

# **An evaluation of training and job-search assistance programmes: the case of long-term unemployed in Spain**

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## **Abstract**

Exploiting microdata from administrative records of the Public Employment Services of the Community of Madrid (Spain) during the period January 2010 to December 2012, we analyse the influence of participation in training and job-search assistance programmes on the employment probability of the long-term unemployed. To that end, we construct a specific control group of non-participants using the coarsened exact matching procedure, and use a multinomial logit approach to estimate the treatment effect of participation on the probability of getting different types of jobs attending to specific features related to job security and working hours. We find that participation in both programmes exerts a positive and significant influence on the employment probability of the unemployed, especially as regards the likelihood of getting jobs of a certain quality. Additionally, the effect is stronger for the long-term unemployed and increases in the medium run. However, the effect of participation in training programmes appears to be higher than that corresponding to job-search assistance, especially for long-term unemployed workers.

**Key words:** active labour market policies, programme evaluation, long-term unemployment, coarsened exact matching.

**JEL classification:** J08, J68, C14, C52.

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## 1. Introduction

The economic crisis has deeply deteriorated the European labour market, especially in Southern Europe. During this period, job destruction in the region has increased dramatically, with unemployment rates rising sharply, in particular among young and low-skilled individuals. This has translated into a strong decline in the major living standards of unemployed people, thus increasing inequality. Apart from the strong rise in the overall unemployment rate, south European countries have experienced a significant increase in the percentage of long-term unemployed (LTU hereafter).

Among European countries, Spain has been one of the most affected by the economic crisis, reaching unprecedented levels of long-term unemployment. In particular, the unemployment rate was 26.1% in 2013, the second highest in Europe, and the percentage of long-term unemployment picked up from 23.7% in 2007 to 58.4% in 2013 and 61.8% in 2014. Despite the substantial labour market reform in 2012<sup>2</sup> and the beginning of the economic recovery in 2014, unemployment is still one of the most relevant structural problems of the Spanish economy: the unemployment rate in the first quarter of 2017 was 18.8%, and still more than 2.3 million of persons are long-term unemployed, of which 1.7 million are very long-term unemployed. According to the European Commission, Public Employment Services (PES) should play a leading role to mitigate the adverse effects of the economic recession and, in particular, to reduce long-term unemployment. An important tool to achieve this aim are active labour market policies (ALMPs). However, PES in Spain are characterised by their marginal role in the intermediation of the job matching process, which has even decreased in recent years (see Figure A1 in the Appendix). Moreover, although ALMPs in Spain expanded until 2010 in terms of expenditure, they suffered important budgetary cuts during the period 2011-2013.<sup>3</sup>

In a parallel manner, concerns about how to achieve more effective targeting of ALMPs and resource allocation have gained special attention among policy makers in EU member states. As a result, in recent years, many research papers have focused on the causal impact of specific ALMP measures. Although the Spanish government is promoting policy evaluation,<sup>4</sup> so far this kind of exercises are quite scarce in Spain, and the majority of them refer to the pre-crisis period (see for example Mato 2002; Mato and Cueto 2008; Cueto and Mato 2009; Ramos, Suriñach and Artís 2009; Cueto et al. 2010; Arellano 2010; Borra et al. 2012; Cansino and Sánchez-Braza,

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<sup>2</sup> Royal Decree-Law 3/2012 of 10 February 2012.

<sup>3</sup> Expenditure on ALMPs increased from 6.3 thousand million euros in 2006 to 7.9 in 2010, but decreased during the period 2011-2013, and started rising again in 2014. See Figure A1 in the Appendix.

<sup>4</sup> As a fundamental novelty in Spain, Royal Decree-Law 20/2012 of 13 July 2012 establishes the need for active labour market policy evaluation in order to be effective in contributing to the attainment of the objectives that are determined in each moment. In an environment of austerity and competition for scarce public resources, the evaluation of results is a natural consequence.

2010).<sup>5</sup> To the best of our knowledge, the only work that focuses on the crisis period is that of Clemente et al. (2014).

This paper attempts to partially contribute to this literature by providing an empirical evaluation of participation in ALMPs on the employment probability of Spanish LTU. Specifically, we focus on two activation measures in Spain: training and job-search assistance (JSA). Although the aims of both types of programmes are to increase the probability, efficiency and quality of labour market matching, there are some differences between them that are worth mentioning. Training programmes are measures that provide incentives for human capital enhancement by upgrading workers' skills. Thus, these are included in the type of ALMPs intended to enhance employability by increasing workers' productivity. In contrast, the aim of JSA programmes is to help unemployed workers find a job through counselling and support services, as well as provide access to and information on the labour market situation and trends.

Moreover, we account for the quality of the employment relationship by considering two kinds of employment attending to specific features related to job security, measured by the type of contract and working hours. In particular, we have defined *significant* and *non-significant* jobs. Significant jobs are those associated with a permanent contract independently of the weekly working hours, as well as those with a temporary contract of indefinite duration or with a minimum duration of 6 months, and a minimum of 15 working hours per week in the last two cases. In contrast, non-significant jobs include temporary contracts for less than 15 weekly hours, and temporary contracts with a duration of less than 6 months. Finally, we distinguish between two different post-programme time horizons: short-term (within the following 12 months after completion of the programme) and medium-term (between 12 and 24 months after completion).

This investigation is interesting for a number of reasons. First, long-term unemployment can have serious adverse effects for individuals as it entails the depreciation of skills, more difficulties to get hired, less time devoted to the job search and hence more probabilities of leaving the labour market. Consequently, a high level of long-term unemployment involves a risk to social cohesion, as it exposes individuals to a risk of social exclusion and society to high levels of structural unemployment. In addition, it entails enormous challenges for policymakers. In this respect, and due to the persistence of long-term unemployment in Europe in the aftermath of the crisis, the Council Recommendation of 15 February 2016<sup>6</sup> called upon the Member States to provide individualised assistance to all LTU. The Spanish response has been materialised in the

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<sup>5</sup> Other studies that have evaluated the Spanish case but focus on employment subsidies are Clemente, González and Sanso-Navarro (2012), García-Pérez and Rebollo (2009), Méndez (2013) and Font, Izquierdo and Puente (2017).

<sup>6</sup> Council Recommendation of 15 February 2016 on the integration of the long-term unemployed into the labour market (2016/C 67/01).

*Programa de Acción Conjunta para Desempleados de Larga Duración* (Joint Action Programme for the Long-Term Unemployed). The programme is based on an agreement between the central government and the regions to devote a budget of 515 million euros to provide individualised assistance to 1 million long-term unemployed persons until 2018.

Second, there is recent empirical evidence suggesting that well-targeted ALMP measures are an effective and cost-efficient tool in the fight against long-term unemployment (see Card, Kluge, and Weber, 2015). However, as suggested by Jansen (2016a, 2016b), Spain has a poor track record in the field of ALMPs, and the budget of PES for such policies, especially the funding of training policies targeted at the unemployed, suffered considerable cuts during the crisis. To the extent that our results shed some light on the most effective active measures intended to improve the employment prospects of LTU in Spain, they might facilitate the intermediation role of PES in the job matching process.

Finally, an additional contribution of this study relies on the econometric methodology used to obtain the causal effects of participation in active measures on the employment probabilities of the long-term unemployed. In particular, we apply the coarsened exact matching algorithm (CEM) proposed by Iacus, Porro, and King (2009, 2011b, 2012) and Blackwell et al. (2009). Previous studies that have evaluated the effects of ALMPs have mostly relied on propensity score matching (PSM) techniques. By reducing the imbalance between the treated and control groups, the CEM method allows us to improve causal inference and hence obtain more accurate estimates of participation on employment probabilities among the long-term unemployed.

For the purposes of the paper we use microdata from administrative records of the Spanish PES for the period January 2010 to December 2012. Specifically, we use a subsample of unemployed jobseekers participating in these ALMPs in the Community of Madrid and construct a specific control group of non-participants that has the same distribution of observables as the group of participants in the corresponding programme.

Our results suggest that participation in both kinds of programmes (training and job-search assistance) exerts a positive and significant influence on the probability of getting both significant and non-significant jobs at all time horizons. However, the effect of participation in training policies seems to be stronger than the effect of participation in job-search assistance measures. Furthermore, a relevant result from our analysis is that the effect of ALMPs is more intense among LTU, thus suggesting the convenience of participating in this kind of measures for this group of jobseekers. These findings thus provide a diagnosis of the most effective measures to increase the employment probabilities of long-term unemployed people, and should be taken

into consideration by PES in their attempt to optimise the positive impact of the available resources.

The rest of the paper is organised as follows. Following the introduction, section 2 reviews the literature on the effects of ALMPs. In section 3 we describe the database and the procedure applied to construct the control group. In section 4 we present the results of the econometric analysis and discuss the main results. Finally, section 5 concludes.

## **2. Literature review**

ALMPs aim to improve employability and/or salary perspectives, primarily for people affected by long-term unemployment and other vulnerable groups who face greater difficulties in finding employment.<sup>7</sup> A large variety of active labour market programmes exists among EU Member States and other European countries. Based on their different aims,<sup>8</sup> the programmes can be grouped into four main categories: (i) training programmes, which essentially comprise all human capital enhancing measures (classroom training as well as on-the job training); (ii) private sector incentive schemes, such as wage subsidies to private firms, reductions in non-wage labour costs, as well as short work schedules or work sharing and start-up incentives; (iii) direct employment programmes, which take place in the public sector and are aimed at creating and providing public works or other activities that produce public goods or services; and (iv) services and sanctions, a category comprising all measures aimed at increasing job search efficiency, such as counselling and monitoring, job search assistance and corresponding sanctions in case of noncompliance.<sup>9</sup> Over the past decades these measures have become an important element of the functioning of labour markets in most European countries, especially during the last years of the economic downturn, in which governments have made use of these measures to combat increasing unemployment and longer unemployment spells.

In addition to this surge in interest in ALMPs, concerns about the effectiveness and efficiency of such measures have gained special attention among policy makers in the EU Member States. Numerous microeconomic studies on the impact of these types of measures in developed countries can be found in the literature. Heckman, Lalonde and Smith (1999) summarised approximately 75 microeconomic evaluation studies from the US and other

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<sup>7</sup> According to Calmfors (1994), the direct effects on employment, unemployment and earnings act via three mechanisms: (i) an improved matching process, (ii) an increased and enhanced labour supply and (iii) increased labour demand.

<sup>8</sup> ALMPs have different aims such as reducing outflows from employment, increasing inflows into employment, increasing labour market attachment, providing income support, increasing productivity, improving job search efficiency or improving job match quality.

<sup>9</sup> See Kluge (2010) for a more detailed description of the different categories.

countries. For the US economy, Greenberg, Michalopoulos and Robins (2003) provided a survey of 31 evaluations of government-funded programmes for the disadvantaged, and Bergemann and van den Berg (2008) surveyed programme effects by gender.<sup>10</sup> Overall, the results suggest that there is a considerable degree of variation in impact estimates both across different types of programmes and for each given measure.

Focusing on the labour market effects of training measures, we can find ample evidence of their positive effects especially in the medium and the long-run. For instance, Lechner, Miquel and Wunsch (2007) analysed public sector sponsored training programmes for unemployed workers in Germany and found that they increase long-term employment prospects and earnings. Nonetheless, these positive effects need some years to materialise because there are initial negative (lock-in) effects for all programmes. Larsson (2003) reported similar effects for training courses in Sweden. We also find some evidence of the effectiveness of these programmes in transition economies. For example, the paper of Rodriguez-Planas and Jacob (2010) confirmed the positive impacts of training in Romania in the late 1990s for workers' reemployment probabilities. The meta-analysis carried out by Kluve (2010) included nearly 100 separate studies from Europe alone and confirmed the effectiveness of training measures. In the same line, Card, Kluve and Weber (2010) synthesised some of the main lessons in the recent microeconomic evaluation literature. In particular, they conducted a meta-analysis using a sample of 199 'programme estimates' – estimated effects for a particular programme on a specific group of participants – drawn from 97 studies of active labour market policies between 1995 and 2007. Their results suggest that training programmes have a larger effect in the medium and the long-run.<sup>11</sup> More recent studies have confirmed that the effectiveness of training is greater in the medium to short-term than just in the short-term (see Crépon, Ferracci and Fougère, 2012, Lechner et al., 2007; Forslund Fredriksson and Vikström, 2011 and Card et al., 2015).

JSA programmes have been analysed in a number of empirical studies focusing on EU countries. However, the evidence is dispersed and the studies suggest that the performance of such programmes often varies over time and for different types of job search assistance.<sup>12</sup> The work of Thomsen (2009) condensed the findings of some evaluation studies of these programmes in nine European countries. Although the programmes differ across countries, the effects are quite positive overall due to the improved matching of jobseekers and jobs, but also

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<sup>10</sup> There is also some evidence for Latin America countries (Ibarrarán and Rosas, 2009), as well as for low- and middle-income countries (Cho and Honorati 2014, and Grimm and Paffhausen, 2015).

<sup>11</sup> Within training programmes, on-the-job training has proven to be particularly effective in comparison to classroom training (see, for instance, Kluve, 2010).

<sup>12</sup> See Fay (1996), Heckman, Lalonde and Smith (1999), Martin and Grubb (2001), Dolton and O'Neill (2002), Kluve and Schmidt (2002), Blundell et al. (2004) and OECD (2005), among others, for empirical evidence on the variability in the size of the estimated effects of JSA programmes.

due to the threat component that comprises the possibility of the jobseeker to be sanctioned by benefit revocation in case of noncompliance. As regards the effects of JSA programmes over time, most papers agree that they are more likely to be effective in the short-term (see Card et al. 2010, 2015 for a review). Finally, we find some papers that have studied the role of JSA in optimal programmes that combine active and passive measures. For example, the work of Wunsch (2013) assessed the optimality of job search assistance as a function of its effectiveness in raising exit rates to employment for West Germany in the period 2000-2002.

The evaluation of training and JSA programmes in Spain has been scarcer and more recent due to the lack of available data. The most recent works include Mato and Cueto (2008), Cueto and Mato (2009), Cueto et al. (2010), Arellano (2010), Cansino and Sánchez-Braza (2010) and Clemente et al. (2014), all of which analyse training programmes and rely on propensity score matching techniques, and Ramos et al. (2009), who analysed several ALMPs. The work of Arellano (2010) assessed the causal effect of training courses on unemployment duration, providing evidence of the effectiveness of training courses for unemployed Spanish workers on their employment prospects. In particular, the author found that mid-level courses reduced unemployment among workers who received training programmes in the first quarter of 2000 compared to untrained unemployed workers. Other works focus on specific Spanish regions. An example is Mato and Cueto (2008) and Cueto and Mato (2009), who explored the effect of a voluntary regional training programme on employment probabilities. They used two control groups – rejected programme applicants and accepted applicants who decided not to participate – and found that training increases employment probabilities by about 8–9%. Cueto et al. (2010) studied the effect of participation in training (the Spanish *plan FIP*) on the employment probabilities of unemployed in the region of Catalonia for the year 2005 attending to the specific duration of the courses. They found that the positive effects of training increase for courses of longer duration. Another example for Catalonia is the work of Ramos et al. (2009), which analyses the effectiveness of a wide range of ALMPs promoted by the Catalan PES during 2005. They found that, for the majority of the analysed programmes, the employment probability of participants two years after participation is higher than that of the control group, especially in the case of public employment plans, personalised employment support and professional training for the unemployed. In contrast, they found no statistically significant differences either for the social protection programme or the training schools programme. Borra et al. (2012) used administrative data from Andalusia to evaluate a short-duration combination programme (including training courses, labour orientation and work placements) targeted at people who enter from registered unemployment that was administered locally from the capital of Andalusia, with funding from the European Social Fund. They found positive effects in terms of employment probabilities, job security, working hours and earnings in the short-run that are not

maintained in the long-run. Cansino and Sánchez-Braza (2010) evaluated the effect of participation in the *Spanish Training Schools Programme* on the time needed to find a job for the province of Seville in the 1990s. The authors found consistent evidence that participants in the programme found a job more quickly than non-participants. More recently, Clemente et al. (2014) exploited administrative records from the PES of the region of Aragón during the period 2005-2010 to analyse the causal effect of training on employment and unemployment hazard rates. They found positive effects of training on both the job retention rate and the unemployment exit rate from the fourth and sixth month, respectively, but with differences depending on the characteristics of the participants and the duration of the courses.

Finally, we find some evidence on the effects of ALMPs for LTU. Based on impact estimates from over 200 econometric evaluations of active labour market programmes, the meta-analysis of Card et al. (2015) finds that the two types of programmes that deliver the best outcomes in the case of long-term unemployed are training programmes and economic incentives for employment in the private sector. By contrast, the average impact of job search assistance is not statistically different from zero. These findings suggest that well-designed ALMPs might be an effective tool to combat long-term unemployment. Taking into account the persistently high levels of long-term unemployment and the poorly designed ALMPs that have characterised the Spanish labour market in the last years, it is necessary to devote more efforts to studying the most effective measures to improve the employment prospects of the long-term unemployed. This paper attempts to partially contribute to this aim.

### **3. Database and construction of the control group**

#### ***3.1. Dataset and sample selection***

Our empirical analysis is based on microdata from administrative records of the Spanish PES. We focus our analysis on the Autonomous Community of Madrid,<sup>13</sup> one of the most relevant Spanish regions accounting for 1.4% of the total economically active population in the European Union and 2.4% in the Euro area (Eurostat, 2016).<sup>14</sup> Particularly, we combine information from three records: the jobseekers record, the contracts record and the services record during the period January 2010 to December 2012.

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<sup>13</sup> In Spain, labour market policies are transferred to the different regional governments. The Spanish PES comprise the regional employment services of the 17 autonomous communities, which collect regional data about job offers, job requests and contracts.

<sup>14</sup> The Community of Madrid is the 28<sup>th</sup> largest region (NUTS 1) of the European Union and accounts for 1.38% of its GDP (2015).

The jobseekers record includes the universe of jobseekers registered at public employment offices, including both employed and unemployed jobseekers. We only focus on unemployed jobseekers. As in other European countries, a considerable proportion of unemployed workers<sup>15</sup> in Spain are registered at public employment offices, independently of whether they really use this channel in the job search process. Registration in the jobseekers record is voluntary, except for those receiving benefits. Enrolment is also a pre-requisite for jobseekers who want access to active labour market measures and support for active job search. The jobseekers record contains very rich information about personal characteristics (gender, age, education, nationality, language skills, specific occupational work experience, unemployment benefit, time enrolled at PES and others), as well as other features related to the job-search process (geographical area of job search, type of workday selected in their job applications, requested occupation, etc.). In order to identify LTU we use the information regarding the time enrolled at public employment offices. Although it does not exactly correspond with job search duration, insofar as there might be individuals who start their job search process without registering in the employment offices, it can be considered as a proxy variable. Additionally, time enrolled at employment offices is the information used by the Spanish PES in order to identify LTU.

The contracts record includes all the employment contracts that have been secured during a specific period of time. Since the registration of contracts is mandatory, this record contains all the contracts that an individual has had, as well as information on the characteristics of the contract (type of contract and working hours, among others) and some employer characteristics (economic sector, firm size). For the purposes of this paper, we have selected all contracts registered from January 2011 to December 2012 and classified them into two categories: significant and non-significant jobs. Significant jobs comprise those associated with a permanent contract and some temporary contracts. Specifically, a temporary contract is categorised as a significant job if it is of indefinite duration (especially interim contracts and contracts for work and services) and has a minimum weekly working hour of 15 hours, or if it has a minimum duration of 6 months and a minimum of 15 working hours per week. In contrast, non-significant jobs include all the remaining temporary contracts of less than 15 weekly working hours and temporary contracts with a duration of less than 6 months.

Finally, the services record contains the list of all jobseekers that have participated in any ALMP measure, with very detailed information regarding the specific programme. As we mentioned in the Introduction, in this paper we focus on professional training (training hereafter) and job-search assistance. On the one hand, training comprises occupation-specific training programmes that provide unemployed the skills and abilities needed for direct

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<sup>15</sup> According to the Spanish Labour Force Survey, 70% of unemployed workers are registered in public employment offices.

attachment to employment in a specific occupation.<sup>16</sup> On the other hand, JSA programmes focus on helping jobseekers find jobs more quickly or jobs of higher quality than they would get on their own. Thus, JSA programmes comprise both measures intended to facilitate the job-search process as salaried workers, as well as some measures aimed at assisting self-employment. Our research focuses on the former.

In order to construct our specific database, we start by selecting all individuals who were registered as unemployed<sup>17</sup> at employment offices in December 2010 (327,078 individuals after excluding those older than 64 and disabled people). We then merge the information from the jobseekers record with the services record. This procedure allows us to identify participants and non-participants in ALMPs. For the purposes of our study we identify jobseekers who participated in a training or JSA programme during the 12 months prior (January 2010 to December 2010). We identified 14,528 and 75,793 participants in training and JSA programmes, respectively. As Bergemann and van den Berg (2008) pointed out, programmes are sometimes difficult to compare because the boundary between different sets of programmes is sometimes difficult to draw, as training programmes sometimes include job search assistance, and monitoring may entail enrolment in training. In this paper, and in order to avoid potential interactions between the effects of different ALMPs, we eliminate jobseekers that have participated in both types of programmes during the period January 2010 to December 2010. Additionally, jobseekers who participated in other active labour market measures have been discarded from the analysis.<sup>18</sup>

Our sample of non-participants comprises jobseekers registered as unemployed in December 2010 who did not participate in any ALMP measure during a period of three consecutive years (from January 2010 to December 2012; 198,992 persons). As we explain in the following section, we use this group of non-participants to construct a specific control group by applying the coarsened exact matching method (CEM) proposed by Iacus et al. (2009, 2011b, 2012) and Blackwell et al. (2009).<sup>19</sup> The CEM method is described in more detail in the next section.

Finally, the third stage in the construction of the database consists of merging the jobseekers and the services record with the contracts record.

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<sup>16</sup> Mixed programmes combining employment and training ("*Escuelas Taller*", "*Casas de oficio*" and "*Talleres de Empleo*") are not analysed in this evaluation. These three training programmes are aggregated in Eurostat in a single category called "Training at the workplace".

<sup>17</sup> Unemployed jobseekers account for 80% of total registered jobseekers.

<sup>18</sup> Individuals who did not participate in 2010 but participated in 2011 or 2012 are not included in the analysis.

<sup>19</sup> We use the stata module cem coded by Blackwell et al. (2009).

### ***3.2. The control group: the coarsened exact matching method***

When estimating causal effects using observational data, it is desirable to replicate a randomised experiment as similar as possible by obtaining treated and control groups with similar covariate distributions (Stuart, 2010). Nevertheless, data often do not come from randomised trials but from non-randomised observational studies. In this context, matching procedures appear to reduce the bias in the estimation of treatment effects with observational data sets. The most common matching methods involve finding, for each treated unit, at least one control unit that is “similar” on the covariates. While exact matching provides a perfect balance, it typically produces few matches because of curse-of-dimensionality issues.

By far, the most commonly used current matching method is the propensity score matching (PSM) proposed by Rosenbaum and Rubin (1983), which belongs to the class of matching methods known as “equal percent bias reducing” (EPBR). The PSM first summarises the vector of covariate values for an observation by the scalar propensity score, which is the probability of treatment given the vector of covariates estimated in some way, typically via a simple logit or probit model, and then matches each treated unit to control units, matching those units whose propensity scores are as close as possible using, for instance, the single nearest-neighbour method (see Stuart 2011). Nonetheless, as suggested by Iacus et al. (2011b), EPBR methods do not guarantee any level of imbalance reduction in any given data set. Moreover, their properties only hold on average across samples and under a set of normally unverifiable assumptions about the data generation process. In the same line, King and Nielsen (2016) claimed in a recent article that, contrary to its goal, PSM increases imbalance, inefficiency, model dependence and bias. They argue that the weakness of PSM comes from the fact that PSM applies a single model to produce an unbiased estimate.

The coarsened exact matching algorithm (CEM) is a matching procedure designed to improve causal inference by reducing imbalance between the treated and control groups regarding a set of pre-treatment control variables and grouping observations into categories. Contrary to the EPBR matching methods, the CEM procedure ensures that there are no differences in relevant variables between treatment and control units. In fact, there is evidence showing that CEM has a greater capacity than commonly used matching methods in terms of its ability to reduce imbalance, model dependence, estimation error, bias, variance, mean square error and other criteria (see Blackwell et al. 2009, Iacus et al. 2009, 2011a, 2011b, and King et al. 2011a, b).

The CEM method first sorts all the observations into strata, which are defined based on a set of pre-treatment variables. Individuals within the same stratum have identical values for all the

coarsened covariates. The observations within any stratum that do not have at least one observation for each unique value of the treatment variable are discarded. As the idea is to find a control group similar to the treated group, a fewer number of covariates and fewer strata will result in more diverse observations and hence higher imbalance. The richness of our database allows us to avoid this problem by using a wide set of pre-treatment variables. Specifically, the characteristics used in this paper to define strata and for which we require exact matching are: gender, age (coarsened in quinquenniums), education (coarsened in five categories: no studies, primary studies, first stage of secondary education, second stage of secondary education and tertiary education), nationality (Spanish/foreigners), a dummy variable indicating proficiency in a foreign language, a dummy variable indicating whether or not the jobseeker receives unemployment benefits, time enrolled at public employment offices as a jobseeker (coarsened into four categories:  $\leq 6$  months, 7-12 months, 1-2 years, more than 2 years), occupation-specific work experience (coarsened into three groups: no experience, less than 1 year, more than 1 year of experience) and several variables referred to the job-search characteristics.<sup>20</sup>

The CEM method can be applied by matching each treated unit to a weighted average of all control units or, alternatively, by matching each treated unit with a unique control unit (one-to-one exact matching), resulting in the same number of treated and control units. This latter option is only feasible in those cases with large databases. In this paper we apply the weighted procedure.<sup>21</sup>

### **3.3. Descriptive analysis**

When constructing the control groups, it is desirable that the percentage of matched units for treated individuals is as high as possible. As can be seen in Table 1 (last row), in our case the percentage of matched units is very high for both programmes and for both procedures. For the original sample of 14,528 participants in training we find at least one control unit for 13,964 treated units, resulting in a percentage of exact matching of 96.1%, so only 4.9% of jobseekers in the treatment group are left without a matching control and figures are quite similar for participants in JSA programmes.<sup>22</sup>

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<sup>20</sup> Particularly, we include a dummy variable indicating if the jobseeker is searching for a part-time job and the geographical area where he is conducting the search (municipality, region of Madrid, Spain or Europe, or a restricted area)

<sup>21</sup> The one-to-one procedure yields similar results, which are available upon request.

<sup>22</sup> For the one-to-one procedure we get an exact match for 95.6% of treated units in the case of training and 90.6% in the case of job search assistance.

**Table 1. Sample sizes of treated and control groups**

	Training		Job-search assistance	
	Control	Treated	Control	Treated
All	198,989	14,528	198,989	75,793
<b>Matched</b>	<b>139,063</b>	<b>13,964</b>	<b>183,323</b>	<b>72,953</b>
Unmatched	59,926	564	15,666	2,840
<b>% of matched units</b>	69.9%	96.1%	92.1%	96.3%

Table A1 in the Appendix contains descriptive information of the selected sample for participants in both training and job-search assistance programmes.<sup>23</sup> As the control group has been selected using the CEM method, the distribution across pre-treatment variables is the same for treated and control units. Some differences can be highlighted as regards the characteristics of participants in both types of programmes. The percentage of females is higher among participants in JSA, while men stand out among participants in training. In addition, participants in training are younger than participants in job-search assistance (36 vs. 38 years old) and they are also more educated (around 55% of participants in training have secondary or tertiary education, while this figure is only 38% among participants in JSA). Although the percentage of individuals proficient in a foreign language is low in both samples, the figure is slightly higher in the sample of participants in training (24%). More than 50% of participants in both programmes were receiving unemployment benefits, but the figure is nearly 60% among participants in JSA, thus indicating that jobseekers receiving benefits are more prone to take part in JSA programmes than in training. In both types of programmes participants have one or more years of specific occupational work experience, and most of them search for a full-time job, although the percentage of individuals who search for part-time jobs is slightly higher among participants in training programmes. Finally, attending to the geographical area of the job search, we do not distinguish relevant differences between participants in training and participants in JSA. In both cases around 83% of participants were searching for a job within the Community of Madrid.

The percentage of LTU – jobseekers enrolled at the employment offices for more than one year – is quite similar in both samples, accounting for 40.4% and 39.6% in training and JSA programmes, respectively. Nonetheless, some points are worth noting as regards the specific characteristics of LTU. First, women predominate in the LTU subsample, while the percentage of men in the subsample of short-term unemployed (STU) is higher than that of females. In addition, LTU are, on average, around 5 years older than STU. While there are no relevant dissimilarities as regards the percentage of individuals with only compulsory education or less,

<sup>23</sup> Table A1 also includes the original sample distribution of participants and non-participants before extracting the control group by exacted matching. As regards the original sample of non-participants, the percentage of women was higher than the corresponding percentage in both control groups (training and job search assistance), and the mean age was older. The percentage of low skilled unemployed was also higher in the whole sample of non-participants, while the percentage of unemployed with tertiary education was lower.

the proportion of individuals with tertiary education is somehow lower among LTU and the corresponding figure with secondary education is slightly higher. The percentage of jobseekers proficient in a foreign language is low, especially among LTU, with a difference of 5 percentage points (pp) with respect to the rest of unemployed. The percentage of unemployed receiving benefits is higher among those enrolled at employment offices for more than 1 year, with a difference of about 3–4 pp with respect to STU. The proportion of individuals with longer periods of occupational work experience is notably higher among LTU. In particular, among participants in training, the percentage of LTU with more than one year of experience is 70% in contrast to 58% among STU. For participants in JSA, the corresponding figure is 74% for LTU in contrast to 63% for STU. There are no significant differences as regards the geographical area of the job search; nevertheless, LTU seem to be less willing to work outside the region of Madrid.

Finally, and before starting the econometric analysis, Tables A2 and A3 in the Appendix display the short-run employment rates for the treated and control groups according to their personal characteristics. As can be seen, men exhibit higher employment rates than women, with the differences being especially relevant in the case of significant jobs. As regards age, the highest employment rates in significant jobs are found among unemployed aged 25-34 years old, while the lowest ones appear to be associated to the older individuals (55 to 64 years). As expected, the employment rate in significant jobs increases with education, while the unemployed with lower secondary education display the highest employment rates in non-significant jobs. Attending to nationality, unemployed Spanish tend to exhibit higher employment rates than immigrants, although the differences do not seem to be very large, especially as regards non-significant jobs. While employment rates decrease with the duration of unemployment, they increase with specific occupational work experience.

Moving onto the differences between the treated and the control groups, we gain a first insight into the causal effect of participation on the employment probabilities of the unemployed. The general finding is that, for both types of jobs, participants in training and JSA programmes exhibit higher employment rates than the corresponding control groups. In addition, the effect of participation seems to be higher among LTU for both programmes. More specifically, when we focus on the employment rate in significant jobs for LTU, we find that participants in training have a 10.2 pp higher employment rate than non-participants. For STU, in contrast, participation in training increases the probability of getting a significant job in the short run by 5.1 pp. Attending to JSA programmes, differences between the treated and control groups are also positive, but of a lower magnitude than in the case of training. Specifically, LTU participants in JSA display a 2.2 pp higher employment rate in significant jobs than non-participants, while the corresponding figure among STU is just 0.8 pp.

#### 4. Econometric model and results

In this section we estimate the effects of participation in training and JSA programmes during the period January to December 2010 on the employment probability in two time horizons: short-term (January 2011–December 2011) and medium-term (January 2011–December 2012). In order to account for job quality, we distinguish between significant and non-significant jobs classified attending to the type of contract and the weekly working hours as we explained in section 2.

Employment probabilities are estimated using a multinomial logit model where we define a categorical dependent variable  $y_i$  that takes the values 1, 2 or 3 depending on whether the individual  $i$  gets either a significant job, a non-significant job or any job, respectively, during the period January 2011–December 2011 for the short-term analysis and during the period January 2011–December 2012 for the medium-term analysis. We take individuals who did not find any job during the period of analysis as the reference group. Thus, for each time horizon, we estimate two multinomial logit models:  $pr(y_i = j \mid T_i, X_{ki})$ , and  $pr(y_i = j \mid J_i, X_{ki})$ , with  $j = 1, 2, 3$ . Our main interest is on the effects of  $T_i$  and  $J_i$ , where  $T_i$  and  $J_i$  are dummy variables that capture whether individual  $i$  has participated in either training or JSA programmes, respectively. As we coarsened the original numerical variables age and specific occupational work experience when applying CEM, we have included these two variables and their corresponding squares in the vector of explanatory variables  $X_{ki}$  in order to adjust for the remaining imbalance. In addition, a more detailed educational level (7 categories) and the number of months enrolled at public employment offices (and its square) are included as explanatory variables in the estimations.<sup>24</sup> We perform separated estimations for LTU and STU.

Tables 2 and 3 show the estimation results of the treatment effects associated to participation in training and JSA programmes, respectively, where coefficients and average partial effects (APE)<sup>25</sup> are shown. The results refer to the average treatment effect estimated from separated estimations for each specific group (men, women, youth, etc.). The first thing to note is that participation in both programmes exerts a positive and significant influence on employment probability in both significant and non-significant jobs, although the effects seem to be higher on the likelihood of getting significant jobs. These results are true in the short (12 months) and

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<sup>24</sup> If exact matching (i.e. without coarsening) was chosen in the CEM procedure, a simple estimation of the treatment variable on the employment probability would result in an estimate of the sample average treatment effect on the treated (ATT).

<sup>25</sup> In a multinomial logit model, the partial effect of a variable  $X$  on the alternative  $j$  indicates the increase/decrease in the estimated probability for that category taking as a reference the other categories as a whole. Hence, the partial effect of a variable  $X$  on the alternative  $j$  does not need to have the same sign as the corresponding estimated coefficient.

medium run (24 months), which rejects the existence of lock-in effects in our data (Lechner et al. 2007, Wunsch 2016).<sup>26</sup> Nonetheless, it should be noted that, in general, the treatment effect increases in the medium run; a result that is to some extent in line with previous works in the literature (see, for instance, the meta-analysis of Card et al. 2010, 2015).

**Table 2. Participation effect in training programmes on the probability of getting significant and non-significant jobs. Multinomial logit estimations.**

	Long-term unemployed (≥ 1 year enrolled at PES)				Short-term unemployed (< 1 year enrolled at PES)				
	Significant job (y <sub>i</sub> =1)		Non-significant job (y <sub>i</sub> =2)		Significant job (y <sub>i</sub> =1)		Non-significant job (y <sub>i</sub> =2)		
	Coeff.	Average Partial effect	Coeff.	Average Partial effect	Coeff.	Average Partial effect	Coeff.	Average Partial effect	
<b>Jan. 2011–Dec. 2011</b>									
Total	0.699 ***	0.088	0.742 ***	0.041	0.406 ***	0.063	0.468 ***	0.038	
Men	0.777 ***	0.111	0.847 ***	0.046	0.376 ***	0.058	0.468 ***	0.037	
Women	0.630 ***	0.068	0.647 ***	0.037	0.445 ***	0.065	0.468 ***	0.039	
16–24 years	0.482 ***	0.065	0.275 *	0.020	0.268 ***	0.035	0.277 ***	0.029	
25–44	0.767 ***	0.112	0.787 ***	0.048	0.472 ***	0.078	0.512 ***	0.037	
≥ 45	0.572 ***	0.050	0.830 ***	0.031	0.261 ***	0.030	0.611 ***	0.047	
No studies	0.626 ***	0.070	0.735 ***	0.038	0.465 ***	0.062	0.794 ***	0.064	
Primary	0.666 ***	0.078	0.694 ***	0.047	0.340 ***	0.049	0.379 ***	0.035	
Secondary	0.695 ***	0.085	0.797 ***	0.041	0.390 ***	0.057	0.488 ***	0.041	
Tertiary	0.762 ***	0.111	0.798 ***	0.033	0.525 ***	0.091	0.576 ***	0.035	
Spanish	0.703 ***	0.089	0.749 ***	0.041	0.410 ***	0.064	0.457 ***	0.036	
Foreigner	0.645 ***	0.078	0.637 ***	0.038	0.394 ***	0.055	0.567 ***	0.050	
<b>Jan. 2011–Dec. 2012</b>									
Total	0.727 ***	0.113	0.776 ***	0.039	0.518 ***	0.091	0.530 ***	0.030	
Men	0.800 ***	0.134	0.945 ***	0.043	0.479 ***	0.082	0.533 ***	0.029	
Women	0.666 ***	0.095	0.635 ***	0.035	0.567 ***	0.098	0.531 ***	0.032	
16–24 years	0.455 ***	0.083	0.254	0.010	0.324 ***	0.045	0.362 ***	0.030	
25–44	0.819 ***	0.144	0.908 ***	0.049	0.608 ***	0.112	0.574 ***	0.027	
≥ 45	0.589 ***	0.068	0.647 ***	0.025	0.373 ***	0.056	0.634 ***	0.043	
No studies	0.862 ***	0.125	0.989 ***	0.058	0.623 ***	0.105	0.737 ***	0.050	
Primary	0.680 ***	0.102	0.701 ***	0.043	0.422 ***	0.070	0.431 ***	0.029	
Secondary	0.693 ***	0.105	0.782 ***	0.037	0.508 ***	0.083	0.592 ***	0.037	
Tertiary	0.830 ***	0.141	0.918 ***	0.033	0.681 ***	0.129	0.618 ***	0.022	
Spanish	0.731 ***	0.113	0.790 ***	0.040	0.530 ***	0.093	0.517 ***	0.027	
Foreigner	0.666 ***	0.111	0.553 ***	0.029	0.448 ***	0.070	0.650 ***	0.049	

\*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10%.

Estimations include a constant term.

Number of observations: Treated: 13,964. Control: 139,063 (weighted matching)

For the majority of groups, the influence of participation in both training and JSA is higher among LTU, thus suggesting the convenience of participating in these active measures for this group of jobseekers.<sup>27</sup>

<sup>26</sup> A common result in the empirical literature is that activation programmes, such as job search assistance and training, typically produce negative employment effects in the short run (the so-called “lock-in effects”) because during participation, unemployed spend less time and effort on job search activities than non-participants.

<sup>27</sup> For both programmes we tested the statistical significance of the differences between LTU and STU by estimating multinomial logit models for the whole sample of unemployed which included among the explanatory variables a dummy variable for participation in training (or JSA), a dummy for LTU and the interaction effect between participation and LTU. For both programmes we found participation to have a positive effect and LTU to have a

This higher effect of participation among LTU has also been observed in other empirical works for the Spanish case (see Cueto et al. 2010). However, when comparing the effects of training and JSA among LTU, we observe that the effect of participation in training programmes appears to be more intense than that corresponding to JSA in both the short and the medium run. Specifically, among LTU that participated in training, the probability of finding a significant job in a time horizon of 12 months is 8.8 pp higher than that of non-participants, while the corresponding difference between participants and non-participants in JSA programmes is just 2 pp. When looking at the employment prospects within 2 years after participation, the difference in terms of employment probabilities is 11.3 pp for the case of training and 3.2 pp for JSA. Similar results are found when focusing on non-significant jobs. The average partial effects associated to participation in training among LTU are 4.1 and 3.9 pp in the short and medium term, respectively, while the corresponding figures related to JSA are 1.9 and 2.7 pp. However, in comparing the probabilities of finding significant and non-significant jobs, we can conclude that although both active measures appear to be more effective in improving the probability of finding a significant job for LTU, the effect is especially important for participants in training programmes.<sup>28</sup> Thus, participating in training programmes not only increases the employment probability among LTU, but also increases the likelihood of getting a high-quality job.

We now move onto the effects of participation for different socioeconomic groups. The first thing that should be highlighted is that, for all sociodemographic groups, the treatment effects on employment probabilities for both kinds of jobs (significant and non-significant jobs) are always higher among participants in training compared to participants in JSA. However, in line with other papers in the literature (see, for instance, Card et al. 2010, and Kluve 2010) we find differences among the socioeconomic groups that are worth noting.

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negative effect on employment probability, while the interaction effect is positive and significant, thus confirming that participation is more effective for LTU than for STU. In addition, in order to account for differences between different types of LTU according to search duration (time enrolled at PES), we estimated similar models but included three dummy variables to identify jobseekers enrolled from 1 to 2 years (LTU-1), from 2 to 3 years (LTU-2) or more than 3 years (LTU-3). The results suggest that participation in training drives the major effects among LTU-1, while for JSA the highest positive impact of participation is linked to LTU-3. The results are not shown but are available upon request.

<sup>28</sup> In order to account for the duration of the training courses, Table A4 in the Appendix displays the estimation results for the effect of participation in training attending to the specific duration of the courses. Similarly to Cueto et al. (2010) for participants during 2005 and Clemente et al. (2014) for participants during the period 2008-2009, we find that the employment probability increases with the duration of the courses, and reaches maximum values for courses of 2 to 3 months in duration and starts to decrease after 3 months.

**Table 3. The effect of participation in job-search assistance programmes on the probability of getting significant and non-significant jobs. Multinomial logit models.**

	Long-term unemployed (≥ 1 year enrolled at PES)				Short-term unemployed (< 1 year enrolled at PES)					
	Significant job (y <sub>i</sub> =1)		Non-significant job (y <sub>i</sub> =2)		Significant job (y <sub>i</sub> =1)		Non-significant job (y <sub>i</sub> =2)			
	Coeff.	Average Partial effect	Coeff.	Average Partial effect	Coeff.	Average Partial effect	Coeff.	Average Partial effect		
<b>Jan. 2011-Dec. 2011</b>										
Total	0.177 ***	0.020	0.301 ***	0.019	0.126 ***	0.014	0.257 ***	0.025		
Men	0.162 ***	0.021	0.288 ***	0.017	0.121 ***	0.013	0.272 ***	0.026		
Women	0.196 ***	0.019	0.310 ***	0.020	0.130 ***	0.014	0.242 ***	0.025		
16-24 years	0.330 ***	0.055	-0.028	-0.014	0.190 ***	0.030	0.132 ***	0.009		
25-44	0.169 ***	0.021	0.329 ***	0.025	0.108 ***	0.011	0.261 ***	0.026		
≥ 45	0.167 ***	0.014	0.283 ***	0.012	0.121 ***	0.010	0.379 ***	0.032		
No studies	0.136 *	0.014	0.185 *	0.010	0.179 ***	0.025	0.274 ***	0.022		
Primary	0.124 ***	0.013	0.191 ***	0.013	0.133 ***	0.015	0.249 ***	0.026		
Secondary	0.271 ***	0.030	0.506 ***	0.031	0.080 ***	0.016	0.247 ***	0.027		
Tertiary	0.228 ***	0.029	0.487 ***	0.026	0.122 ***	0.014	0.280 ***	0.024		
Spanish	0.186 ***	0.021	0.304 ***	0.019	0.126 ***	0.013	0.275 ***	0.028		
Foreigner	0.120 **	0.013	0.277 ***	0.020	0.130 ***	0.019	0.180 ***	0.016		
<b>Jan. 2011-Dec. 2012</b>										
Total	0.237 ***	0.032	0.411 ***	0.027	0.227 ***	0.031	0.375 ***	0.030		
Men	0.226 ***	0.032	0.446 ***	0.025	0.225 ***	0.029	0.407 ***	0.030		
Women	0.252 ***	0.032	0.392 ***	0.028	0.231 ***	0.032	0.348 ***	0.031		
16-24 years	0.344 ***	0.066	0.132	-0.001	0.240 ***	0.035	0.255 ***	0.019		
25-44	0.260 ***	0.038	0.479 ***	0.036	0.228 ***	0.031	0.389 ***	0.031		
≥ 45	0.164 ***	0.017	0.302 ***	0.015	0.205 ***	0.025	0.449 ***	0.035		
No studies	0.207 ***	0.027	0.371 ***	0.024	0.300 ***	0.046	0.479 ***	0.035		
Primary	0.182 ***	0.024	0.275 ***	0.019	0.215 ***	0.027	0.361 ***	0.032		
Secondary	0.298 ***	0.038	0.635 ***	0.040	0.182 ***	0.023	0.322 ***	0.027		
Tertiary	0.339 ***	0.051	0.661 ***	0.035	0.264 ***	0.040	0.417 ***	0.026		
Spanish	0.245 ***	0.032	0.436 ***	0.028	0.232 ***	0.031	0.386 ***	0.031		
Foreigner	0.193 ***	0.030	0.251 ***	0.018	0.215 ***	0.033	0.333 ***	0.026		

\*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10.

Estimations include a constant term.

Number of observations: Treated: 72,953. Control: 183,323 (weighted matching)

Starting with gender differences in the treatment effects we first observe that, among LTU, training seems to have clearly stronger impacts among men, especially as regards significant jobs (11.1 pp in contrast to 6.8 pp for women).<sup>29</sup> In contrast, when looking at STU, the results reveal a higher influence of training on the probability of getting a job (both significant and non-significant) among women, although the effect is not very relevant in its magnitude, accounting for less than 1 pp in their corresponding marginal effects. Our results are thus to some extent in line with previous works in the literature that find higher positive effects of training among males. This is the case of Clemente et al. (2014) for the analysis of the Spanish region, Aragón. However, other works have provided evidence of positive treatment effects for training

<sup>29</sup> This finding may be partially related to the fact that the period of analysis comprises the years of economic recession, which were characterised by a strong increase in the male unemployment rate as a consequence of the deep contraction of the construction sector. In this situation were male workers were the most affected by the economic crisis in Spain, it seems reasonable that training could be more effective in terms of their employment probabilities, as they require new skills that allow them to switch occupations.

programmes among women (see the review of Bergemann and van den Berg 2008, and Arellano 2010, Cueto et al. 2010, and Herrarte and Sáez 2007, for the Spanish case). Finally, some other works did not find significant gender differences regarding the effects of participation in training programmes (see Card et al. 2010).

With respect to the treatment effects associated to JSA programmes, our results are also in line with some previous works suggesting non-significant gender differences for both LTU and STU (see for instance Biewen et al. 2006, and Graversen and Van Ours 2006).<sup>30</sup>

Looking at differences by age groups, our estimations indicate that the positive influence of participation in training for LTU increases with age until 44 years and reaches its maximum value added for jobseekers aged 25 to 44 years old, for whom the probability of getting a significant job is 11.2 pp higher than for jobseekers younger than 25.<sup>31</sup> The results for the STU are similar, but of a lower magnitude. In contrast, the treatment effect among LTU related to JSA programmes seems to be higher for youth, but only in the case of getting significant jobs, with a marginal effect of 5.5 pp. This result might be partially explained by the fact that young workers do not only have less work experience, but also less job search skills because they have entered the labour market more recently than older jobseekers.

As we saw in the previous section, employment rates in both the short and the medium run increase with educational level. In addition, the treatment effects associated with both training and JSA programmes rise with the educational level of jobseekers. However, in the case of training, this positive relation is only clear with regard to access to significant jobs, while the results for non-significant jobs are much more heterogeneous. In contrast, the treatment effect associated to JSA among LTU seems to increase with education for both types of jobs. The case of LTU with tertiary education is worth mentioning. For LTU, the likelihood of getting a significant job increases by 11 pp if they participated in training, and by 2.9 pp if they took part in JSA programmes. Taking into account the large impact of training on LTU with tertiary education, this type of measure appears to be especially suitable. An additional point to highlight is that, despite being statistically significant, the marginal effect of JSA for low-skilled unemployed is small (around 1 pp among LTU), thus suggesting that these measures are not very effective for the lowest educated workers.

Finally, and attending to nationality, we also notice assorted results. Although our results indicate that participation in both measures increases the employment probabilities of natives and immigrants, we observe that among LTU, the treatment effects of both training and JSA

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<sup>30</sup> However, gender differences in terms of the effects of JSA have been found in other papers (see the review of Bergemann and van den Berg 2008). For example, Biewen et al. (2006), Crépon, Djemeppe and Gurgand (2005), Fougère Pradel and Roger (2005), Lalive, van Ours and Zweimüller (2002) and Weber and Hofer (2004) find higher effects of JSA for women than for men in countries with relatively low female labour force participation

<sup>31</sup> The corresponding marginal effect in the case of getting a non-significant job is 4.8 pp.

programmes on the likelihood of getting a significant job are higher for natives, while the differences between them are almost insignificant as regards non-significant jobs. Although the treatment effect is higher for natives, the high impact that participation in training seems to have on immigrants' employment probability in significant jobs is remarkable (7.8 pp for LTU and 5.5 pp for STU). This result might suggest that the lack of specific occupational skills could be one of the reasons behind the difficulties that immigrant workers face when trying to get high-quality jobs. Thus, participation in training would allow them to improve their skills, thereby contributing to reducing the phenomenon of imperfect human capital transferability (see Chiswick 1978, Sanromá et al. 2015a, b, Simón et al. 2008, among others), and hence improve their likelihood of getting high-skilled jobs. Although foreign LTU also obtain positive results associated to participation in JSA, in this case the employment probability in significant jobs only increases by 1.3 pp.

Summing up, three main findings could be derived from this evaluation. First, in a context of persistent unemployment rates and unacceptable figures of workers in a situation of long-term unemployment, the participation of LTU in ALMPs could allow them to enhance their employability and, more importantly, increase their employability in jobs of a certain quality. Second, the treatment effect associated to participation in ALMPs seems to be higher for LTU than for STU. Finally, our results suggest that the influence of training on the employment probability of jobseekers is more effective than participation in job-search assistance programmes, especially regarding access to significant jobs.

The positive effects of training may be due to different factors. On the one hand, training has an important role as a signalling mechanism: workers that have participated in a training programme are able to signal their quality to firms, and employers may use participation in training to discriminate ex-ante the productivity of workers. On the other hand, training provides workers new knowledge and skills, and therefore increases their professional versatility. This wider professional versatility allows increasing the number of job offers that an individual could receive, hence increasing their employment probability.

As regards job-search assistance programmes, although our results suggest that participation in this kind of measures are of lower magnitude than participation in training, the effect of these programmes on the likelihood of getting significant jobs is non-negligible, especially taking into account that their unit cost is much lower than that corresponding to training.

## 5. Summary and conclusions

Long-term unemployment has reached very high levels in Spain. Even under the hypothesis of stable economic growth in the medium run, the problem will remain at unacceptable levels over the next few years. Therefore, it is an issue that requires a resolute and sustained struggle.

In this paper we have studied the two most relevant activation policies used to combat long-term unemployment: training and job-search assistance programmes. Specifically, we have analysed the effect of participation in both programmes on the employment opportunities of unemployed in different types of jobs, classified in this paper as significant and non-significant jobs depending on specific features related to the type of contract and working hours. For that purpose, we have analysed microdata from administrative records of the Public Employment Services of the Community of Madrid in Spain for the period January 2010 to December 2012, and constructed a specific control group of non-participants using the coarsened exact matching algorithm. This procedure allows us to improve causal inference by reducing imbalance between the treated and control groups regarding a set of pre-treatment variables.

By means of multinomial logit models, we find that participation in both programmes exerts a positive and significant influence on the employment probability of jobseekers, with this result being more intense with regard to the likelihood of getting significant jobs, which is especially relevant taking into account that ALMPs usually prioritize individuals with poor employment prospects. However, the effect of participation in training programmes appears to be higher than the effect of JSA, especially for LTU. Moreover, we do not find lock-in effects, since the positive effect of both programmes is observed both in the short run (12 months) and the medium run (24 months), although the effect is higher in the medium run. Finally, the positive influence of participation appears to be more intense for specific groups.

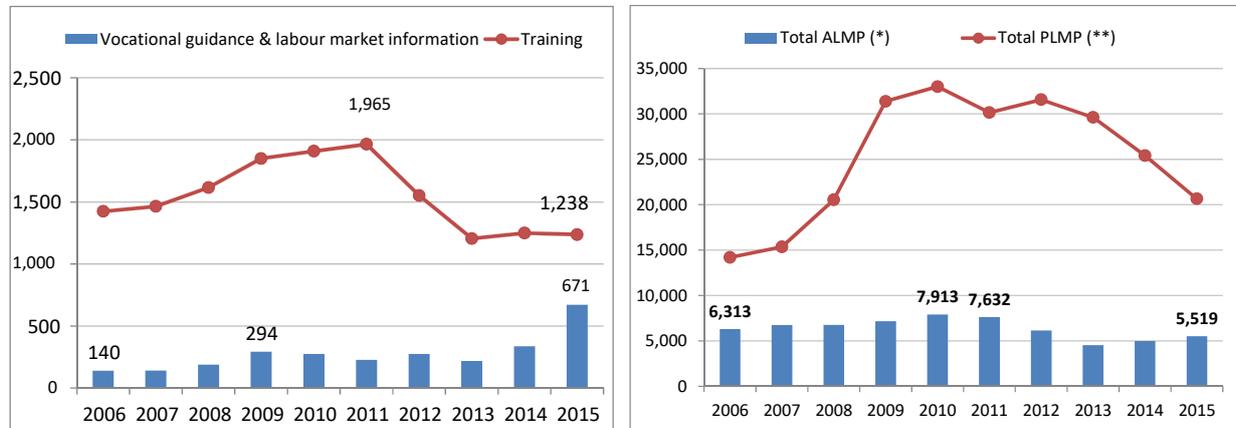
The results of this paper may be of key relevance for the role of PES in the mediation and job matching process. Some additional considerations should be highlighted in this respect. First, given that the prediction of new jobs and their professional tasks content presents great difficulties, training programmes for unemployed should include both measures intended to improve workers' skills related to a specific group of professions, as well as a broad module of transversal skills that are common to other professions. This would be of special relevance for the case of Spain, where a large proportion of long-term unemployed are very unlikely to return to jobs of a similar nature to those they performed in the past. Thus, in order to improve the employment prospects of these workers, PES should design active measures that equip them with the new professional skills most demanded by today's labour markets.

Second, PES should devote more efforts to the digitalisation and multi-channelling of their services. Digital platforms with centralised software and processes might facilitate the provision of some ALMPs, such as JSA programmes, thus ensuring consistent service delivery and achieving a more efficient management of employment offices. However, the digitalisation of services provision should be carried out accompanied by some type of personal guidance, which could be especially relevant for some vulnerable groups such as LTU. In addition, this should be accompanied by the development of more sophisticated profiling tools that allow jobseekers to direct their search more efficiently and PES to provide more effective targeting of ALMP. In this respect, the design of individual action plans that include measures with search components and occupational guidance, on the one hand, and specific modules on professional training, on the other, might be particularly useful for jobseekers with multiple barriers to employment.

Finally, the role and function of PES advisors should shift from simply administrative tasks to a set of tasks that combine the role of broker, counsellor and social worker. This implies that specialised training of PES staff in terms of interviewing and counselling is needed to provide the most adequate services for different types of jobseekers, and to optimise the outcomes of ALMPs.

## Appendix

**Figure A1. Labour market policy expenditure by type of action in Spain. Million euros.**



(\*) Includes: Some labour market services (vocational guidance and labour market information services), training, employment incentives, supported employment and rehabilitation, direct job creation and start-up incentives.

(\*\*) Includes: Out-of-work income maintenance and support and early retirement.

Source: Author's elaboration based on Eurostat data (European Commission - Directorate General for Employment, Social Affairs & Inclusion).

**Table A1. Sample characteristics**

	Original sample before exact matching			Training			Job search assistance		
	Parti- cipants training	Parti- cipants JSA	Non- Parti- cipants	Total	LTU	STU	Total	LTU	STU
				Treated/ Control	Treated/ Control	Treated/ Control	Treated/ Control	Treated/ Control	Treated/ Control
No. obs. - Treated	14,528	75,793	-	13,964	5,639	8,325	72,953	28,862	44,091
No. obs. - Control	-	-	198,989	139,063	56,157	82,906	183,323	72,527	110,796
Women	47.2%	52.4%	49.2%	47.1%	50.9%	44.6%	52.3%	56.5%	49.6%
Age (mean) - Treated	36.35	38.05	-	36.38	39.86	34.02	38.07	41.31	35.95
Age (mean) - Control	-	-	41.35	36.41	39.94	34.02	38.14	41.43	35.99
No studies	3.5%	9.9%	10.5%	3.3%	2.9%	3.7%	9.5%	8.2%	10.3%
Primary	41.5%	52.0%	53.4%	41.8%	42.1%	41.6%	52.4%	53.3%	51.7%
Secondary	28.2%	19.3%	19.0%	28.3%	29.5%	27.4%	19.3%	20.4%	18.5%
Tertiary	26.8%	18.8%	17.1%	26.6%	25.5%	27.4%	18.9%	18.0%	19.5%
Spanish	90.3%	82.4%	85.3%	91.3%	95.0%	88.8%	83.3%	88.2%	80.1%
Proficiency foreign language	25.1%	24.3%	23.0%	24%	21.7%	25.8%	23.4%	20.7%	25.2%
Unemployment benefits	50.7%	59.6%	52.1%	51.1%	53%	50%	59.8%	62%	58%
<i>Time enrolled at emp. offices:</i>									
≤ 6 months	38.8%	38.8%	51.6%	39.8%	-	66.7%	39.6%	-	65.6%
6-12 months	20.0%	21.0%	15.8%	19.8%	-	33.3%	20.8%	-	34.4%
1-2 years	28.8%	29.2%	17.9%	28.6%	70.9%	-	29.1%	73.5%	-
More than 2 years	12.3%	11.0%	14.7%	11.8%	29.1%	-	10.5%	26.5%	-
<i>Occup. work experience</i>									
No experience	18.4%	14.9%	17.1%	17.7%	15.3%	19.3%	14.3%	12.3%	15.6%
1-11 months	19.7%	19.0%	15.2%	19.1%	14.7%	22.2%	18.4%	13.8%	21.4%
1 or more years	62.0%	66.1%	67.7%	63.1%	70.0%	58.5%	67.3%	73.9%	63.0%
Part-time work	1.6%	1.2%	1.9%	1.1%	1.3%	0.9%	0.9%	0.9%	0.9%
Municipality	9.8%	10.9%	17.0%	9.4%	9.9%	9.1%	10.4%	12.9%	8.8%
Region of Madrid	81.8%	81.1%	75.5%	83.7%	83.7%	83.7%	83.0%	80.8%	84.5%
Spain/Europe	3.5%	3.2%	2.4%	2.7%	2.2%	3.1%	2.5%	1.4%	3.2%
Restricted area	4.9%	4.8%	5.1%	4.2%	4.2%	4.1%	4.1%	4.8%	3.6%

**Table A2. Short-term employment rates by personal characteristics. Participants in training vs. control group.**

	Long-term unemployed						Short-term unemployed					
	No job		Significant job		Non-significant job		No job		Significant job		Non-significant job	
	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control
<b>January–December 2011</b>												
Total	59.4%	74.4%	28.1%	18.0%	12.5%	7.6%	44.9%	53.7%	36.9%	31.8%	18.2%	14.5%
Men	53.1%	70.7%	33.8%	21.5%	13.1%	7.8%	41.7%	50.1%	40.2%	35.5%	18.1%	14.4%
Women	65.4%	78.0%	22.6%	14.5%	12.0%	7.5%	48.8%	58.1%	32.9%	27.2%	18.3%	14.6%
16–24 years	57.6%	65.9%	25.6%	19.1%	16.8%	15.0%	45.3%	50.6%	31.2%	28.6%	23.5%	20.8%
25–34	45.2%	64.5%	37.6%	24.7%	17.3%	10.9%	37.6%	47.8%	43.9%	36.9%	18.5%	15.3%
35–44	56.1%	73.3%	31.7%	19.4%	12.2%	7.3%	45.9%	56.3%	37.7%	31.6%	16.4%	12.1%
45–54	70.5%	81.6%	20.1%	13.4%	9.4%	5.0%	56.6%	63.7%	27.9%	26.1%	15.5%	10.3%
55–64	84.5%	94.8%	9.6%	3.9%	5.9%	1.2%	72.0%	80.5%	17.8%	13.7%	10.3%	5.8%
Primary or less	63.4%	76.6%	24.0%	15.3%	12.7%	8.1%	50.6%	59.4%	30.7%	26.8%	18.7%	13.7%
Secondary, 1st stage	58.2%	72.7%	26.5%	17.6%	15.3%	9.8%	45.5%	51.8%	34.4%	30.8%	20.2%	17.4%
Secondary, 2nd stage	61.1%	76.0%	27.1%	17.2%	11.8%	6.8%	45.1%	53.7%	36.3%	31.5%	18.6%	14.8%
Tertiary	56.5%	73.5%	33.6%	20.8%	9.9%	5.7%	40.3%	51.8%	44.3%	36.4%	15.5%	11.8%
Spanish	59.1%	74.3%	28.3%	18.1%	12.6%	7.6%	44.2%	53.0%	37.6%	32.3%	18.2%	14.7%
Foreigners	63.8%	76.3%	24.5%	15.9%	11.7%	7.8%	49.7%	58.7%	32.0%	28.1%	18.3%	13.1%
Not receiving UB	64.6%	79.5%	23.1%	13.4%	12.3%	7.1%	49.0%	57.3%	32.7%	26.9%	18.4%	15.8%
Receiving UB	54.7%	69.9%	32.6%	22.0%	12.7%	8.1%	40.7%	50.1%	41.3%	36.7%	18.0%	13.2%
<i>Time enrolled at offices</i>												
≤ 6 months	-	-	-	-	-	-	42.5%	49.7%	37.9%	34.3%	19.7%	16.1%
6–12 months	-	-	-	-	-	-	49.6%	61.8%	35.1%	27.0%	15.3%	11.3%
1–2 years	54.6%	70.2%	31.7%	21.1%	13.7%	8.7%	-	-	-	-	-	-
> 2 years	71.0%	84.6%	19.4%	10.3%	9.7%	5.1%	-	-	-	-	-	-
<i>Occup. work experience</i>												
No experience	68.2%	77.2%	21.2%	14.9%	10.6%	7.9%	50.6%	60.1%	30.3%	25.1%	19.1%	14.8%
1–11 months	57.2%	72.6%	26.0%	16.7%	16.8%	10.7%	42.8%	48.3%	35.0%	33.0%	22.2%	18.8%
≥ 1 year of experience	57.9%	74.2%	30.1%	18.9%	12.0%	6.9%	43.7%	53.6%	39.9%	33.6%	16.4%	12.8%
No proficiency foreign language	59.8%	74.2%	27.1%	17.6%	13.1%	8.2%	45.7%	53.4%	35.5%	31.3%	18.8%	15.3%
Proficiency foreign language	57.7%	75.1%	31.8%	19.3%	10.6%	5.7%	42.4%	54.4%	41.1%	33.4%	16.5%	12.2%
Searching full-time job	59.2%	74.3%	28.3%	18.1%	12.5%	7.7%	44.8%	53.6%	37.0%	31.9%	18.2%	14.5%
Searching part-time job	72.4%	85.0%	14.5%	9.3%	13.2%	5.7%	53.2%	59.5%	28.6%	26.0%	18.2%	14.5%
Municipality	70.6%	80.9%	20.1%	13.3%	9.3%	5.8%	53.9%	63.1%	29.7%	23.9%	16.4%	12.9%
Region of Madrid	57.9%	73.9%	29.2%	18.3%	12.9%	7.8%	44.0%	52.9%	37.7%	32.6%	18.3%	14.6%
Spain/Europe	59.0%	69.5%	30.3%	24.6%	10.7%	5.9%	35.0%	48.0%	50.0%	37.7%	15.0%	14.4%
Restricted area	61.3%	71.9%	25.2%	18.6%	13.4%	9.5%	50.3%	53.6%	28.1%	29.9%	21.6%	16.5%

**Table A3. Short-term employment rates by personal characteristics. Participants in job-search assistance vs. control group.**

	Long-term unemployed						Short-term unemployed					
	No job		Significant job		Non-significant job		No job		Significant job		Non-significant job	
	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control	Treated	Control
<b>January–December 2011</b>												
Total	71.4%	75.6%	19.1%	16.9%	9.5%	7.5%	52.8%	56.0%	31.0%	30.2%	16.2%	13.8%
Men	68.2%	72.4%	22.8%	20.5%	9.0%	7.2%	48.6%	51.8%	35.7%	35.0%	15.7%	13.2%
Women	73.8%	78.1%	16.3%	14.2%	9.9%	7.7%	57.1%	60.4%	26.2%	25.2%	16.7%	14.4%
16–24 years	60.6%	65.1%	26.0%	20.1%	13.4%	14.7%	46.5%	49.8%	32.2%	29.7%	21.2%	20.5%
25–34	61.2%	65.7%	25.4%	23.6%	13.4%	10.8%	47.2%	49.7%	35.8%	35.4%	17.0%	14.9%
35–44	68.7%	73.9%	21.0%	18.5%	10.3%	7.6%	54.2%	57.6%	30.6%	30.2%	15.2%	12.2%
45–54	77.3%	80.2%	15.4%	13.9%	7.3%	5.9%	60.2%	63.5%	25.9%	25.7%	13.9%	10.8%
55–64	90.3%	94.2%	6.9%	4.4%	2.8%	1.4%	74.0%	80.9%	16.4%	13.2%	9.6%	5.9%
Primary or less	76.0%	78.8%	16.0%	14.2%	8.0%	7.0%	57.1%	60.5%	28.3%	26.8%	14.6%	12.6%
Secondary, 1st stage	70.8%	73.8%	18.1%	17.0%	11.1%	9.3%	50.4%	54.2%	30.1%	29.4%	19.4%	16.4%
Secondary, 2nd stage	69.0%	75.8%	20.7%	17.3%	10.3%	6.9%	51.7%	54.2%	31.2%	31.2%	17.1%	14.6%
Tertiary	66.5%	72.8%	24.6%	21.3%	8.9%	5.9%	48.7%	51.8%	37.2%	36.4%	14.1%	11.8%
Spanish	71.3%	75.7%	19.2%	16.9%	9.4%	7.4%	52.0%	55.4%	31.4%	30.6%	16.6%	14.0%
Foreigners	71.6%	74.9%	18.3%	17.1%	10.1%	8.0%	56.0%	58.7%	29.5%	28.2%	14.5%	13.1%
Not receiving UB	73.8%	81.5%	17.0%	11.9%	9.2%	6.6%	55.9%	61.5%	27.6%	24.1%	16.5%	14.4%
Receiving UB	69.9%	72.1%	20.4%	19.9%	9.7%	8.0%	50.5%	52.1%	33.5%	34.5%	16.0%	13.4%
<i>Time enrolled at offices</i>												
≤ 6 months	-	-	-	-	-	-	48.5%	51.6%	33.8%	33.1%	17.8%	15.3%
6–12 months	-	-	-	-	-	-	61.0%	64.6%	25.8%	24.5%	13.2%	11.0%
1–2 years	68.2%	72.4%	21.2%	19.3%	10.6%	8.3%	-	-	-	-	-	-
> 2 years	80.0%	84.7%	13.4%	10.3%	6.6%	5.0%	-	-	-	-	-	-
<i>Occup. work experience</i>												
No experience	73.8%	80.3%	16.6%	13.0%	9.6%	6.7%	58.5%	63.4%	25.5%	22.8%	16.0%	13.8%
1–11 months	69.2%	74.2%	18.2%	15.7%	12.6%	10.1%	49.1%	51.8%	32.0%	30.5%	18.8%	17.7%
≥ 1 year of experience	71.4%	75.1%	19.7%	17.8%	8.9%	7.1%	52.6%	55.7%	32.0%	31.8%	15.4%	12.5%
No proficiency foreign language	71.9%	76.0%	18.4%	16.3%	9.6%	7.8%	52.8%	56.1%	30.4%	29.5%	16.8%	14.4%
Proficiency foreign language	69.1%	74.4%	21.9%	19.4%	9.0%	6.2%	52.7%	55.9%	32.8%	32.1%	14.4%	12.0%
Searching full-time job	71.2%	75.5%	19.2%	17.0%	9.5%	7.4%	52.7%	55.9%	31.1%	30.3%	16.2%	13.8%
Searching part-time job	84.2%	86.9%	6.2%	5.1%	9.7%	8.0%	61.1%	67.6%	21.2%	18.9%	17.7%	13.5%
Municipality	78.4%	81.6%	14.6%	12.5%	7.0%	5.9%	61.7%	64.0%	24.2%	23.0%	14.2%	13.1%
Region of Madrid	70.2%	74.7%	19.9%	17.6%	9.9%	7.7%	52.2%	55.5%	31.5%	30.6%	16.3%	13.8%
Spain/Europe	63.4%	69.8%	25.2%	22.9%	11.4%	7.3%	45.4%	50.0%	38.1%	37.5%	16.5%	12.4%
Restricted area	73.4%	77.4%	17.4%	15.4%	9.1%	7.3%	52.3%	54.3%	29.3%	29.6%	18.4%	16.1%

**Table A4. The effect of participation in training on the probability of getting significant and non-significant jobs by duration of courses. Multinomial logit models (Reference category: no job)**

		Long-term unemployed (≥ 1 year enrolled at PES)				Short-term unemployed (< 1 year enrolled at PES)				
		Significant job (y <sub>i</sub> = 1)		Non-significant job (y <sub>i</sub> = 2)		Significant job (y <sub>i</sub> = 1)		Non-significant job (y <sub>i</sub> = 2)		
		Coeff.	APE	Coeff.	APE	Coeff.	APE	Coeff.	APE	
<b>Jan. 2011–Dec. 2011</b>										
Total	< 1 month	0.567 ***	0.068	0.802 ***	0.048	0.399 ***	0.061	0.482 ***	0.040	
	1–2 months	0.624 ***	0.076	0.789 ***	0.046	0.343 ***	0.054	0.371 ***	0.029	
	2–3 months	0.782 ***	0.099	0.804 ***	0.044	0.474 ***	0.074	0.537 ***	0.043	
	3–5 months	0.721 ***	0.092	0.691 ***	0.037	0.460 ***	0.071	0.519 ***	0.042	
	> 5 months	0.699 ***	0.091	0.609 ***	0.031	0.203 **	0.027	0.311 ***	0.029	
Men	< 1 month	0.645 ***	0.090	0.785 ***	0.044	0.360 ***	0.055	0.470 ***	0.038	
	1–2 months	0.829 ***	0.119	0.843 ***	0.044	0.385 ***	0.062	0.446 ***	0.034	
	2–3 months	0.937 ***	0.134	1.007 ***	0.054	0.429 ***	0.072	0.425 ***	0.029	
	3–5 months	0.693 ***	0.097	0.839 ***	0.047	0.383 ***	0.054	0.585 ***	0.051	
	> 5 months	0.787 ***	0.117	0.637 ***	0.030	0.216 *	0.034	0.267 *	0.021	
Women	< 1 month	0.460 ***	0.045	0.822 ***	0.052	0.445 ***	0.064	0.498 ***	0.043	
	1–2 months	0.555 ***	0.057	0.755 ***	0.046	0.350 ***	0.053	0.316 ***	0.024	
	2–3 months	0.689 ***	0.075	0.654 ***	0.037	0.562 ***	0.080	0.631 ***	0.055	
	3–5 months	0.720 ***	0.082	0.489 ***	0.024	0.492 ***	0.078	0.367 ***	0.025	
	> 5 months	0.514 ***	0.055	0.594 ***	0.035	-0.007	-0.017	0.352 *	0.044	
<b>Jan. 2011–Dec. 2012</b>										
Total	< 1 month	0.595 ***	0.089	0.767 ***	0.042	0.526 ***	0.096	0.469 ***	0.023	
	1–2 months	0.727 ***	0.112	0.826 ***	0.043	0.483 ***	0.084	0.497 ***	0.028	
	2–3 months	0.749 ***	0.115	0.879 ***	0.046	0.558 ***	0.098	0.558 ***	0.031	
	3–5 months	0.756 ***	0.121	0.682 ***	0.031	0.562 ***	0.095	0.624 ***	0.038	
	> 5 months	0.711 ***	0.112	0.730 ***	0.036	0.323 ***	0.052	0.408 ***	0.028	
Men	< 1 month	0.626 ***	0.102	0.861 ***	0.042	0.449 ***	0.079	0.472 ***	0.024	
	1–2 months	0.861 ***	0.148	0.900 ***	0.038	0.516 ***	0.092	0.521 ***	0.026	
	2–3 months	0.956 ***	0.162	1.097 ***	0.049	0.499 ***	0.086	0.549 ***	0.030	
	3–5 months	0.752 ***	0.126	0.888 ***	0.040	0.506 ***	0.082	0.632 ***	0.039	
	> 5 months	0.736 ***	0.121	0.969 ***	0.046	0.317 ***	0.054	0.351 **	0.019	
Women	< 1 month	0.563 ***	0.076	0.696 ***	0.043	0.624 ***	0.115	0.469 ***	0.021	
	1–2 months	0.695 ***	0.097	0.744 ***	0.043	0.495 ***	0.084	0.484 ***	0.031	
	2–3 months	0.600 ***	0.082	0.717 ***	0.043	0.646 ***	0.115	0.558 ***	0.031	
	3–5 months	0.733 ***	0.110	0.480 ***	0.021	0.567 ***	0.093	0.622 ***	0.043	
	> 5 months	0.667 ***	0.099	0.473 **	0.022	0.199	0.017	0.499 **	0.049	

\*\*\* Significant at 1%, \*\* Significant at 5%, \* Significant at 10%.

Estimations include a constant term.

Reference: Non-participants.

Remaining explanatory variables included in estimations: age (and its square), number of months of occupation-specific work experience (and its square), educational level (6 dummies for 7 categories) and number of months enrolled at employment offices (and its square)

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