

A randomized experiment on improving job search skills of older unemployed workers

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Still preliminary, please do not quote

Abstract

It is generally acknowledged that older unemployed workers have a lower probability of returning to work and have a higher risk of becoming long term unemployed. However, little is known about the effectiveness of Active Labour Market Policies directed at this group. In this paper we study the effects of a training in networking for unemployed workers of 50 years and older in the Netherlands. Using a large-scaled randomized experiment which involved 50,000 unemployed older workers, we find that the training increased the probability of exit from UI by about 12%. At the same time, we do not find evidence that the training affected the job quality of the first job after UI.

Keywords: Randomized controlled trial, older unemployed workers, ALMP, job search assistance

JEL-code: C93, J14, J64

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1 Introduction

In many countries, the unemployment rate of older workers has been increasing over the last years. The Netherlands is no exception. Between 2008 and 2012, the unemployment rate of workers above 50 has more than doubled. As the job finding probabilities of older unemployed are relatively low and their maximum entitlement period to Unemployment Insurance (UI) benefits relatively long, older unemployment have a larger risk of becoming long term unemployed. While only 13% of the Dutch unemployed individuals below 50 years were long term unemployed in 2012, among those of 50 years and older the share of long term unemployed was 42%.

In response of the increasing unemployment rate of older workers, the Dutch government decided to implement a three-year project to stimulate job finding amongst unemployed job seekers of 50 years and older. The project started in 2013 and the main element of this project was a job search assistance program called "Successfully back to Work" for short-term older unemployed which consisted of a short group training in networking. Other elements were a schooling voucher for older unemployed and a fee for temporary employment agencies if they found employment for an unemployed individual of 50 years and older.

In this paper we estimate the effect of the training program for older unemployed using a large-scale randomized field experiment. The experiment involved about 50,000 older unemployed workers, of which roughly 10,000 were placed in the control group and did not receive an invitation to the training. Using an extensive administrative data set, we are able to estimate the effects of the program on job finding rates but also on subsequent labour market outcomes such as earnings, contract hours and type of contract. As the experiment ended in October 2015, in this version of the paper we focus effects within one year after entry into UI. In a later version of the paper we will be able to look at a long term effects. Moreover we will add additional labour market outcomes, such as inflow into social assistance benefits and the length of employment.

There exists a wide literature on active labor market policies (ALMP) such as job search assistance (see Card et al. (2010) or Card et al. (2015) for an overview). However most of this literature focuses on general programs and only a few studies specifically look at ALMP for older unemployed. Most of those studies focus on

hiring subsidies or changes in search requirements for older workers. Both Bloemen et al. (2013) and Koning and Raterink (2013) find that stricter search requirements increased the employment rates for older unemployed in the Netherlands. Boockmann et al. (2012) study the effect of hiring subsidies for older unemployed workers. They do not find any effects of the subsidies on exit from unemployment to employment, except for women from East Germany. To our knowledge, Arni (2010)) is the only one who studies the effect of a job search assistance program for older unemployed.¹ Using a randomized experiment he finds that an early intensive counseling and coaching program increases job finding rates and decreases reservation wages for unemployed between 45 and 55 years in Switzerland. He does not find a positive effect for individuals older than 55 years.

We find positive effects of the training on both the probability of exit from UI and the job finding probability. The intention to treat effect on the UI exit rate in the first 12 months after inflow is about 2 percentage points. As we have non-compliance in both the control and treatment group, the local average treatment effect is substantially larger: participation in the training increases the exit from UI with 4.5 percentage points. The vast majority of the additional outflow from UI is due to an increase in the job finding probability. We find that participation in the training increases the probability of finding a job nine months after UI entry with about 2.8 percentage points.²

Our estimates indicate that participation in the training decreases the government expenditures on UI. However, as the drop in income from UI benefits seems to be substituted by an increase in earned wage, the total income of older unemployed workers does not seem to be affected by participation. In addition, we do not find evidence that the training reduces subsequent job quality, as we do not find effects on the probability of receiving a temporary contract, the average wage or the number of contract hours.

This paper proceeds as follows. In the next section, we will explain the job

¹Another study that is related but focuses on older welfare recipients is that of Boockmann and Brändle (2015). They exploit regional variation in program participation to estimate the effect of a large-scale ALMP targeted at older welfare recipients, which consists mostly of coaching, job search assistance and skills assessment. They find that the program increased the probability of entering non-subsidized employment, but that participants also had a higher probability of remaining on welfare assistance because of substantial lock-in effects.

²At the moment of writing we only had access to employment data up to nine months after the end of the experiment.

search assistance program for older unemployed workers. In section 3 we discuss the details of the randomized experiment and in section 4 we give an overview of the administrative data that is used to estimate the effects of the program. Section 5 describes the estimation strategy and we present the results in section 6. We conclude in section 7.

2 The job search assistance program

In 2013, the Dutch government started the project "Actieplan 50pluswerkt", which translates as "Plan of Action 50-plus works". This plan consists of five elements, all directed at unemployed workers of 50 years and older collecting UI benefits. The first element is a subsidy for education of a maximum of €1000, which an unemployed worker can receive if he or she shows that the educational track would improve job finding probabilities. This subsidy is often used if the unemployed worker found a job for which he or she needs a certain certificate, such as a special drivers license or a course in computer skills. The second element is a fee for temporary employment agencies if they found employment of at least three months for an unemployed worker over 50. The third element are so-called "inspirational days", an event where unemployed workers can meet with employers in their region and can follow short courses in networking and applying for jobs. The fourth element is a nationwide publicity campaign targeted at employers to stimulate hiring of older unemployed workers.

The fifth and main element of the Plan of Action was a job search program called "Succesvol naar werk", which translates as "Successfully back to work" (StW). The idea behind the program is that individuals would get to know their abilities and interests, learn how to use their network and improve their job finding skills. The program involves ten group meetings of about two hours each and two short individual meetings with a trainer. The group consists of around twelve unemployed individuals between the age of 50 and 63, and the composition of the group does not change during the program. An overview of the subjects per meeting is given in Table 1. The trainer is usually a regular caseworker of UWV who received a short course in order to provide the trainer. The outflow from the program is not monitored by UWV and there is no financial incentive for the trainer to stimulate outflow from

Table 1: Outline of the training Successfully back to work (StW)

Meeting	Subject
Group meeting 1	Introduction and test of abilities and job interests
Group meeting 2	Abilities, results of test meeting 1
Group meeting 3	Networking
Group meeting 4	STARR technique and analysis of job openings
Group meeting 5	Social media
Individual meeting 1	Discuss progress
Group meeting 6	Repetition, extension and questions
Group meeting 7	Ways of communication
Group meeting 8	Job interview
Group meeting 9	Elevator pitch
Group meeting 10	Repetition, extension and questions
Individual meeting 2	Concluding the program

Source: UWV

the program. In two or three of the group meetings, most often meetings 4, 8 and 9, an advisor specialized in contact with employers attends the meeting. The advisor can provide advice on how to convince employers to hire the unemployed or give recent information on job openings. The total costs of StW are about €470 per participant.

The standard procedure is that the job seeker receives an invitation for StW in his or her first meeting with the caseworker, around four months after entering unemployment. Around 83 percent of the participants in the training received the invitation in this first meeting. Five out of the 30 local labor market offices do not organize the fourth month meetings. These offices are part of a special group of offices which are, to a certain extent, free to organize the communication with job seekers as they like. They invite the job seekers in group meetings. Although participation in the job search program is mandatory, only 54 percent of the potential participants actually participates. According to the local offices, the main reasons for this are that the job seeker is sick or on holiday, already has a (small) job with irregular working hours, participated in the program in a previous UI spell or did not want to participate in the program. The degree in which the latter reason resulted in non-participation varies a lot per region as some are more strict than others. Seven and ten months after entering UI the job seeker again has a meeting with her caseworker. If the job seeker, for whatever reason, did not yet participate in the program she should be invited to the program again.

The Ministry of Social Affairs and Employment provided the budget for the project for older unemployed workers under the condition that UWV would provide the program to at least 40,000 job seekers every year. This target became one of the ten annual targets that UWV has to fulfill.³ The nationwide targets are transformed into targets for the local offices. The outcome on the targets is part of the evaluation of the managers. In the year of our experiment, the target meant that each office had to provide the program to at least 50% of its expected inflow of unemployed between 50 and 63.

3 The experiment

The experiment took place between February and October 2015. Since unemployed workers are invited for the job search assistance program in the meeting with the caseworker after three months, the experiment concerned all unemployed individuals who entered UI between November 2014 and July 2015. We restrict the experiment to individuals who were between 50 and 63 years of age at the moment of entry into UI, stayed unemployed for at least three months, are not employed at the start of UI for more than eight hours a week and who are not also collecting Disability Insurance benefits. After the sample selection the experiment includes about 50,000 older unemployed workers.

We randomized every individual into a treatment- and control group. Only individuals in the treatment group should receive an invitation to StW. We stressed to the caseworkers that individuals in the control group should not receive an alternative to the training, unless that alternative would also have been provided if the individual would have been in the treatment group.⁴ One exception to this is when an individual in the control group asks for participation in the training. He or she can then participate in the training. After the experiment the individuals from the control group were still not allowed to be invited for the training. The randomization into treatment- and control group is based on the last number of the social security number. We were allowed to randomize at most 20% of the individuals into

³If UWV does not meet one or more targets it has to develop a plan in order to meet the target in the future.

⁴UWV has little means to provide alternative job search assistance to unemployed. They can offer short online courses and occasionally organize a "speeddate event", where unemployed workers can meet temporary employment agencies.

the control group, with 20% UWV would still be able to meet governmental targets of the number of participants. Since the training is for individuals of 50 years and older, we picked individuals with a last number 5 or 0 to serve as control group.

The experiment was carried out by over 1,250 caseworkers. Because of the size of the experiment we took several measures to ensure that caseworkers complied. Before the experiment started, we made a visit to each local office to inform them about the experiment. We presented the set-up of the experiment and answered questions of caseworkers or managers. To make sure caseworkers would not forget about the experiment, the operating system was altered. If a caseworker plans a meeting with someone from the control group, he or she receives a warning not to invite the unemployed to the training. Some local offices add to this warning, for example by a calendar alarm just before the meeting or by planning meetings with individuals in the control group on a specific day. Every week we monitored the progress of the experiment. If we observe that an individual in the control group participated in StW, we notify the manager of the responsible caseworker. An (anonymous) summary of participation rates in the treatment- and control group in each office was sent around so offices can compare their progress with other offices. This monitor continued after the end of the experiment, since the control group was excluded from participation in the training for three years. Although the local offices still had a target of number of participants in the training, the head office viewed the compliance to the experiment to be more important.⁵

4 Data

We use three different datasets from UWV in the analysis. The first dataset is the Unemployment Register (WWO), which contains monthly administrative data on all individuals who collected unemployment benefits. We select the UI spells of individuals who entered UI in the period of the experiment, November 2014 and July 2015. We also include the UI spells of individuals who re-enter UI after their first spell in the experimental period. Every record in the dataset is a separate UI

⁵In case a local office did not meet the target of the number of participants, it could ask the head office for suggestions how to improve the participation rate without hindering the experiment. The head office would then for example distribute a list with potential participants that entered UI in the pre-experiment period.

spell for which we know the dates of the start and end of the spell, the monthly UI benefits, whether someone was also entitled to sickness or disability benefits and the reason for the end of the spell. The data also contains personal characteristics such as the date of birth, gender and municipality.

Using social security numbers, we are able to match the UI spells to the second dataset from UWV called Sonar. This dataset is filled by the caseworkers and contains information on re-integration activities, meetings and applications of the unemployed worker. It also includes some additional personal characteristics such as household status, education and nationality. We observe the date of the first meeting with the caseworker, which is the moment when the treatment group is invited to the training, and the start date of the training. Unfortunately we do not know whether the individual attended more than one training session, as only the attendance to the first training session is recorded. Usually only one group starts the training within a local office on the same day, which means that for 90% of the participants we can identify their fellow participants.

The final dataset contains information on employment contracts. We match the UI spells to employment information of 2013 up to October 2015, so we can observe employment before, during and after unemployment.⁶ From the dataset we know the start and end date of all employment spells, the monthly wage, number of contract hours, type of contract and sector. We construct these characteristics for the last job before unemployment and the first job after unemployment. We also create an indicator for whether or not the individual was still working when he or she started collecting UI benefits.

Table 2 shows some descriptive statistics for both control group and treatment group. None of the differences in observed variables between the treatment and control group are statistically significant at the 5% level. The average age of the individuals in the experiment is 55.9 years. Given that individuals had to be between 50 and 63 years of age to be included in the experiment, we observe relatively more "young" unemployment workers. About 45% of the unemployed workers is female and the majority is married or cohabiting. About 45% of the individuals attended secondary education, and more than 23% has at least a bachelor degree. On average they are unemployed for 32 hours per week and entitled to monthly UI benefits of

⁶Unfortunately, the employment information comes with a delay of about four months.

Table 2: Descriptive statistics for treatment and control group and p-values of t-test of different means

	Treatment group	Control group	All	P-value
<i>Personal characteristics</i>				
Average age	55.9	56.0	55.9	0.17
% Women	44.9	44.4	44.8	0.43
% Single	24.5	24.9	24.6	0.37
% Couple	73.9	73.4	73.8	0.32
% Immigrants	1.0	1.1	1.0	0.40
<i>Education</i>				
% At most primary education	13.7	13.6	13.7	0.83
% Vocational education	17.0	17.3	17.0	0.44
% Secondary education	45.2	44.8	45.1	0.45
% Bachelor or master	23.8	23.9	23.8	0.92
<i>UI characteristics</i>				
Average UI benefits (€per month)	1,520	1,523	1,521	0.73
Maximum entitlement period	153	153	153	0.22
Number of hours unemployed	31.6	31.7	31.6	0.46
% Employed at start of UI spell	15.6	15.7	15.6	0.87
Re-entry unemployment	6.3	6.7	6.4	0.10
<i>Characteristics job before UI</i>				
Average wage (€per year)	30,651	30,698	30,660	0.89
% Temporary contract	42.3	42.3	42.3	0.95
Average monthly contract hours	129	130	129	0.51
Received disability benefits	2.0	2.1	2.1	0.72
<i>Sector last job</i>				
% Business	20.5	20.4	20.5	0.89
% Health care	20.5	20.0	20.4	0.29
% Industrial	11.8	12.3	11.9	0.20
% Temp agency	11.1	11.5	11.2	0.26
% Trade	9.0	8.5	8.9	0.18
% Transport	6.6	6.6	6.6	0.92
% Other	20.6	20.7	20.6	0.88
Observations	39,592	9,841	49,433	

€1,521 for 152 weeks. About 16% had a (part-time) job at the start of their UI spell. 6% of the unemployed workers re-entered UI, which means that they had a UI spell in the half year before the current UI spell. 2% of the unemployed workers collected DI benefits before entering UI. The average wage in their last job before

UI was about €30,660, they worked on average 129 hours per month and 42% of the workers had a temporary contract before UI. Roughly 21% of the unemployed workers had a job in health care before UI and an equal share in business, while the share of those sectors for the total inflow was about 15% per sector (UWV (2015)) The share of unemployed with a previous job with a temp agency is lower than in the total inflow, 11% in our sample versus 18% in the total inflow. More than 11% had a job in the industrial sector and about 9% in the trade sector.

The upper panel of Table 3 shows the participation rate of the first meeting with the caseworker and the training for the control and treatment group. We observe a smaller percentage of individuals who attended the meeting with the caseworker in the treatment group. The difference is caused by one of the local offices which invited a part of the treatment group to StW in group meetings instead of an individual meeting with the caseworker. On average 83% of the unemployed individuals attended the meeting with the caseworker. We do not observe a significant difference in participation in the other two elements of the main project "50-plus": about 6% of the older unemployed received an educational voucher and temporary employment agencies received a placement fee for 5.7% of the individuals. As a result of the experiment, the participation in StW in the treatment group is about seven times as high as in the control group. But still we observe considerable non-compliance in the control group. About 20% of the participants in the control group asked their caseworker if they could participate in the training by themselves. The majority of the other 80% was invited by mistake, but there is also some evidence that a few caseworkers ignored the rules of the experiment if they believed the unemployed worker would really benefit from the training. This means that we might underestimate the effect of the training.

In the second panel of Table 3 we observe the outflow from UI at different moments after inflow into UI. For all time periods under investigation, we observe a larger outflow from UI for the treatment group. The difference between control and treatment group is statistically significant after nine months. In the third panel we split the outflow from UI by reason for exit. The main reason to exit UI is because of work, this accounts for about two-thirds of the outflow. About 17% of the exits from UI is to sick leave benefits. Sanctions account for 3.5% of the exits and 2.2% of the UI spells end because the maximum entitlement to UI expires. Roughly one

percent of the exits is to self-employment.

The fourth panel shows the percentage of individuals who still receives UI at different moments after inflow into UI. Here we account for re-entry into UI. For all time periods we observe a smaller percentage of UI receipt in the treatment group. Finally, the last panel shows the cumulative UI benefits after inflow into UI. The average cumulative UI benefits are lower in the treatment group for all time periods.

Table 3: Participation in the training StW, outflow from UI and cumulative UI benefits for treatment and control group and p-values of t-test of different means

	Treatment group	Control group	All	P-value
<i>Meeting, other programs and participation</i>				
% Attended first meeting caseworker	83.2	83.9	83.3	0.07
% Received educational voucher	6.1	5.8	6.0	0.29
% Placement fee	5.6	5.8	5.7	0.53
% Participated in the training StW	53.8	7.9	44.6	0.00
<i>Outflow from UI</i>				
Outflow UI within 6 months	19.2	18.8	19.1	0.35
Outflow UI within 9 months	32.0	31.0	31.8	0.05
Outflow UI within 12 months	39.5	37.7	39.1	0.00
<i>Outflow UI within 12 months by reason of exit</i>				
Outflow to work	64.2	65.2	64.4	0.27
Outflow to sick leave	16.9	16.7	16.9	0.69
Outflow because of sanction	3.5	3.5	3.5	0.94
Outflow because end of entitlement	2.2	2.1	2.2	0.75
Outflow to self-employment	1.1	0.9	1.1	0.21
Outflow other	12.0	11.7	11.9	0.56
<i>Receives UI benefits</i>				
Receives UI after 6 months	81.3	81.9	81.4	0.23
Receives UI after 9 months	70.7	71.7	70.9	0.05
Receives UI after 12 months	68.5	70.1	68.8	0.00
<i>Received UI benefits after inflow (€)</i>				
Cumulative UI benefits within 6 months	9,088	9,153	9,101	0.24
Cumulative UI benefits within 9 months	12,753	12,891	12,780	0.10
Cumulative UI benefits within 12 months	15,739	15,949	15,781	0.05

In Table 4 shows several labour market outcomes after inflow into UI for the treatment and control group.⁷ The first panel shows the job finding probability

⁷The data of the employment spells comes with a delay of four months. For this reason we do not observe job finding probabilities for a longer time period than nine months.

at different moment after inflow into UI. Nine months after inflow 33.2% of the treatment group found a job, whereas 32.1% of the control group found a job. Panel two tells us that not all jobs are persistent, as the probability of having a job after nine months is somewhat lower than the job finding probability. In panel three and four we show the cumulative wage and total income. We observe a higher cumulative wage in the treatment group, while the cumulative income does not differ between the treatment and control group. The last panel shows the characteristics of the first job after entry into UI. By construction these statistics only apply to individuals who found a job after entry into UI. The first job after UI earns on average €1.915 per month, 86% of the contracts is fixed term with on average 113 hours per month. More than half of the workers finds work in a different sector than the sector in which they worked before UI and about one quarter works through a temporary employment agency. UWV has a database with vacancies which caseworkers can send to job seekers. UWV records the placement on these vacancies to track whether job seekers find work with the help of the caseworker. About 13% of the jobs are found through one of these vacancies.

To explore the timing of participation in the training, Figure 1 shows the survival curves of not participating in the training for the control and treatment group. Although the majority of the job seekers is invited to the training after three months, some individuals start the training in the first three months after UI. In both the control and the treatment group, most individuals start the training between three and five months after entering UI. The gap in participation between treatment and control group slowly increases over time.

Figure 2 shows the survival curve of receiving UI benefits for the treatment and control group. Because we only select individuals that received UI benefits for at least three months, we do not observe outflow from UI in that period. Recall that according to UWV guidelines, an individual should be invited to the training after three months and that the training will last about ten weeks. This implies that someone would participate in the training between month four and six. For this period, we do not observe a difference in the survival curve between the control and treatment group, which could imply that there is no substantial lock-in effect of participation in the training. After about seven months, the survival curve of the treatment group falls below that of the control group. The difference between

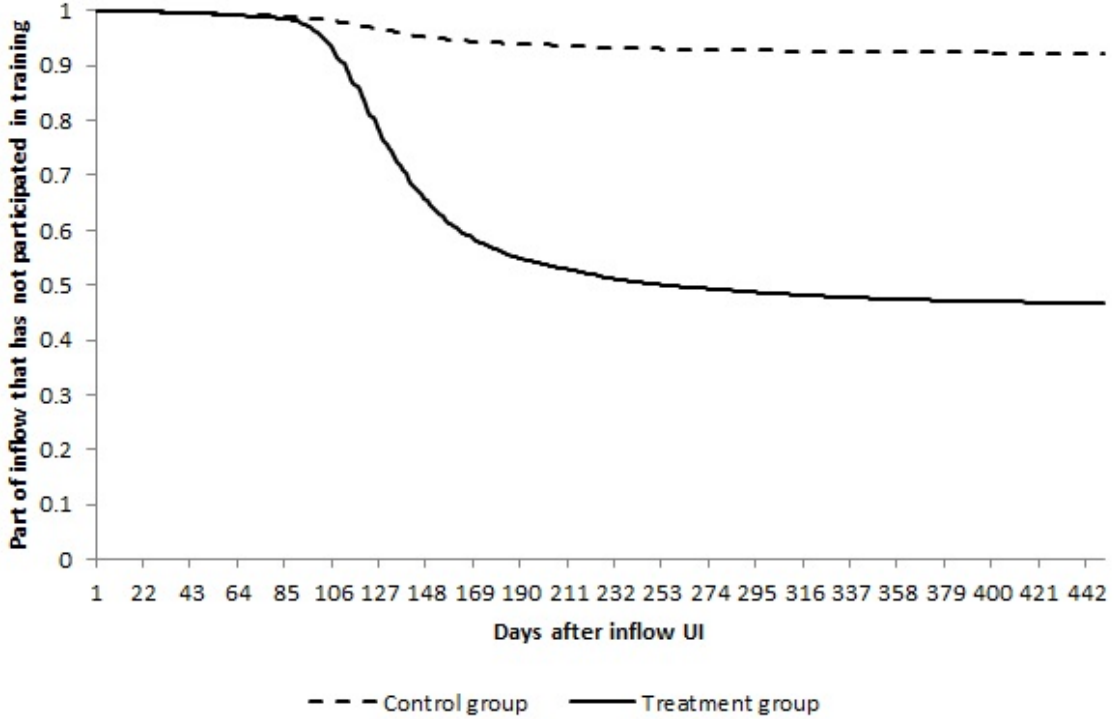
Table 4: Labour market outcomes after UI for treatment and control group and p-values of t-test of different means

	Treatment group	Control group	All	P-value
<i>Job finding probability</i>				
Finds job within 6 months	24.4	23.5	24.2	0.07
Finds job within 9 months	33.2	32.1	33.0	0.03
<i>Has job</i>				
Has job after 6 months	22.2	21.3	22.0	0.05
Has job after 6 months	28.5	27.5	28.3	0.07
<i>Cumulative wage after inflow (€)</i>				
Cumulative wage within 6 months	1.488	1.429	1.476	0.13
Cumulative wage within 9 months	3.232	3.098	3.205	0.07
<i>Cumulative income after inflow (€)</i>				
Cumulative income within 6 months	10.576	10.581	10.577	0.94
Cumulative income within 9 months	15.985	15.988	15.985	0.97
<i>Characteristics first job after UI (only for those who found job)</i>				
Average wage (month, €)	1.922	1.884	1.915	0.23
Average monthly contract hours	113	113	113	0.88
% with a fixed-term contract	86.2	85.7	86.1	0.41
% in different sector than before UI	54.9	55.3	55.0	0.62
% contract with temp agency	26.9	26.0	26.7	0.27
% placed on vacancy UWV	13.2	12.6	13.1	0.33

the control and treatment group slowly increases over time. As we saw in Figure 1, this could be due to late participation the training, but it could also be caused to delayed treatment effects.

Table 5 shows descriptive statistics for participants and non-participants within the treatment group. In general, participants have more favorable labour market characteristics compared to non-participants: they are younger, higher educated, had a higher income before UI and less often received UI benefits in a previous unemployment spell or suffered from disability before entering UI. Unemployed workers who were still (part-time) employed at the start of the UI spell are less likely to participate in the training. We also observe a larger share of attending the first meeting with the case worker amongst the participants.

Figure 1: Survival curve of not participating in the training StW



5 Estimation strategy

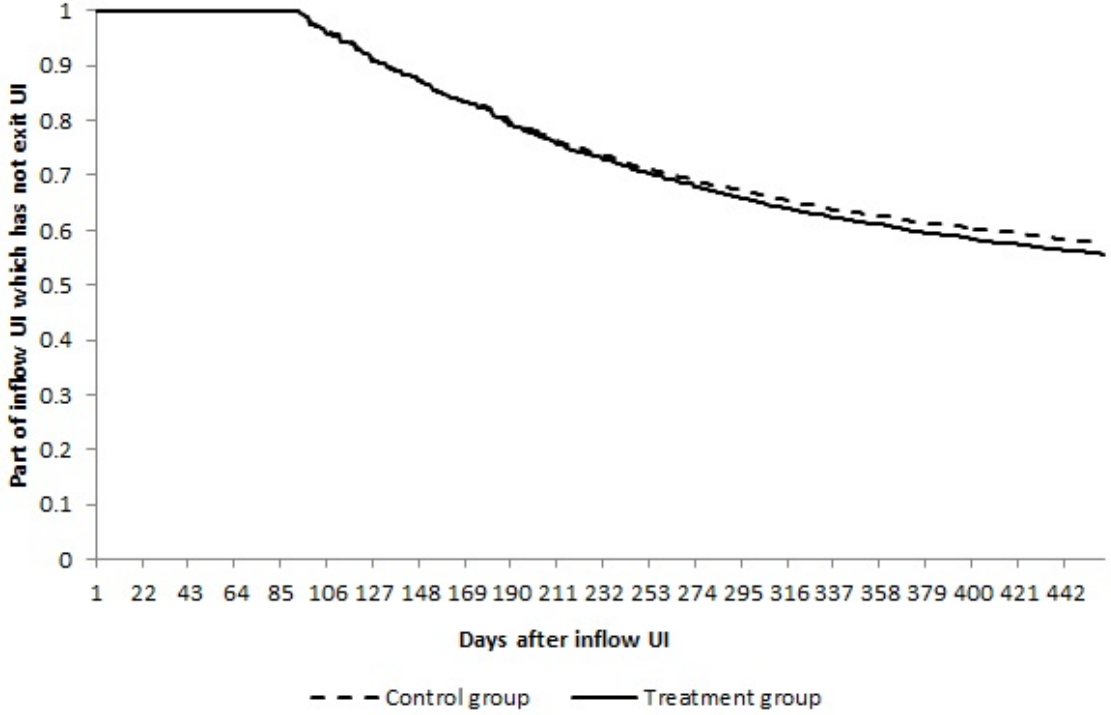
To estimate the effect of the training StW on outcomes Y at time τ of individual i who started collecting UI benefits at moment t , we specify the model

$$Y_{it\tau} = \alpha + N_{it\tau}\gamma + X_i\beta + \mu_t + O_i\delta + \epsilon_{it\tau} \quad (1)$$

The variable $N_{it\tau}$ indicates whether individual i received the networking training at time τ . The vector X_i contains individual characteristics, such as gender, household composition, nationality, earnings before entering UI, sector, age and the maximum entitlement period. We include the time trend μ_t which is specified by dummy variables for each month of inflow in UI to control for calendar time variation. We also control for regional variation as we include fixed effects O_i representing the different local offices.

It is likely that participation in the training is not independent of the potential outcome, for example because more motivated individuals are more likely to participate or because caseworkers select those individuals of whom they expected the

Figure 2: Survival curve of receiving UI benefits



highest return of the training. For this reason we exploit the experimental design of our study and replace $N_{i\tau}$ by T_i , a dummy variable which is equal to one if individual i was assigned to the treatment group:

$$Y_{it\tau} = \alpha + T_i\gamma + X_i\beta + \mu_t + O_i\delta + \epsilon_{it\tau} \quad (2)$$

Since only 52% of the individuals in the treatment group actually participated in the training, γ gives us the intention to treat estimate. Given that UWV has a target to maximize the number of participants in the training and this is translated into targets for the local offices, we can assume that not every worker that could participate will actually participate in the training. The intention to treat estimate therefore seems to be a policy relevant estimator, as it tells us what the effect of the training is for the entire group of unemployed workers over 50. Note however, that we underestimate the intention to treat effect because we observe non-compliance in the control group.

To estimate the local average treatment effect, we estimate equation 1 by instru-

Table 5: Descriptive statistics for participants and non-participants of Successfully back to Work in the treatment group and p-values of t-test of different means

	Participants	Non-participants	All	P-value
<i>Personal characteristics</i>				
Average age	55.8	56.0	55.9	0.00
% of men	50.0	61.1	55.1	0.00
% Single	23.7	25.4	24.5	0.00
% Couple	74.6	73.1	73.9	0.00
% of immigrants	0.2	1.9	1.0	0.00
<i>Education</i>				
% At most primary education	10.3	17.6	13.7	0.00
% Vocational education	16.1	17.9	17.0	0.00
% secondary education	46.8	43.4	45.2	0.00
% bachelor or master	26.6	20.6	23.8	0.00
<i>UI characteristics</i>				
Average UI benefits (€per month)	1,599	1,427	1,520	0.00
Maximum entitlement period	154	152	153	0.00
Number of hours unemployed	31.1	32.2	31.6	0.00
% Employed at start of UI spell	10.5	21.6	15.6	0.00
<i>Characteristics job before UI</i>				
Re-entry unemployment	3.1	9.9	6.3	0.00
Disabled before UI	1.4	2.8	2.0	0.00
Average wage before UI (€per year)	31,902	29,196	30,651	0.00
% temporary contract before UI	34.2	51.6	42.3	0.00
Average monthly contract hours before UI	132	126	129	0.00
<i>Sector last job</i>				
% Health care	23.1	17.5	20.5	0.00
% Business	23.0	17.5	20.5	0.00
% Temp agency	6.6	16.3	11.1	0.00
% Industrial	12.7	10.7	11.8	0.00
% Trade	9.5	8.3	9.0	0.00
% Transport	5.7	7.6	6.6	0.00
% Other	19.4	22.0	20.6	0.00
% Attended meeting with case worker	90.7	74.3	83.2	0.00

mental variables, using the treatment dummy T as an instrument for participation in the networking training N at time τ . This gives us the first and second stage estimations:

$$N_{i\tau} = \kappa + T_i\lambda + X_i\zeta + \mu_t + O_i\nu + v_{it\tau} \quad (3)$$

$$Y_{it\tau} = \alpha + \hat{N}_{it\tau}\phi + X_i\beta + \mu_t + O_i\delta + \epsilon_{it\tau} \quad (4)$$

where ϕ will give us the local average treatment effect (LATE).

6 Estimation results

So far, we have only showed evidence of the effects of the training based on the descriptive statistics in Section 4. Using the estimation strategies given in Section 5, we can estimate the intention to treat (ITT) and local average treatment effects (LATE). The results of these estimations for outflow from UI, receipt of UI benefits and cumulative UI benefits are given in table 6 (estimation results of first stage are given in Appendix A). We find a significant effect of the invitation to the training on exit from UI after nine and twelve months since the moment of inflow. Twelve months after inflow into UI, the exit probability of the treatment group is 2.0 percentage points larger than in the control group. We find a local average treatment effect of 4.5 for the outflow within twelve months, implying that participation in the program increases the exit from UI from 39% to 43.5%.

The second panel of Table 6 shows the estimated effects on UI receipt. We find significant effects of the training which are somewhat smaller than the effects on outflow UI. This means that a fraction of the additional outflow from UI returns to UI. Participation in the training decreases the probability of UI receipt after twelve months with 3.7 percentage points.

Finally, the last panel shows the cumulative UI benefits for different periods after UI inflow. The estimated ITT- and LATE-effects are significant for the UI benefits within nine and twelve months. Participation in the training reduces the received UI benefits within one year with €408. Thirteen months after inflow UI, the reduction in UI benefits exceeds the costs of the training of €470 (not in the table).

In Table 7 we show the ITT and LATE effects on several labour market outcomes after entry into UI. We find significant positive effects of the training on the job finding probability within six and nine months after inflow. Nine months after entering UI, someone in the treatment group is 1.2 percentage points more likely to have found a job, and participants in the training are 2.8 percentage points more likely. Given that the average job finding probability in the control group is only

Table 6: Estimation results for the effect of the training on outflow from UI, UI receipt and cumulative UI benefits, intention to treat and local average treatment effect

	ITT		LATE		Baseline
<i>Outflow from UI</i>					
Outflow UI within 6 months	0.006	(0.004)	0.016	(0.011)	0.19
Outflow UI within 9 months	0.013**	(0.005)	0.030**	(0.011)	0.32
Outflow UI within 12 months	0.020**	(0.005)	0.045**	(0.011)	0.39
<i>Receives UI benefits</i>					
Receives UI after 6 months	-0.007*	(0.004)	-0.019*	(0.011)	0.82
Receives UI after 9 months	-0.012**	(0.005)	-0.029**	(0.011)	0.72
Receives UI after 12 months	-0.017**	(0.005)	-0.037**	(0.011)	0.70
<i>Cumulative received UI benefits after inflow (€)</i>					
UI benefits within 6 months	-28	(25)	-87	(67)	9,153
UI benefits within 9 months	-99**	(45)	-252**	(105)	12,891
UI benefits within 12 months	-171**	(65)	-408**	(146)	15,949

Every cell represents a separate regression. The estimations include controls for personal characteristics, time fixed effects, regional effects and characteristics of the job before UI. Standard errors in parenthesis. * significant at the 10% level, ** at the 5% level

32%, this is a substantial effect of about 9%.

In the second panel we estimate the effects on having a job after six and nine months after inflow UI. The point estimates of the effect on having a job after nine months are a bit smaller than the point estimates of the effect on job finding, which could imply that the some of the additional jobs are short-lasting. The effects on the cumulative wage and income are given in panel three and four. We find a positive effect of the training on the earned wage within six and nine months. Cumulative over the first nine months after inflow UI, participants in the training earn about €351 more because of the training. The negative effect on UI benefits (Table 6) is offset by this positive effect on wages, as can be seen by the insignificant effect on the cumulative income.

The last panel shows the estimated effect of the training on several characteristics of the first job. We do not find any evidence that the training has an effect on the quality of the first job. We do find a positive effect of the training on the probability of finding work with a temporary employment agency, participants are 4.2 percentage points more likely to have found work in that sector. One aim of the training is to broaden the search strategy of the unemployed worker, which could

increase the percentage of jobs found in a different sector than the sector before UI. We do not find evidence of such an effect. Finally, the increase in the job finding probability does not seem to be the result of additional job finding by means of the vacancy database of UWV, which would have implied that participants take jobs at the expense of non-participants.

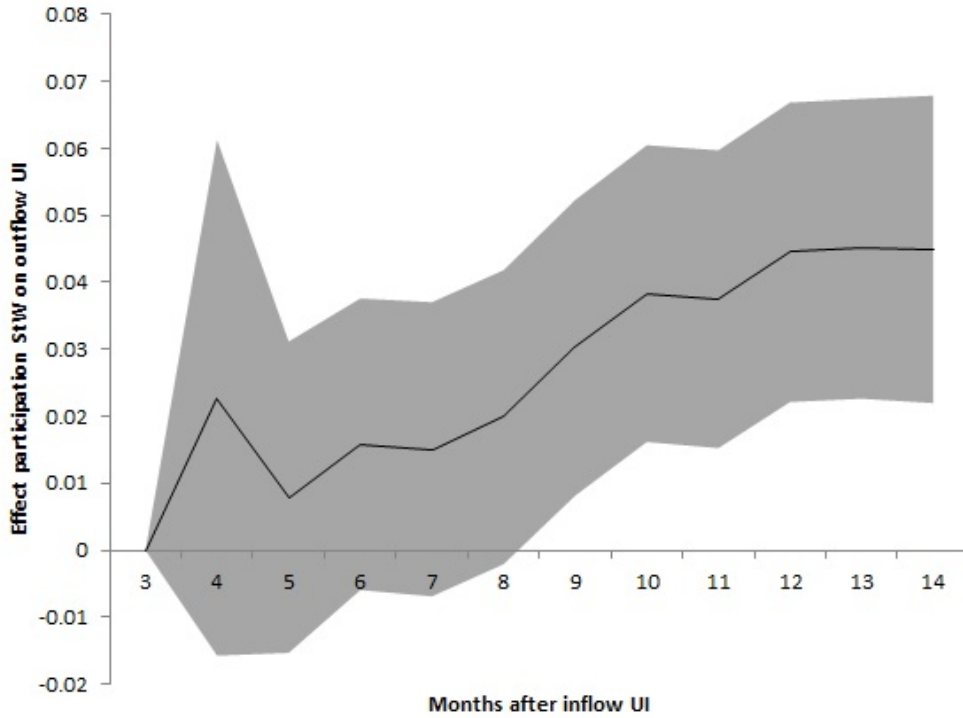
Table 7: Estimation results for different labor market outcomes, intention to treat and local average treatment effect

	ITT		LATE		Baseline
<i>Job finding probability</i>					
Finds job within 6 months	0.010**	(0.005)	0.026**	(0.012)	0.24
Finds job within 9 months	0.012**	(0.005)	0.028**	(0.011)	0.32
<i>Has job</i>					
Has job after 6 months	0.010**	(0.004)	0.026**	(0.012)	0.21
Has job after 9 months	0.010**	(0.005)	0.022**	(0.011)	0.28
<i>Cumulative wage after inflow (€)</i>					
Cumulative wage within 6 months	68*	(37)	185*	(98)	1,429
Cumulative wage within 9 months	149**	(68)	351**	(157)	3,098
<i>Cumulative income after inflow (€)</i>					
Cumulative income within 6 months	41	(35)	98	(94)	10,581
Cumulative income within 9 months	51	(57)	99	(132)	15,988
<i>Characteristics first job after UI (only for those who found job)</i>					
Average wage (month, €)	13	(25)	36	(69)	1,884
Average monthly contract hours	0.47	(0.76)	1.29	(2.12)	113
% with a fixed-term contract	0.009	(0.006)	0.023	(0.017)	0.86
% contract with temp agency	0.015**	(0.007)	0.042**	(0.020)	0.26
% in different sector than before UI	-0.010	(0.008)	-0.028	(0.024)	0.55
% placed on vacancy UWV	0.008	(0.006)	0.022	(0.017)	0.13

Every cell represents a separate regression. The estimations include controls for personal characteristics, time fixed effects, regional effects and characteristics of the job before inflow UI. Standard errors in parenthesis. * significant at the 10% level, ** at the 5% level

To study the effect of the training over time in more detail, Figure 3 shows the estimated local average treatment effect on exit from UI for every month after inflow into UI with the corresponding confidence interval. The figure clearly shows a steadily increasing effect of the training of time. After nine months and later the effect of the training on outflow from UI is significant for every month.

Figure 3: Estimated Local Average Treatment Effects on UI exit by month after inflow UI



6.1 Heterogeneous treatment effects

In this subsection we explore whether the estimated treatment effects of the program differ by characteristics of the unemployed worker. We estimate the LATE on several outcomes by age, education, sector, gender and earned wage before UI inflow. The results of these estimations are given in Table 8. The baseline means of the outcome variables by subgroup are given in the appendix in table A2. We do not find significant differences in the size of the effects by age and gender for exit from UI and job finding. We do observe significantly larger effects on cumulative UI benefits and the earned wage for men. We do observe differences by sector of the last job before UI, individuals who were working in the trade sector seem to benefit most from the training while individuals who were employed by a temporary employment agency do not gain from the training at all. In addition, the results by education differ substantially: the program seems to have no effect for individuals with at most vocational education, while we find larger effects for individuals with

at least secondary education.⁸ In the appendix (Table A3) we explore the differences in education in more detail. We find the largest effects for men with secondary education and women with a bachelor or masters degree. Older workers with at most vocational education seem to benefit less from the training. The last panel of Table 8 shows the effects by earned wage before UI inflow. We find that the effects of the program are larger for individuals who earned more than the median wage before entering UI.

7 Conclusion

This paper studies the effects of a job seekers program targeted at older unemployed workers in the Netherlands. We use a large-scaled randomized experiment that involved around 50,000 individuals. Twenty percent of the older unemployed were randomized into a control group and did not receive an invitation to a training in networking, while the treatment group consisting of 80% of the sample did receive an invitation. Because individuals in the control group could participate in the training if they asked for it themselves and because of noncompliance, 8% of the control group participated. This is still a huge difference compared to the treatment group, where 54% of the individuals participated.

We find that the training increased the outflow from UI and the job finding probability. One year after inflow to UI, individuals from the treatment group have a 2.0 percentage points higher probability to exit UI. The job finding probability within nine months has increased from 28% to 29%. The local average treatment effects are more substantial: participation in the training in networking has increased their probability to exit UI within one year with 4.5 percentage points and increased their job finding probability within nine months with 2.8 percentage points. Thirteen months after inflow UI, the reduction in cumulative UI benefits because of participation in the training exceeds the costs of the program. We do not find evidence that the training has an effect on the quality of the first job after UI. The effects seem to be confined to individuals with at least secondary education and

⁸Note that the baseline exit probability seems to decline with education (appendix). This could be explained by other characteristics that are correlated with lower education which correspond to a high exit probability, such as having a temporary contract before UI, being employed by a temporary employment agency and re-entry into UI.

individuals who earned a higher wage before entering UI.

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Table 8: Local Average Treatment Effects of Successfully to Work on exit UI and cumulative UI benefits within twelve months and the job finding probability and cumulative wage within nine months for different subgroups.

	Exit UI	Cumulative UI benefits	Has a job	Cumulative earned wage
Full population	0.045** (0.011)	-408** (146)	0.022** (0.011)	351** (157)
<i>By age</i>				
Younger than 55	0.061** (0.020)	-430* (244)	0.025 (0.020)	297 (286)
Older than 55	0.033** (0.014)	-364** (180)	0.021 (0.013)	353* (180)
<i>By gender</i>				
Men	0.054** (0.017)	-705** (250)	0.026 (0.017)	627** (276)
Women	0.036** (0.015)	-153 (144)	0.019 (0.014)	98 (141)
<i>By sector</i>				
Health care	0.025 (0.021)	-39 (225)	0.008 (0.020)	87 (238)
Business	0.040* (0.022)	-857** (319)	0.041* (0.022)	692* (376)
Temp agency	-0.023 (0.056)	102 (679)	-0.006 (0.064)	64 (730)
Industrial	0.038 (0.031)	-488 (431)	0.022 (0.029)	672 (445)
Trade	0.110** (0.036)	-515 (328)	-0.011 (0.034)	190 (318)
<i>By education</i>				
At most vocational education	0.011 (0.024)	-340 (268)	-0.007 (0.023)	199 (256)
Secondary education	0.056** (0.017)	-361* (201)	0.017 (0.016)	451** (202)
Bachelor or master	0.052** (0.021)	-476 (313)	0.042** (0.020)	376 (387)
<i>By earned wage before inflow</i>				
Less than €27,000	0.030* (0.017)	-16 (152)	0.003 (0.017)	64 (146)
More than €27,000	0.057** (0.015)	-748** (242)	0.040** (0.015)	572** (271)

Every cell represents a separate regression. The estimations include controls for personal characteristics, time fixed effects, regional effects and characteristics of the job before inflow UI. Standard errors in parenthesis. * significant at the 10% level, ** at the 5% level

A Additional figures and tables

Table A1: Estimation results of the first stage for exit from UI within six months (dependent variable is participation in the training within six months)

	Coefficient	Standard error
Treatment group	0.380**	(0.005)
<i>Personal characteristics</i>		
Man	-0.069**	(0.005)
Single	0.012	(0.016)
Couple	0.012	(0.016)
Immigrant	-0.164**	(0.020)
At most vocational education	0.113**	(0.038)
Secondary education	0.202**	(0.038)
Bachelor or master	0.165**	(0.039)
<i>UI characteristics</i>		
Maximum entitlement period	0.001**	(0.000)
Number of hours unemployed	0.002**	(0.000)
Had a job at entry UI	-0.082**	(0.006)
Level of UI benefits	0.0001**	(0.00004)
<i>Characteristics job before UI</i>		
Re-entry unemployment	-0.101**	(0.008)
Disabled before UI	-0.124**	(0.014)
Average wage before UI (€ per year)	-0.00001**	(0.00001)
Had temporary contract before UI	-0.059**	(0.005)
Average monthly contract hours before UI	-0.0002	(0.0002)
F-statistic	298.91	

The estimations include age dummies, sector fixed effects, regional effects and month of inflow fixed effects
Standard errors between parenthesis. * significant at the 10% level, ** at the 5% level

Figure A1: Estimated Local Average Treatment Effects on cumulative UI benefits by month after inflow UI

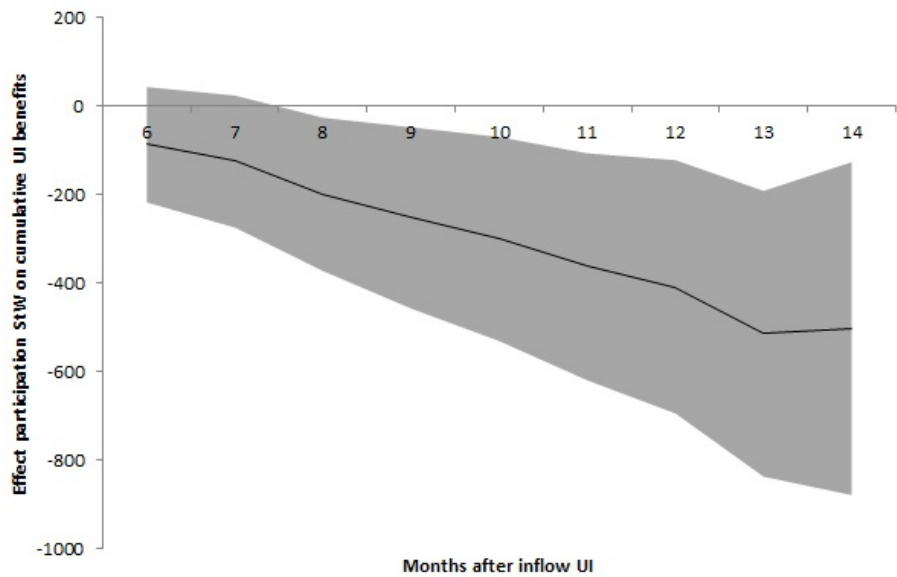


Figure A2: Estimated Local Average Treatment Effects on UI receipt by month after inflow UI

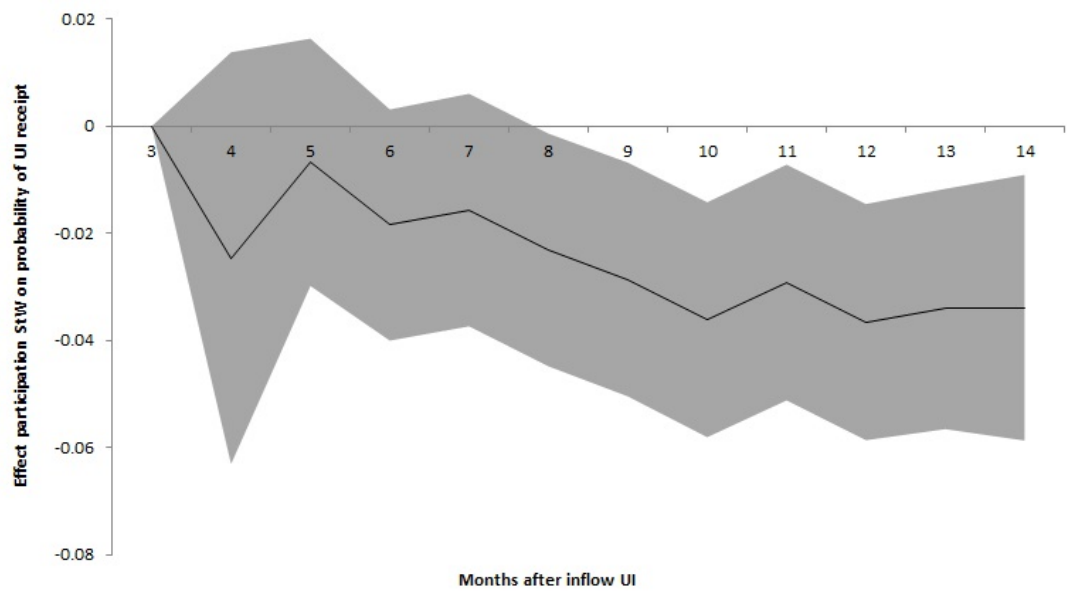


Figure A3: Estimated Local Average Treatment Effects on finding a job by month after inflow UI

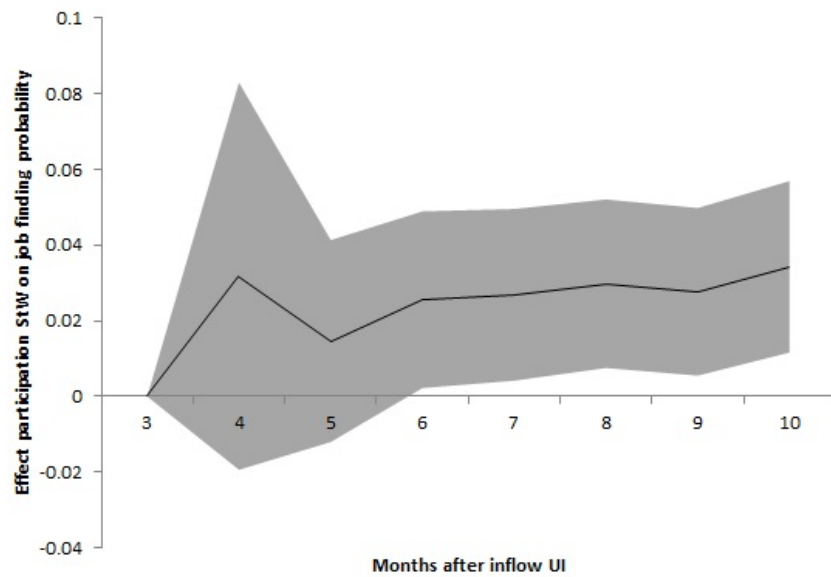


Figure A4: Estimated Local Average Treatment Effects on having a job by month after inflow UI

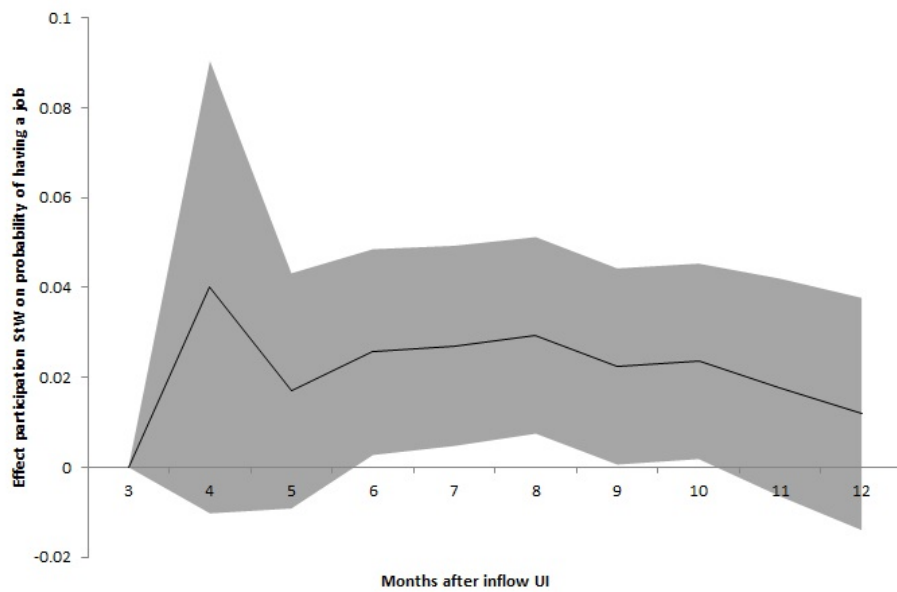


Figure A5: Estimated Local Average Treatment Effects on cumulative earned wage by month after inflow UI

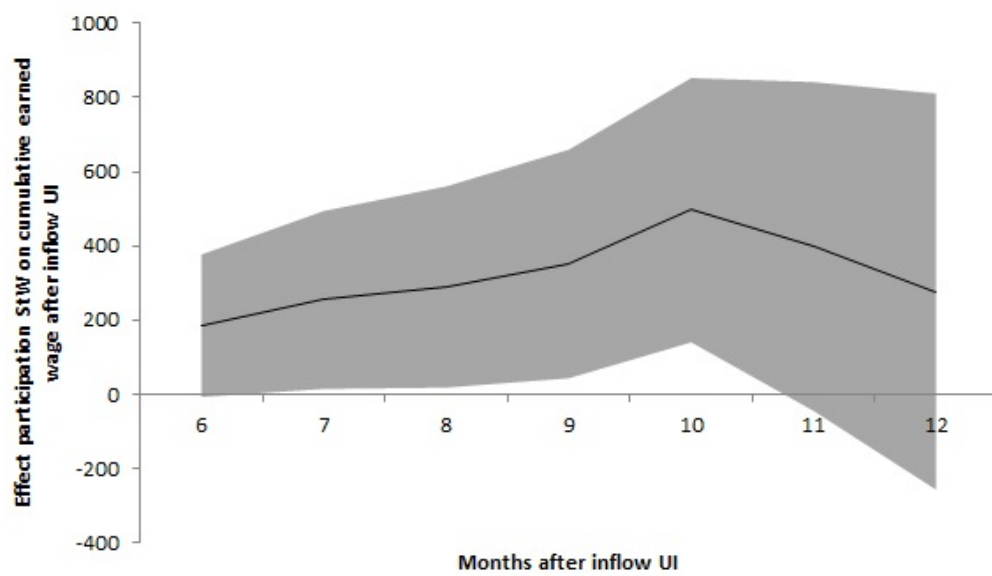


Table A2: Baseline means of exit UI and cumulative UI benefits within twelve months and the job finding probability and cumulative wage within nine months for different subgroups.

	Exit UI	Cumulative UI benefits	Has a job	Cumulative earned wage
Full population	0.39	15,949	0.32	3,098
<i>By age</i>				
Younger than 55	0.45	14,563	0.41	3,939
Older than 55	0.33	16,885	0.26	2,530
<i>By gender</i>				
Men	0.44	18,859	0.37	4,170
Women	0.30	12,309	0.27	1,755
<i>By sector</i>				
Health care	0.28	13,801	0.25	1,952
Business	0.34	19,848	0.27	3,124
Temp agency	0.67	11,166	0.53	4,980
Industrial	0.36	19,702	0.29	2,916
Trade	0.28	11,697	0.28	1,667
<i>By education</i>				
At most vocational education	0.42	12,785	0.31	2,594
Secondary education	0.38	15,040	0.35	3,028
Bachelor or master	0.32	21,834	0.29	3,818
<i>By earned wage before inflow</i>				
Less than €27,000	0.40	10,311	0.34	2,297
More than €27,000	0.35	22,528	0.30	4,031

Table A3: Local Average Treatment Effects of Successfully to Work on exit UI and cumulative UI benefits within twelve months and the job finding probability and cumulative wage within nine months by education and age, wage before UI and gender.

	Exit UI	UI benefits	Has a job	Earned wage
Full population	0.045** (0.011)	-408** (146)	0.022** (0.011)	351** (157)
<i>By age and education</i>				
At most vocational education, 50-54	0.071 (0.044)	-654 (467)	0.010 (0.045)	356 (482)
At most vocational education, 55-62	-0.019 (0.028)	-155 (327)	0.007 (0.026)	102 (297)
Secondary education, 50-54	0.063** (0.027)	-173 (315)	0.012 (0.028)	373 (343)
Secondary education, 55-62	0.052** (0.020)	-466* (258)	0.020 (0.020)	514** (244)
Bachelor or master, 50-54	0.042 (0.036)	-595 (547)	0.050 (0.036)	383 (725)
Bachelor or master, 55-62	0.059** (0.025)	-420 (373)	0.034 (0.023)	348 (429)
<i>By gender and education</i>				
At most vocational education, men	0.002 (0.040)	-724 (551)	-0.015 (0.040)	569 (535)
At most vocational education, women	0.015 (0.029)	-77 (210)	0.024 (0.026)	-104 (170)
Secondary education, men	0.085** (0.025)	-824** (348)	0.049** (0.025)	914** (357)
Secondary education, women	0.028 (0.022)	101 (187)	-0.022 (0.021)	-38 (170)
Bachelor or master, men	0.033 (0.027)	-289 (453)	0.007 (0.026)	170 (590)
Bachelor or master, women	0.083** (0.031)	-799** (406)	0.092** (0.031)	710 (444)
<i>By wage and education</i>				
At most vocational education, low wage	-0.004 (0.030)	44 (249)	0.013 (0.029)	72 (238)
At most vocational education, high wage	0.036 (0.040)	-863 (594)	-0.014 (0.037)	186 (562)
Secondary education, low wage	0.027 (0.023)	92 (207)	-0.030 (0.023)	-30 (204)
Secondary education, high wage	0.088** (0.024)	-839** (353)	0.070** (0.023)	946** (363)
Bachelor or master, low wage	0.123** (0.044)	-440 (467)	0.091** (0.043)	349 (427)
Bachelor or master, high wage	0.025 (0.023)	-459 (383)	0.022 (0.022)	305 (496)

Every cell represents a separate regression. The estimations include controls for personal characteristics, time fixed effects, regional effects and characteristics of the job before inflow UI. Standard errors in parenthesis. * significant at the 10% level, ** at the 5% level