufacturing	0,12	0,10	0,10	0,12	
Energy, water, waste	0,01	0,01	0,01	0,01	
Construction	0,15	0,16	0,15	0,14	
Trade, maintenance, repair	0,13	0,14	0,10	0,13	
Transport and storage	0,08	0,08	0,08	0,08	
Hospitality	0,07	0,08	0,10	0,09	
Information and communication	0,02	0,03	0,02	0,03	
Financial and insurance services	0,00	0,01	0,01	0,02	
Real estate activities	0,01	0,01	0,02	0,01	
Scientific and technical services	0,07	0,05	0,08	0,06	
Other business services	0,09	0,08	0,08	0,09	
Public administration, defense	0,01	0,00	0,01	0,00	
Education	0,02	0,02	0,01	0,01	
Health and social care	0,01	0,04	0,03	0,04	
Art, Entertainment and Recreation	0,01	0,01	0,02	0,01	
Other services, private households	0,02	0,02	0,02	0,02	
Temporary agency work	0,11	0,12	0,14	0,11	
Activity last job					
Helper	0,23	0,25	0,24	0,21	0,66
Professional	0,59	0,59	0,58	0,63	
Complex specialist	0,11	0,10	0,11	0,10	
Highly complex	0,06	0,06	0,07	0,06	

Table A.4 continued

	(1) Early IA	(2) Early IA+ AP	(3) Late IA	(4) Late IA + AP	(5) p-value
Employment history last 5 years					
Share of years in employment	3,64	3,57	3,50	3,54	0,11
Share of years with last employer	2,10	2,04	1,97	1,93	0,11
Share of years in unemployment	0,62	0,66	0,67	0,65	0,49
Share of years with unemployment benefits	0,41	0,46	0,45	0,45	0,20
Share of years with basic income support	0,50	0,49	0,53	0,50	0,89
Recall (1 = yes)	0,31	0,33	0,33	0,30	0,40
Active labor market program (1 = yes)	0,27	0,30	0,29	0,31	0,25
Month of assignment in 2013					
June	0,12	0,12	0,10	0,09	0,09
July	0,10	0,10	0,12	0,13	
August	0,11	0,11	0,13	0,10	
September	0,15	0,17	0,14	0,15	
October	0,13	0,15	0,14	0,15	
November	0,26	0,19	0,25	0,25	
December	0,13	0,15	0,11	0,13	
Number of observations	834	766	810	827	