# The effect of active labor market policies targeted at youth: evidence from Catalonia[*]

Jaume Blasco      David Casado      Jordi Sanz      Federico A. Todeschini[†]

October 2012

## Abstract

Using a mixed method approach, we evaluate the impact of Catalonia's "Programes de Qualificació Professional Inicial" (PQPI), a public sponsored training program targeted at 16 to 24 years youngsters that did not finished succesfully high school that started in 2008's fall. Building on the work of Caliendo et al. (2011) and Sianesi (2004) we employ propensity score matching on an exceptionally rich administrative dataset to evaluate the two main objectives of the program: labor market integration and re-enrollment in formal education. We complement this analysis with quasi-random interviews of the people involved in the program. Our results indicate that the program has no effect on employment. However, it seem to be successful in enhancing education participation. Further research is needed in order to assess the long term impact on employment outcomes due to increased education.

KEYWORDS: active labor market policies, youth unemployment, dropouts. JEL-CLASS: J00, J08, J68.

---

[*]The authors would like to thanks Jochen Kluve, Pilar Garcia and the participants of the SOC seminar for their contribution. Ongoing reasearch, please do not quote. The usual disclaimer applies.

[†]Corresponding author: Federico.Todeschini@ivalua.cat

# 1 Introduction

One of the most dramatic consequences of last decade financial turmoil is the surge in unemployment in developed countries, a problem now shared even by those countries that in the previous 20 years enjoyed low unemployment rates, like for instance the US. This problem, however, has not been uniform neither between countries nor within them. While some countries have been able to keep unemployment relatively low (Japan, Netherlands and Austria) others like Spain (21%[1]), Ireland (14.5%[2]) or Portugal (12.5%[3]) are experiencing one of the worst labor market performance in decades.

In that context, youth unemployment is proving to be a larger problem. Even before the beginning of the crisis, youth unemployment more than doubled adult unemployment rate(Scarpetta et al. (2010)) with the notable exception of Germany and Japan. Spain and Catalonia, an autonomous administration within Spain, have not been an island in the sea. Indeed, as a consequence of the harsh economic conditions at the end of 2010 there were more than 600 thousand unemployed, of which more than 16% were between 16 and 24 years old, a situation that is not to be found in previous recessions (OCDE (2011)). Interestingly, more than 42% of that subset were high school dropouts.

Even thought there are economic grounds for youth unemployment to be higher than adult's, as initially lower skills, less work experience and the financial possibility of allocating more time searching for a job that matches their preferences, these vulnerabilities are expected to be transitory. However, evidence suggest that a persistently large share of the youth experience significantly long spells of unemployment, with a strong imbalance towards those with a low educational attainment(Quintini and çand S. Martin (2007)).

From early in the crisis, the Catalan administration implemented a series of active labor market policies (ALMP) with the intention of moderate downturns, increase the chances of access of unemployed workers to jobs and improve job-related skills. The "Programes de Qualificació Professional Inicial" (PQPI) are intended to re-enroll high-school dropouts back into formal education and provide them some job-skills in order to improve their chances of finding a job. Governments have very good reasons to allocate resources in those ALMP aimed at the unemployed and low ed-

---

[1]Data from the Instituto Nacional de Estadísticas de España

[2]Data from Central Statistics Office of Ireland

[3]Instituto Nacional de Estadista de Portugal

ucated youth. Among the many adverse effects from these two problems, we can highlight not only the reduction in future employment probability of this particular group (Burgess et al. ( 309)) but also the social problems that are associated with these phenomena, as for instance the depreciation of human capital, rising crime rates and drug abuse (Bell and Blanchflower (2010).

Program evaluation should play an important role in the design of these kind of programs. However, so far only a few studies in Spain have analyzed the effectiveness of these targeted policies. In the catalan case particularly, both the novelty of the program as well as potential data limitations have restricted so far such an analysis. We aim to fill that gap using a mixed method approach, combining quantitative analysis of a unique data set from administrative records with interviews to participants in the program.

By exploiting detailed information on individual pretreatment characteristics, we are able to match participants to individuals that meet the requirements to participate but have not. We combine this quantitative analysis with qualitative information from interviews to all different types of people involved in the program: instructors, students and program officers. By these means, we can establish whether non observable information can bias the estimated impact and therefore improve the quantitative analysis. Also, it allows us to have a better understanding of the implementation process and see whether the objectives of the program are shared among the different participants.

We estimate the program's impact using a quasi-experimental evaluation framework on two separate types of outcomes: employment probability (probability of working in a given quarter, accumulated number of quarters worked, probability of working in a long term contract and probability of working in a full-day job) and educational re-enrollment (probability of obtaining the high-school diploma, probability of enrolling in vocational schooling and probability of finishing the vocational school). Based on a justifiable conditional independence assumption, we apply semi-parametric matching techniques. To account for differences due to program adjustments and different setups, we estimate the treatment effects separately by program/year. Our findings suggest that while the program has no effect improving short run employment probabilities, it does seem to be successful in enhancing education participation.

The remainder of the paper is organized as follows. In section 2 we analyze how our paper fits in the literature. In section 3 we depict the Catalan education system, and we provide details on the policy. In section 4 we explain the data used and the identification strategy we follow. In

section 5 we analyze the results from the implementation of the id strategy. Finally, in section 6 we conclude the paper and introduce the potential research agenda to follow.

## 2   Relevant literature

The literature on ALMP has experienced an important growth during the last ten years. The meta-analysis done by Card et al. (2010) and Kluve (2010) review most of the evaluations that have been performed on these policies. Only one of the included evaluations is a program conducted in Spain. There are three more published evaluations nos Repiso and Braza (2009) i Cueto and Mato (2009) that were not included in the meta analysis. However, all of them are policies where the weight of the activation is mostly on subsidized jobs with no formal training. Both of the two meta-analyses conclude that training is one of the effective ALMP. However, the way the training is designed or the who is targeted is supposed a very relevant parameter in order to assess the effectiveness of the program.

In that sense our research contributes to the literature in two important dimensions. First, our analysis includes a mixed-methods approach that allows us to have a better understanding of the limitations in our identification strategy and also helps grasping the results of the quantitative analysis. Second, we were able to gain access to a full administrative data record that allows to have all the unemployed from where to create our control group, something that has never was done for any spanish ALMP in the past.

UNFINISHED...

## 3   Policy Description

Poor labor market performance has been usually addressed with different types of policies: training, private sector incentive programs, direct employment programs in the public sector and measures aimed at enhancing job search efficiency not only to improve the access of unemployed workers to jobs, job-related skills but also with the idea of reducing structural imbalances, support at-risk employers and moderating cyclical downturns.

Catalonia's government started in 2006 several programs addressed to those students older than

16 years that failed to obtain they high school diploma with several objectives [4]. First, raise their abilities in order to match them to the labor market demands. Second, increase the probability of labor participation. Third, increase the chances of studying in the future. Among that group of programs. The 'Programa de Qualificació Professional' (PQPI) demands a triple requisite to enter the program: on top of the aforementioned two on age range and high school drop out condition, the person also has to be registered in the unemployed office.

The PQPI stands as one of the few programs that has the mandate to meet both the labor and educational objective. In order to do so, PQPI's programs offer a differentiated training from high school that consists in smaller groups (from 10 to 15), more tutoring from professors and flexibility towards the student profile. On top of that, the syllabus[5] has a more practical component with different specializations related to the labor market that the student can choose from and a between 150 to 250 hours of real work experience, which for many of the students is a first time experience. Those students that successfully complete the program have a very good advantage (less evaluation than a person that didn't finish high school) to start a more specific professional training program and those that have a very high grade can enter the program without having to pass any test. One of the objectives of the programs is to increase graduation from professional training programs among those students that do not complete high school. Whereas the program has this twofold objectives (labor market integration and increase students formal abilities) the program does not explicitly says which of the two objectives is the primary target.

The program is run in private (PQPI-S) and public centers[6] (PQPI-FIAP) and come at cost zero for students. While private centers have more autonomy to which kind of student enters the program and to hire professors, in order to start the program every year they have to wait for the approval of general subsidy that controls the program. Because private schools are only paid if a determinate part of the class successfully complete the training, they have an incentive to pick the 'best' students, cream skimming the applicants[7]. Moreover, the PQPI-S have tutoring system which during the interviews process was regarded as a very important factor of success of the program. This system, however, is not available in public centers. Consequently, we should expect better results in the PQPI-S than in the PQPI-FIAP. However, private centers have the tendency to

---

[4] According to the Department of Education, the ratio of high school diploma to 15 year old population (high school diploma expected age) was 76.3%

[5] The duration of the course is between 800 and 1100 hours

[6] For public centers the maximum age is 21 years.

[7] Indeed, abandonment rate in PQPI-S is about 20% lower than in the FIAP one

Table 1: Ratio of coverage of the program

|            | 2008-2009 | 2009-2010 | 2010-2011 |
|------------|-----------|-----------|-----------|
| PQPI-S     | 4.6%      | 5.0%      | 4.5%      |
| PQPI-FIAP  | 2.1%      | 2.6%      | 1.9%      |
| Total PQPI | 6.7%      | 7.6%      | 6.4%      |

Table 2: Coverage of PQPI-S and PQPI-FIAP

| Geographic Service | 16-24 population | Target population | Unemployment index | Aggregate Programs | | PQPI-S | | PQPI-FIAP | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | Participants | Coverage Rate | Participants | Rate of coverage | Participants | Rate of coverage |
| Baix Llobregat | 132.66 | 5.465 | 4,1% | 551 | 10,1% | 404 | 7,4% | 147 | 2,7% |
| BCN-Ciutat | 141.487 | 3.496 | 2,5% | 540 | 15,4% | 375 | 10,7% | 165 | 4,7% |
| Girona | 72.642 | 3.573 | 4,9% | 146 | 4,1% | 73 | 2,0% | 73 | 2,0% |
| Lleida | 41.307 | 1.687 | 4,1% | 70 | 4,1% | 29 | 1,7% | 41 | 2,4% |
| Tarragona | 61.406 | 3.025 | 4,9% | 311 | 10,3% | 210 | 6,9% | 119 | 3,9% |
| Terres de l'Ebre | 18.211 | 761 | 4,2% | 87 | 11,4% | 19 | 2,5% | 50 | 6,6% |
| Vallès Occidental | 103.965 | 4.763 | 4,6% | 478 | 10,0% | 351 | 7,4% | 127 | 2,7% |
| Vallès Oriental | 128.513 | 5.636 | 4,4% | 604 | 10,7% | 457 | 8,1% | 147 | 2,6% |
| Catalunya | 700.191 | 28.406 | 4,1% | 2.787 | 9,8% | 1.918 | 6,8% | 869 | 3,1% |

propose courses that require lower organizational costs and this might compensate for the positive creaming.

The program covers a low percentage of the potential population, that is, people from 16 to 24 (16 to 21 for PQPI-FIAP ), that did not complete high school diploma and have signed-on in the the unemployment office, as we can see in table 1. Since only those that want to work are registered in the in the unemployment office, the real problem might be much larger and consequently that ratio is expected to decrease if we consider the non working population instead of the registered one.

The geographical coverage of the program in terms of size of the municipality and unemployment index[8] can be analyzed in figure 1. As we can see, there is a positive correlation, even tough a small one, between unemployment and coverage.

## 3.1   Data sources

The empirical analysis done in this papers uses four different datasets that haven been through a unique identification. Figure 2 shows how the datasets were integrated[9].

- Catalonian occupational service: This dataset identifies who has participated in the program and it also identifies which type of center the individual attended, when did it start and when did it end and also if the program was succesfully completed or not.

---

[8]For reasons of data limitations, the unemployment index is calculated by dividing the registered unemployed to total population between 16 and 24 and just not the active part of it

[9]For obvious legal reasons, the data is subject to protection clauses and therefore we are not allowed to make it publicly available.

Figure 1: Coverage of PQPI-S and FIAP by unemployment index and municipality size
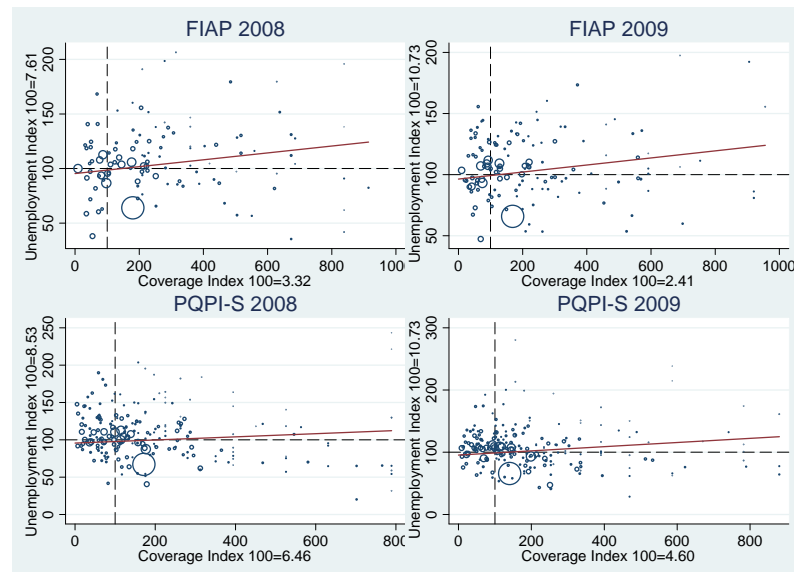


- SICAS: This dataset identifies all of those that are registered as unemployed or actively looking for a job in spite of having one. The register contains information on demographics, languages, dissability information, previous jobs and sector and also his preferences for a job, like moving geographically, how much hours a day he would like to work (that is, full time or not) or if he is willing to accept more than one specific ocuppation. However, this dataset does not has information on his family (marital status, kids) and the time left to stop receving unemployment benefit.

- Social Security information: This dataset provides information on whether the individual was working or not during each quarter since the start of 2005, and the type of contract she/he had. Unfortunately we are not able to determine if the individual has worked in the informal sector.

- Department of education dataset: This dataset provides information on whether the individual has enrolloded in a high school for adult or in a professional training program and whether she has succesfully completed it

7

Figure 2: Integration of the datasets used in the analysis
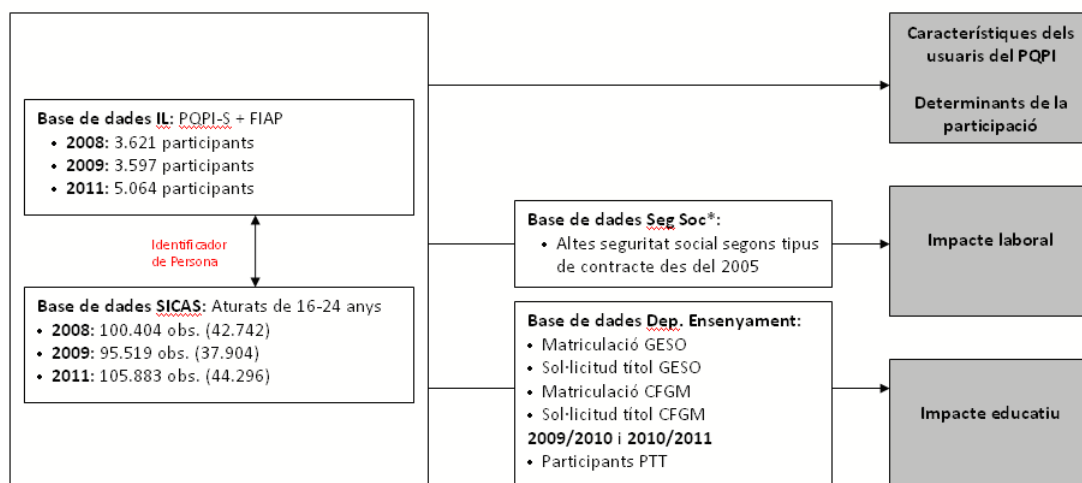


## 3.2 The selection of students

A crucial question to answer in order to evaluate the program's impact is to determine which are
the factors that decide participation in the program. While there are some objective criteria to enter
in the program (be in the corresponding age range, be a high school drop out and be registered in
the unemployment office) there is no established criteria of how to decide in case of an excess of
demand. As one of the most relevant bias in program evaluation is selection bias, a better picture
of the characteristics of participants and non participants is needed to assess the magnitude of that
bias.

**Quantitative analysis**  Following Sianesi (2004) we do not exclude from the control group those individuals that may have participated in the program at a later stage. Therefore the control group includes all individuals that meet the requirements to participate in the program and have not participated in it at least as yet. In tables 3 and 4 we can see the characteristics of the individuals that participated in the program and those who, although eligible, did not participate in the program for both types of centers - PQPI-S and PQPI-FIAP - during the 2008/2009 academic year[10]. As we can see, participants and non participants are quite different in many characteristics that we can suspect are directly related to labor and educational outcomes, like sex, nationality, previous experience, etc. Most of the differences are common to both type of subprograms, the PQPI-S and PQPI-FIAP. Consequently, we can conclude that observable characteristics are not balanced between the two groups of individuals

A closer look at labor market participation, we can show us how different the two groups are. On table 5 we can see that not only program participants have a significantly lower participation rate than non enrolled ones but also that the difference changes a lot between this period[11].

Even though this piece of information is be a valid check of the differences between participants and non participants on observable characteristics that may have an influence both on the outcome and on the decision to participate, it has the disadvantage of not being able to control for more than one characteristic at the time. Therefore, we complemented this information with a multivariate regression of participation on this variables to see which of them are the most important observable characteristics driving the decision to enter the program. Figures 3 and 4 shows the marginal effects of a logit regression of participation on the group of variables.

There are a couple of thing worth mentioning from figures 3 and 4. The probability of participating in each of the two types of programs decreases with age. Also, having previous working experience significantly decreases the probability of participation as well as being from outside the EU (only significant in the case of PQPI-S) or the fact of living in a city below 150 thousands inhabitants. On the other hand, participation increases among those that demanded only one type of occupation. Also, we can see that the different unemployment offices have a significant effect on participation. That is, it seems that participants have 'less' to offer to the labor market relative

---

[10]It is important to remember that public centers have a different age range and that the start of the programs differs between the two programs for bureaucratic reasons

[11]At first, the labor market behavior of non participants might be seem as dubious. However, we should bear in mind that only those unemployed at the start of the program can be a valid control group and that's why we observe such behavior in quarters prior to the start of the program

Figure 3: Determinants of participation in PQPI-S: Marginal effects



Note: In percentage
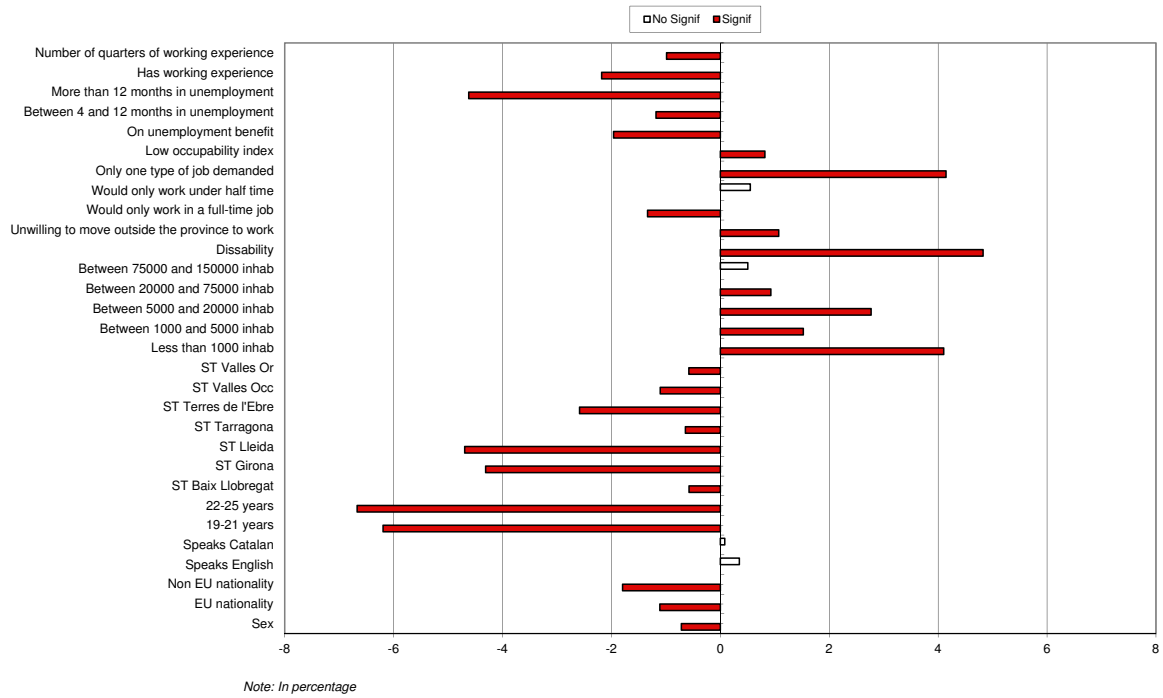
to non participants. Consequently we should expect a negative bias from unobservables.

**Qualitative analysis**  What is the logic behind these differences between participants and non participants and between participants in public centers and participants in private centers? The interviews to the different actors involved in the selection process are a very important tool to fully understand the process and shed more light on the potential unobservables that drive selection. As we previously explained, the strategies for the selection of students differ between the PQPI-FIAPs centers (public centers) and its subsidized version, PQPI-S (private centers). According to professors and directors of PQPI-FIAP centers, the Department of Education establishes some fixed criteria for assessing candidates. An interview is then held with each of the candidates and they fill out a guided and standardized questionnaire prepared by the Department. The answers are then sent to the school committees of each territory, who balance the offer and the demand, and finally the candidates are chosen, with the approval of the educational centre that will take them, which has the last word. In this process, the selection usually gives priority to those candidates in

10

Figure 4: Determinants of participation in PQPI-FIAP: Marginal effects



Note: In percentage
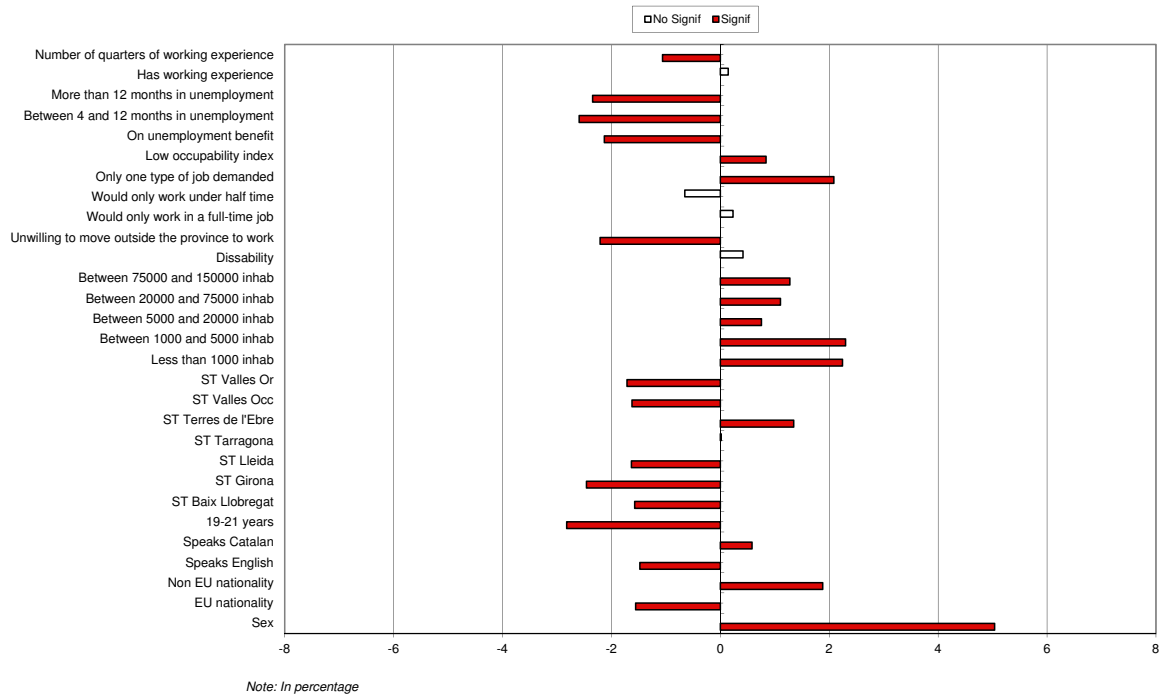
situations involving the risk of social exclusion, but who display a motivation to participate in the program.

In the case of the subsidized PQPIs, the criteria established by the regulating decree are quite lax, as they only indicate that the program should be addressed mainly to workers who are unemployed, over the age of 16 and younger than 25 and who have not obtained the graduate certificate in obligatory secondary education. Within this framework, in general terms the selection is left to the criteria of each centre that will offer the classes, and accordingly, the requirements are more open and depend on the sensitivity of each centre. In this case, the tendency to look for to choose the best from among the candidates. Accordingly, the replies of the people interviewed are clear with regard to the main selection criterion: motivation. Beyond that, there are also other characteristics that are taken into consideration in the selection process:

- That they come directly from ESO

- That there be clear support from parents (family willing to help)

11

- They should have repeated the school "curriculum" as few times as possible

- They should not have a "conflictive" past

- That should be from the territory

- A maximum of 25% of immigrants per group

- A maximum of 2 persons with special learning needs per group

Notwithstanding this, the selection criteria of the entities that benefit from the subsidies are not uniform, and several have mentioned having the same difficulties as the PQPI-FIAP centers to balance the selection between the students who are most in need of a last opportunity and those who have more aptitude to take advantage of it.

The selection strategies used to identify these profiles with greater clarity are equally variable. The use of access tests is common and mention has even been made of looking into the criminal records of the candidates in collaboration with the municipal police. In other cases, collaborations are established with the primary social services to make a "social diagnosis" of a series of possible candidates.

A fundamental element in the selection process is the relationship between the demand and offer of places. In this regard, there seems to be a greater demand for the PQPI-S than for the FIAPs, although there are some major exceptions, depending on the speciality. When there is more offer than demand, the selection process does not work, as all the candidates admitted.

Even though there are certain similarities in the PQPI student profiles (students who have not passed ESO, with individual, family and social problems associated with school failure, and who express motivation), the aforementioned management differences mean that the FIAPs tend to accept more "problematic" profiles than the subsidized PQPI-S. The differences in the composition of the students may condition the final result of the program measured in terms of the proportion of students who finish the course or the proportion of those who pass the entrance test for the CFGM.

# 4 Identification Strategy

We understand that the best set up to evaluate programs such like PQPI would be a randomized control trial, where some of the drop outs are offered the usual pathway and some are offered this new. However, we did not have that possibility and we must deal with observational data in order to assess the impact of the program. This leaves the

As we previously mentioned, in order to participate in the program the person should be a registered unemployed aged between 16 and 24 (21 in the case of public centers) and succesfully completing high school. For that reason we restricted the potential control group to the subgrup of registered unemployed that met the remaining characteristics on quarter before the start of the program. Since the program covers the academic year, all the courses start more or less by the end of the third quarter, and the actual month depends pretty much on whether it is a public or private institute. Consequently, we focused only those unemployed at the moment of beginning of the course since people that become unemployed after that point would have to wait one more year to be enrolled. We also discarded those individuals that were enrolled in any other program at the same moment. As we saw in the previous section, the difference between participants and non participants is quite large for many of the observable variables.

As the Imbens and Rubin (2011) test[12] yields a result larger than a quarter, a multivariate regression will not be able to control for those differences between participants and non participants. For that motive, we implemented a non parametric technique to match participants and non participants and estimate consistently the average treatment on the treated, that is the average treatment on the treated, $ATT = E[Y^1|D=1] - E[Y^0|D=1]$, where D is the treatment indicator variable, $Y_i^1$ is the outcome for treated individuals and $Y_i^0$ the one for non-treated individuals.

The identification strategy we follow in this paper is similar to the one used in Caliendo et al. (2011) and Sianesi (2004). Indeed, in order to solve the fundamental problem of evaluation, that is, not being able to observe at the same time the individual treated and non-treated, we use the actual observed outcome to proxy for $E[Y^0|D=1]$. Because simply using $E[Y^0|D=0]$ will lead to a non consistent estimation of the ATT, we condition on the probability of participation in the program $Pr(D=1|W)$, where W is a set of observable characteristics that influence participation and requiring that every treated individual has a counterfactual, that is $Pr(D=1|W) < 1$ (weak overlap). In order to ensure that the conditional independence assumption holds ($Y^0 \propto D|W$), we

---

[12]Absolute difference of the means over the square root of the sum of the variances

include demographic information, regional characteristics, unemployment benefits, willingness to work, timing of unemployment and labor market history, including the type of contract held. However, we can not include variables reflecting health status (beyond disability), job search effort or characteristics of last employer. However, we believe the CIA is still a reasonable assumption in this context. Also, as we observed in the previous subsection, the program has a coverage below 10% and thus we can assume that the stable unit treatment value assumption holds Imbens and Wooldridge (2009). And even though we are not able to capture directly preferences for leisure, fertility decisions Lechner and Conny (2011) shows that controlling for standard demographic variables already removes a substantial part of the potential selection bias.

The objective of the matching technique is to replicate an experimental setting, that is, make the control group identical to the treatment group in everything but participation status. To do so, the matching uses all the available observable information (demographics, preferences, geographic location, etc) that could influence both the decision to participate in the program and the outcome. The key assumption is that unobservables are not rellevant (not correlated at the same time with participation and outcome) or that observable characteristics are a good proxy of unobservable's. For this reason, it is really important to include labor history or the working attitude. The idea of the matching is to compare individuals with similar characteristics

Incorporating too many variables to match the individuals has the usual curse of dimentionality problem. In order to avoid such burden, we use the technique of the propensity score matching which reduces the dimentionality to one dimension and then matches treatments and controls on the basis of the propensity score, that is, the probability that a person participates conditional on his characteristiques. In this particular case, we opted for a non parametric version of the propensity score matching which is the kernell matching. The algorithm for the matching is the following one:

1. Estimate using a logit regression the determinants of participation

2. For each of the individiuals in the sample, predict the probability of participation in the program $\hat{P}(X)$ (propensity score)

3. Restric the sample to the probability common support. Eliminate from the control group those observations with estimnated probabilities lower than the minimun in the treatment group or higher than the maximun in the treatment group.

14

4. Take one observation from the treated group

5. Calculate the euclidean distance between the ps of this individual and all the non treated individuals such that we can find those non participants that are more similars.

6. We calculate the counterfactual of the treated individual as the weighted kernel average of the most close individuals, where the weight is proportional to the distance between ps of the treated and the non treated as described in the following formula:

$$\hat{Y}_i^c = \sum_{j \in D=0} \frac{\kappa\left(\frac{p_i - p_j}{h}\right)}{\sum_{j \in D=0} \kappa\left(\frac{p_i - p_j}{h}\right)} Y_j$$

7. Once a treated individual has been matched, we remove him from the list

8. We repeat 4-7 until each treated invididual has been matched

9. If after the ps matching some of the variables have a statistically different mean between treated and control, reformulate the logit in step 1 including second and third order of the variables. Repeat 1-8 until the matched sample balances

10. Using the matched control group, we can now calculate the average treatment effect on the treated as:

$$\hat{\alpha}_{att} = \frac{1}{n^T}\left(\sum_i Y_i^T - \sum_i \hat{Y}_i^C\right)$$

A second component of the identification strategy was the separation in the matching algorithm of those going to private centers and those going to public centers as the qualitative analysis showed us that there were good reasons to suspect different strategies. An unplublished paper by Ramos et al. (2009) also focused on several ALMP that were carried in Catalonia during 2005 using matching techniques. Their analysis however treats every single program as equivalent. Leaving aside whether they have done a good job or not in the matching process, we believe that mixing different programs is a wrong strategy in order to obtain the determinants of participation as different strategies are followed by the involved actors. In our specific case, we argue that considering public centers and private centers participant as similar individuals would lead to a bad specification and thus we made a different matching for each of them.

15

## 4.1 Outcomes analyzed and empirical implementation

As the program has a twofold objective we focus on those two objectives to evaluate the program's effectiveness. One objective is labor market integration. To proxy for that we consider four possible outcomes: the probability of working, of working under a full-time contract, of working under a permanent contract and also the accumulated number of quarters worked since the beginning of the program.

Another objective is re-enrollment in the formal educational system. Here we explored four outcomes to proxy for that objectives: probability of enrollment in the ESO, graduating from an ESO, enrollment in a second level formation course and graduating from a second level formation course.

We analyzed this outcomes for all the participants and a series of subpopulation doing separate matchings for each of them, like only 16 years (which by law requirements should not have a labor history beyond a few quarters, which facilitates the matching), 16 years students with a positive evaluation, 16 years males, 16 years female and 19 years or more (a group with full labor history). Table 5 synthesizes this information.

Figure 5: Outcomes Analyzed by subgroups

| | Labour Outcomes (All programmes) | | | | Educational outcomes (PQPI-08 and FIAP 08 only) | | | |
|---|---|---|---|---|---|---|---|---|
| | Probability of Working | Number of quarters worked | Probability of having an indefinite contract | Probability of working full-time | ESO Enrolment | CFPM Enrolment | ESO Graduate | CFPM Graduate |
| All | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| Aged 19 or older | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 16 year old | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 16 years old with positive evaluation | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| 16 year old males | X | X | X | X | X | X | X | X |
| 16 year old females | X | X | X | X | X | X | X | X |

## 4.2 Results of the matching algorithm

The propensity score matching is implemented by means of non parametric kernel, using a logit to estimate the probability of participation, making use of all the information we have on the observable characteristics of the individual. In order to balance the distribution of observable characteristics, we include some interaction among some variables, imposing the common support. Standard

errors are obtained by bootstrapping. We also implemented other methodologies, like coarsened exact matching Blackwell et al. (2010) to perform the matching or implementing weights instead of the kernel matching. The results, however, remained mainly unchanged and we therefore decided to include the most common version of the matching algorithm[13].

Tables 6 and 7show how much of the difference in the variables is reduced by means of the matching[14] When we analyzed the impact on different subgroups of the population, such as 16 years old male, we proceeded to match that particular subpopulation[15]

# 5 Results and policy implication

The teachers and tutors of the PQPI, as well as the majority of the technicians from the administrations who were consulted, tend to recognize the relevance of the PQPI as a specific and appropriate resource of offering large number of students who complete ESO without graduating an opportunity to continue in the educational system or to prepare for the job market. Both professionals and students as well emphasize the fact that the impacts of the PQPIs extend to social dimensions and personal development that go beyond reintegration into the educational system or participation in the job market. These dimensions include improvements in the attitude, behavior, self-esteem and maturity of the young people, the welfare of their families and support for the social inclusion of some students who have just arrived.

**Qualitative impact analysis**   According to most of those interviewed the option of following the C module during the same year as the PQPI is not a very realistic one, and the results have not usually been good for the students who have tried it. On the other hand, the use and success of the C module is more common in the year after the PQPI, when the students have more time and/or have recovered a certain level of confidence about their capacity to study.

In this respect, some of those interviewed stated that the adult learning centers have a traditional format and training structure that is very similar to ESO, at least for the classroom-based lessons, and this not well accepted by students with a PQPI profile.

---

[13]Results available upon request

[14]On top of these variables, we also included first and second orders of the variables. We do not report those results, although they are available upon demand.

[15]Those results are not presented in order to reduce the extension of the paper. However, they are available upon request

A considerable effort is made at the PQPI to get the students to register for and pass the tests to gain access to the intermediate grade training cycles. The efforts during the third quarter at the PQPI are basically dedicated to this aim, as the teachers at the centers explain. Therefore, this is the preferred and most probable option in terms of continuing the pathway after a PQPI.

Generally speaking, the students who sat the access tests for the training cycles have understood that medium-term training is the most effective mechanism in terms of finding work and being able to leave their parents' home. In some cases, when they started the PQPI, they were already aware of the need to continue their studies

For those who do the test and who end up accessing the training cycles, the experience is usually quite positive, insofar as they find a reasonably adequate connection between PQPI and CFGM, both in terms of the structure and format of the teaching and the level of requirements.

Even though the efforts are focussed on ongoing training, not all PQPI graduates choose this option. In fact, following a training pathway has become more frequent in recent years as a consequence of the fall in demand in the labour market. However, some students continue to move directly towards the labour market. In these cases the strategies of the training centres are focussed on offering minimum support in the search for a job.

**Quantitative impact analysis**    Figures 8 to 11 show the labor integration impact of PQPI for the general population and for the subgrup of 16 years old with a positive evaluation from behalf of the professors. According to our findings, the two programs have at best a non significant impact on the probability of being employed.

In those figures we have repeated the analysis for the following cohort[16]. The different impacts, however, are not uniform within a program and across years. For instance, one interesting feature of the impact evaluation is that the second edition in both type of centers seem to do better than the first edition, as the lock in effect is clearly reduced. However, this could be due to very bad macro conditions that reduced the opportunities for those unemployed and not participating in the program, and not to an improvement in the program. Another interesting feature is that students with a positive evaluation seem to do better afterwards than the average student.

Table 6 and table 7 summarizes the main findings.

---

[16]We have not provide any quantititve information for those in the present document, however it is available upon request

18

| Impact one year after participating | P(Working) | # of quarters worked | P(indefinite contract) | P(working full-time ) | Enrolled on ESO | | Enrolled on CFPM | | ESO Graduate | | CFPM Graduate two years later |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **PQPI 2008** | | | | | | | | | | | |
| **All** | | -0.6 | | -1.6% | | | 10.3% | 10.1% | 1.5% | | 1.2% |
| **19 years old and older** | | -0.86 | | | | | 6.9% | 5.5% | 1.3% | | |
| **16 years old** | | -0.55 | | | | | 10.2% | 10.1% | | | |
| **16 years old with positive evaluation** | | -0.51 | | | | | 14.8% | 15.1% | | | 2.2% |
| **16 year old males** | | -0.69 | | | | | 10 % | 11,5 % | | | |
| **16 year old females** | | -0.3 | | | | | 9.8 % | 7.2 % | | | |
| **PQPI 2009** | | | | | | | | | | | |
| **All** | -3.4% | -0.31 | -1.5% | -2.8% | | | | | | | |
| **19 years old or older** | -10.7% | -0.76 | -5.2% | -10.0% | | | | | | | |
| **16  years old** | | -0.15 | | | | | | | | | |
| **16 years old with positive evaluation** | | -0.18 | -1.2% | | | | | | | | |
| **16 year old males** | | -0.21 | | | | | | | | | |
| **16 year old females** | | | -1.4% | | | | | | | | |

On the other hand, educational impact are in general positive and significant, particularly for those that had a positive evaluation in the PQPI-S.

Unfortunately, we do not have yet data to see whether there is a long term impact from enhanced education to labor market outcomes.

## Figure 7: Results for the PQPI-FIAP program

| Impact one year after participating | Labour outcomes (last quarter available) | | | | Educational outcomes | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | P(Working) | # of quarters worked | P(indefinite contract) | P(working full-time) | Enrolled on ESO | | Enrolled on CFPM | | ESO Graduate | | CFPM Graduate two years later |
| | | | | | 1 | 2 | 1 | 2 | 1 | 2 | 2 |
| **FIAP 2008** | | | | | | | | | | | |
| **All** | -4.0% | -0.8 | -1.4% | -2.5% | 5.1% | 2.0% | 6.0% | 2.6% | | | |
| **19 years old and older** | | -1.1 | -4.0% | | | | 5.5% | | | | |
| **16 years old** | | -0.8 | | -2.3% | 4.8% | | 7.3% | | | | |
| **16 years old with positive evaluation** | | -0.7 | | | 6.4% | | 15.9% | 7.5% | | | |
| **16 year old males** | | -0.9 | | -2.6% | | | | | | | |
| **16 year old females** | | | | | | | | | | | |
| **FIAP 2009** | | | | | | | | | | | |
| **All** | -6.5% | -0.4 | -2.7% | -3.0% | | | | | | | |
| **19 years old or older** | -13.0% | -0.7 | -4.8% | -8.0% | | | | | | | |
| **16 years old** | -4.8% | -0.3 | -1.7% | | | | | | | | |
| **16 years old with positive evaluation** | -4.9% | -0.3 | -1.8% | | | | | | | | |
| **16 year old males** | -5.0% | -0.3 | -1.8% | | | | | | | | |
| **16 year old females** | | | | -2.5% | | | | | | | |

## Figure 8: Causal effect of PQPI-S participation over employment outcomes: general population



20
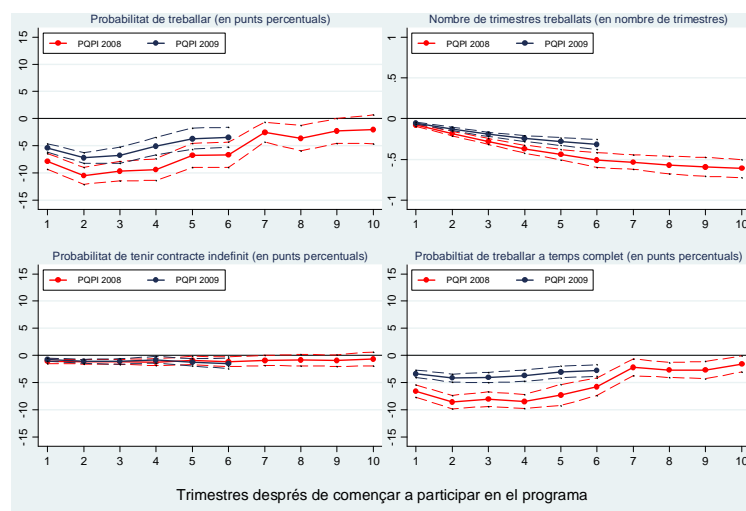
Figure 9: Causal effect of PQPI-S participation over employment outcomes: 16 years with positive evaluation
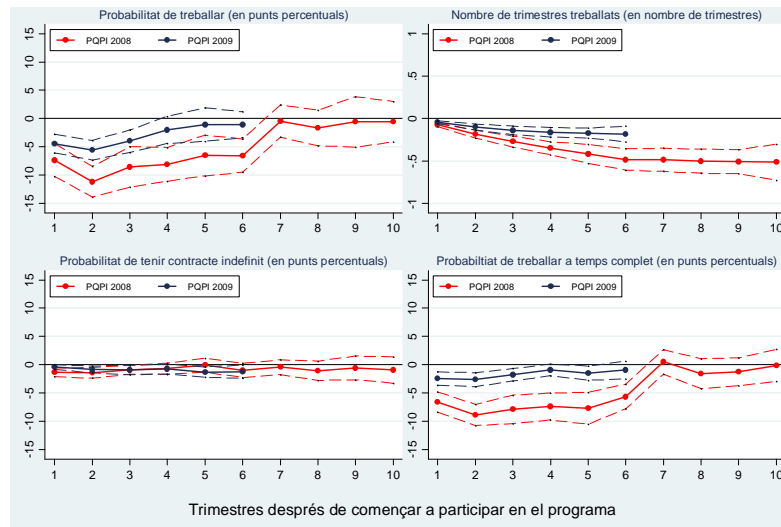


Figure 10: Causal effect of PQPI-FIAP participation over employment outcomes: general population
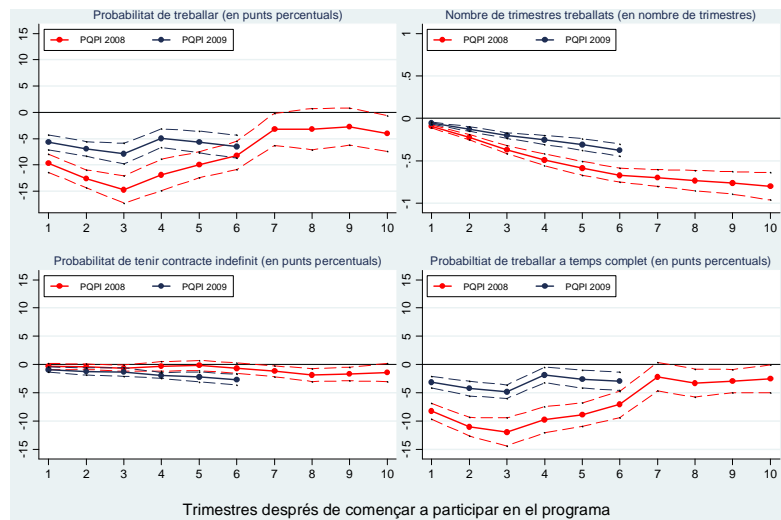


# 6    Conclusion

The evaluation of the effects of both programs has highlighted two fundamental elements. On the one hand, both the PQPI-S and the FIAPs have positive impacts with regard to the objective

Figure 11: Causal effect of PQPI-FIAP participation over employment outcomes: 16 years with positive evaluation
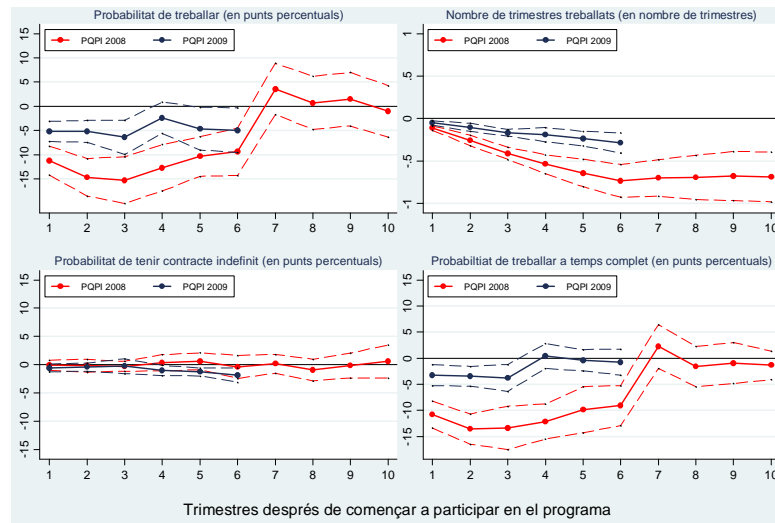


of promoting a return to the educational system, especially in the case of the former, which is manifested in the form of significant increases in the level of enrollments for ESO and CFGM and also, albeit to a lesser degree, in increases in the graduation rates. On the other hand, as far as the labour outcomes are concerned, the participation in both programs has a negative impact during the first few quarters after finishing the courses, but this tends to disappear towards the end of the period of observation.

When considered together, these two results allow for a positive interpretation of the effectiveness of these two programmes. Accordingly, since the programmes manage to get a part of the students to return to the educational system, it is understandable that the participants obtain worse labour results during the quarters after the end of the programme, as some of them are once again trying to pass ESO or else they are studying on a CFGM. Subsequently, given the fact that some of them satisfactorily complete the aforementioned courses, they enter the job market with greater possibilities to be contracted and, as a result, the labour participation of the participants tends to converge with that of the non-participants. The most important question, however, is that after an even longer period of time, the job results of participants even end up exceeding those of non-participants, because of the greater human capital they have accumulated after obtaining a

better academic-professional qualification.

The results of the qualitative analysis corroborate the positive results of the quantitative evaluation: on the one hand, the majority of students interviewed rate the programmes quite positively and on the other, those in charge point to various factors that are also consistent with good educational results, such as the greater self-confidence that the programme instils in the students, an improvement in habits, etc.

## Table 3: Differences between participants and non participants of PQPI-S

| | Treatment | | | | | |
| | **0** | | **1** | | **Total** | |
| | No. | Col % | No. | Col % | No. | Col % |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Man | 15304 | 66.5 | 1074 | 60.1 | 16378 | 66.0 |
| Woman | 7705 | 33.5 | 714 | 39.9 | 8419 | 34.0 |
| **Nationality** | | | | | | |
| EU | 1261 | 5.5 | 40 | 2.2 | 1301 | 5.2 |
| Spanish | 15190 | 66.0 | 1305 | 73.0 | 16495 | 66.5 |
| Non-EU | 6558 | 28.5 | 443 | 24.8 | 7001 | 28.2 |
| **Age** | | | | | | |
| 16-18 | 4981 | 21.6 | 1632 | 91.3 | 6613 | 26.7 |
| 19-21 | 7878 | 34.2 | 119 | 6.7 | 7997 | 32.2 |
| 22-25 | 10150 | 44.1 | 37 | 2.1 | 10187 | 41.1 |
| **Speaks english** | | | | | | |
| No | 19914 | 86.5 | 1559 | 87.2 | 21473 | 86.6 |
| Yes | 3095 | 13.5 | 229 | 12.8 | 3324 | 13.4 |
| **Speaks catalan** | | | | | | |
| No | 6965 | 30.3 | 670 | 37.5 | 7635 | 30.8 |
| Yes | 16044 | 69.7 | 1118 | 62.5 | 17162 | 69.2 |
| **Disabled** | | | | | | |
| No | 22788 | 99.0 | 1751 | 97.9 | 24539 | 99.0 |
| Yes | 221 | 1.0 | 37 | 2.1 | 258 | 1.0 |
| **Geographic Location** | | | | | | |
| Baix Llobregat | 4408 | 19.2 | 375 | 21.0 | 4783 | 19.3 |
| BCN Ciutat | 2477 | 10.8 | 348 | 19.5 | 2825 | 11.4 |
| Girona | 3173 | 13.8 | 66 | 3.7 | 3239 | 13.1 |
| Lleida | 1441 | 6.3 | 27 | 1.5 | 1468 | 5.9 |
| Tarragona | 2482 | 10.8 | 190 | 10.6 | 2672 | 10.8 |
| Terres de l'Ebre | 602 | 2.6 | 32 | 1.8 | 634 | 2.6 |
| Valles Occidental | 3842 | 16.7 | 327 | 18.3 | 4169 | 16.8 |
| Valles Oriental | 4584 | 19.9 | 423 | 23.7 | 5007 | 20.2 |
| **Population** | | | | | | |
| Less than 1.000 | 278 | 1.2 | 23 | 1.3 | 301 | 1.2 |
| from 1.001 to 5.000 | 1491 | 6.5 | 86 | 4.8 | 1577 | 6.4 |
| from 5.001 to 20.000 | 4199 | 18.2 | 298 | 16.7 | 4497 | 18.1 |
| from 20.001 to 75.000 | 7121 | 30.9 | 426 | 23.8 | 7547 | 30.4 |
| from 75.001 to 150.000 | 4135 | 18.0 | 290 | 16.2 | 4425 | 17.8 |
| More than 150.000 | 5785 | 25.1 | 665 | 37.2 | 6450 | 26.0 |
| **# Ocup demanded (1-6)** | | | | | | |
| 1 | 7742 | 33.6 | 1407 | 78.7 | 9149 | 36.9 |
| 2 | 4987 | 21.7 | 142 | 7.9 | 5129 | 20.7 |
| 3 | 3832 | 16.7 | 110 | 6.2 | 3942 | 15.9 |
| 4 | 2807 | 12.2 | 52 | 2.9 | 2859 | 11.5 |
| 5 | 1935 | 8.4 | 42 | 2.3 | 1977 | 8.0 |
| 6 | 1706 | 7.4 | 35 | 2.0 | 1741 | 7.0 |
| **Total** | 23009 | 100.0 | 1788 | 100.0 | 24797 | 100.0 |
| **Journey** | | | | | | |
| Indiferent | 22432 | 97.5 | 1716 | 96.0 | 24148 | 97.4 |
| Complete Journey | 367 | 1.6 | 25 | 1.4 | 392 | 1.6 |
| Half Journey | 210 | 0.9 | 47 | 2.6 | 257 | 1.0 |
| **Willing to travel at most within province** | | | | | | |
| 0 | 2511 | 10.9 | 100 | 5.6 | 2611 | 10.5 |
| 1 | 20498 | 89.1 | 1688 | 94.4 | 22186 | 89.5 |
| **Occupability Index** | | | | | | |
| Subsidi RAI | 70 | 0.3 | 1 | 0.1 | 71 | 0.3 |
| Ocupabilitat molt baixa | 353 | 1.5 | 13 | 0.7 | 366 | 1.5 |
| Ocupabilitat baixa | 9695 | 42.1 | 1257 | 70.3 | 10952 | 44.2 |
| Ocupabilitat mitja | 9799 | 42.6 | 452 | 25.3 | 10251 | 41.3 |
| Ocupabilitat alta | 3092 | 13.4 | 65 | 3.6 | 3157 | 12.7 |
| **Has worked previously** | | | | | | |
| 0 | 4998 | 21.7 | 1578 | 88.3 | 6576 | 26.5 |
| 1 | 18011 | 78.3 | 210 | 11.7 | 18221 | 73.5 |
| **Total** | 23009 | 100.0 | 1788 | 100.0 | 24797 | 100.0 |
| **Time since unemployment** | | | | | | |
| From 0 to 3 month | 16083 | 69.9 | 1480 | 82.8 | 17563 | 70.8 |
| From 4 to 12 month | 6231 | 27.1 | 289 | 16.2 | 6520 | 26.3 |
| More than 12 month | 695 | 3.0 | 19 | 1.1 | 714 | 2.9 |
| **Unemployment Benefit** | | | | | | |
| No | 15091 | 65.6 | 1752 | 98.0 | 16843 | 67.9 |
| Yes | 7918 | 34.4 | 36 | 2.0 | 7954 | 32.1 |
| **Total** | 23009 | 100.0 | 1788 | 100.0 | 24797 | 100.0 |

## Table 4: Differences between participants and non participants of PQPI-FIAP

| | Treatment | | | | | |
| | 0 | | 1 | | Total | |
| | No. | Col % | No. | Col % | No. | Col % |
|---|---|---|---|---|---|---|
| **Sex** | | | | | | |
| Man | 7390 | 67.5 | 776 | 94.2 | 8166 | 69.4 |
| Woman | 3557 | 32.5 | 48 | 5.8 | 3605 | 30.6 |
| **Nationality** | | | | | | |
| EU | 405 | 3.7 | 12 | 1.5 | 417 | 3.5 |
| Spanish | 7883 | 72.0 | 413 | 50.1 | 8296 | 70.5 |
| Non-EU | 2659 | 24.3 | 399 | 48.4 | 3058 | 26.0 |
| **Age** | | | | | | |
| 16-18 | 4156 | 38.0 | 737 | 89.4 | 4893 | 41.6 |
| 19-21 | 6791 | 62.0 | 87 | 10.6 | 6878 | 58.4 |
| 22-25 | | | | | | |
| **Speaks english** | | | | | | |
| No | 9452 | 86.3 | 770 | 93.4 | 10222 | 86.8 |
| Yes | 1495 | 13.7 | 54 | 6.6 | 1549 | 13.2 |
| **Speaks catalan** | | | | | | |
| No | 3078 | 28.1 | 329 | 39.9 | 3407 | 28.9 |
| Yes | 7869 | 71.9 | 495 | 60.1 | 8364 | 71.1 |
| **Disabled** | | | | | | |
| No | 10829 | 98.9 | 817 | 99.2 | 11646 | 98.9 |
| Yes | 118 | 1.1 | 7 | 0.8 | 125 | 1.1 |
| **Geographic Location** | | | | | | |
| Baix Llobregat | 2112 | 19.3 | 140 | 17.0 | 2252 | 19.1 |
| BCN Ciutat | 1157 | 10.6 | 160 | 19.4 | 1317 | 11.2 |
| Girona | 1485 | 13.6 | 66 | 8.0 | 1551 | 13.2 |
| Lleida | 624 | 5.7 | 38 | 4.6 | 662 | 5.6 |
| Tarragona | 1174 | 10.7 | 112 | 13.6 | 1286 | 10.9 |
| Terres de l'Ebre | 289 | 2.6 | 47 | 5.7 | 336 | 2.9 |
| Valles Occidental | 1931 | 17.6 | 119 | 14.4 | 2050 | 17.4 |
| Valles Oriental | 2175 | 19.9 | 142 | 17.2 | 2317 | 19.7 |
| **Population** | | | | | | |
| Less than 1.000 | 132 | 1.2 | 13 | 1.6 | 145 | 1.2 |
| from 1.001 to 5.000 | 745 | 6.8 | 65 | 7.9 | 810 | 6.9 |
| from 5.001 to 20.000 | 1958 | 17.9 | 97 | 11.8 | 2055 | 17.5 |
| from 20.001 to 75.000 | 3436 | 31.4 | 215 | 26.1 | 3651 | 31.0 |
| from 75.001 to 150.000 | 1853 | 16.9 | 167 | 20.3 | 2020 | 17.2 |
| More than 150.000 | 2823 | 25.8 | 267 | 32.4 | 3090 | 26.3 |
| **# Ocup demanded (1-6)** | | | | | | |
| 1 | 3971 | 36.3 | 636 | 77.2 | 4607 | 39.1 |
| 2 | 2264 | 20.7 | 73 | 8.9 | 2337 | 19.9 |
| 3 | 1740 | 15.9 | 44 | 5.3 | 1784 | 15.2 |
| 4 | 1271 | 11.6 | 21 | 2.5 | 1292 | 11.0 |
| 5 | 908 | 8.3 | 24 | 2.9 | 932 | 7.9 |
| 6 | 793 | 7.2 | 26 | 3.2 | 819 | 7.0 |
| **Journey** | | | | | | |
| Indiferent | 10618 | 97.0 | 799 | 97.0 | 11417 | 97.0 |
| Complete Journey | 183 | 1.7 | 16 | 1.9 | 199 | 1.7 |
| Half Journey | 146 | 1.3 | 9 | 1.1 | 155 | 1.3 |
| **Willing to travel at most within province** | | | | | | |
| 0 | 1210 | 11.1 | 93 | 11.3 | 1303 | 11.1 |
| 1 | 9737 | 88.9 | 731 | 88.7 | 10468 | 88.9 |
| **Occupability Index** | | | | | | |
| Subsidi RAI | 23 | 0.2 | 0 | 0.0 | 23 | 0.2 |
| Ocupabilitat molt baixa | 140 | 1.3 | 8 | 1.0 | 148 | 1.3 |
| Ocupabilitat baixa | 4795 | 43.8 | 555 | 67.4 | 5350 | 45.5 |
| Ocupabilitat mitja | 4646 | 42.4 | 220 | 26.7 | 4866 | 41.3 |
| Ocupabilitat alta | 1343 | 12.3 | 41 | 5.0 | 1384 | 11.8 |
| **Has worked previously** | | | | | | |
| 0 | 3336 | 30.5 | 712 | 86.4 | 4048 | 34.4 |
| 1 | 7611 | 69.5 | 112 | 13.6 | 7723 | 65.6 |
| **Time since unemployment** | | | | | | |
| From 0 to 3 month | 8270 | 75.5 | 742 | 90.0 | 9012 | 76.6 |
| From 4 to 12 month | 2428 | 22.2 | 68 | 8.3 | 2496 | 21.2 |
| More than 12 month | 249 | 2.3 | 14 | 1.7 | 263 | 2.2 |
| **Unemployment Benefit** | | | | | | |
| No | 7664 | 70.0 | 818 | 99.3 | 8482 | 72.1 |
| Yes | 3283 | 30.0 | 6 | 0.7 | 3289 | 27.9 |
| **Total** | 10947 | 100.0 | 824 | 100.0 | 11771 | 100.0 |

Table 5: Ex ante labor participation rate - Non Participants and PQPI-S and PQPI-FIAP 2008/2009 Participants

|  | Non-Particiapants | | Participants | |
|---|---|---|---|---|
|  | mean | s.d | Mean | SD |
| 2005/1 | 24.7 | 43.1 | 1.2 | 11.0 |
| 2005/2 | 29.8 | 45.7 | 1.2 | 10.8 |
| 2005/3 | 30.9 | 46.2 | 1.2 | 10.8 |
| 2005/4 | 31.5 | 46.4 | 1.2 | 11.0 |
| 2006/1 | 35.2 | 47.8 | 1.7 | 12.8 |
| 2006/2 | 41.3 | 49.2 | 2.5 | 15.7 |
| 2006/3 | 41.2 | 49.2 | 2.2 | 14.6 |
| 2006/4 | 40.3 | 49.1 | 2.6 | 16.0 |
| 2007/1 | 45.8 | 49.8 | 3.1 | 17.4 |
| 2007/2 | 50.9 | 50.0 | 4.4 | 20.4 |
| 2007/3 | 49.2 | 50.0 | 4.4 | 20.4 |
| 2007/4 | 45.5 | 49.8 | 4.8 | 21.3 |
| 2008/1 | 44.5 | 49.7 | 4.7 | 21.2 |
| 2008/2 | 38.6 | 48.7 | 5.6 | 23.0 |
| 2008/3 | 13.2 | 33.8 | 1.2 | 11.0 |

Table 6: Matching of PQPI-S participants to non participants

| Variable | | Mean | | | | t-test | |
|---|---|---|---|---|---|---|---|
|  | Type | Treated | Control | % Bias | % Reduction Bias | t | p-value |
| Sex (Man=1) | Unmatched | 0.60 | 0.67 | -14 |  | -5.75 | 0 |
|  | Matched | 0.60 | 0.61 | -1.3 | 90.7 | -0.38 | 0.704 |
| Speaks English | Unmatched | 0.13 | 0.13 | -2.1 |  | -0.84 | 0.398 |
|  | Matched | 0.13 | 0.12 | 1.5 | 26.8 | 0.47 | 0.641 |
| Dissability | Unmatched | 0.02 | 0.01 | 9.3 |  | 4.53 | 0 |
|  | Matched | 0.02 | 0.02 | 0.9 | 90 | 0.25 | 0.804 |
| Unemployment benefit | Unmatched | 0.02 | 0.34 | -92.4 |  | -28.54 | 0 |
|  | Matched | 0.02 | 0.04 | -5.1 | 94.5 | -3.14 | 0.002 |
| Willing to move outside province to work | Unmatched | 0.94 | 0.89 | 19.6 |  | 7.08 | 0 |
|  | Matched | 0.94 | 0.95 | -0.7 | 96.3 | -0.26 | 0.794 |
| Occupability ratio | Unmatched | 0.71 | 0.44 | 57.8 |  | 22.52 | 0 |
|  | Matched | 0.71 | 0.71 | 1.4 | 97.6 | 0.43 | 0.664 |
| Ask for one employment | Unmatched | 0.79 | 0.34 | 103.6 |  | 39.48 | 0 |
|  | Matched | 0.79 | 0.79 | 0 | 100 | 0.01 | 0.993 |
| Ask for two employments | Unmatched | 0.08 | 0.22 | -40.3 |  | -14.03 | 0 |
|  | Matched | 0.08 | 0.08 | 0.6 | 98.5 | 0.23 | 0.82 |
| Ask for three employments | Unmatched | 0.06 | 0.17 | -34.1 |  | -11.83 | 0 |
|  | Matched | 0.06 | 0.06 | -0.2 | 99.5 | -0.07 | 0.948 |
| Ask for four or more employments | Unmatched | 0.03 | 0.12 | -35.8 |  | -11.84 | 0 |
|  | Matched | 0.03 | 0.03 | -0.4 | 98.8 | -0.19 | 0.848 |
| Entered unemployment in the last three months | Unmatched | 0.83 | 0.70 | 31.6 |  | 11.82 | 0 |
|  | Matched | 0.83 | 0.82 | 2.4 | 92.3 | 0.79 | 0.427 |
| Has worked before | Unmatched | 0.12 | 0.79 | -178.8 |  | -66.35 | 0 |
|  | Matched | 0.12 | 0.14 | -5.7 | 96.8 | -1.86 | 0.063 |
| Number of trimesters worked before | Unmatched | 0.42 | 5.63 | -153.9 |  | -48.47 | 0 |
|  | Matched | 0.42 | 0.69 | -8 | 94.8 | -4.12 | 0 |
| Has worked with an indefinite contract | Unmatched | 0.02 | 0.30 | -79.5 |  | -24.85 | 0 |
|  | Matched | 0.02 | 0.04 | -4.6 | 94.2 | -2.6 | 0.009 |
| Barcelona province | Unmatched | 0.83 | 0.67 | 37.3 |  | 13.87 | 0 |
|  | Matched | 0.82 | 0.82 | 0.1 | 99.8 | 0.03 | 0.975 |
| Tarragona province | Unmatched | 0.12 | 0.13 | -3.2 |  | -1.26 | 0.207 |
|  | Matched | 0.12 | 0.12 | 1.3 | 60.1 | 0.38 | 0.701 |
| 16 years | Unmatched | 0.59 | 0.05 | 139.6 |  | 86.04 | 0 |
|  | Matched | 0.59 | 0.58 | 1.6 | 98.9 | 0.37 | 0.712 |
| 17 years | Unmatched | 0.25 | 0.07 | 49.5 |  | 26.06 | 0 |
|  | Matched | 0.25 | 0.24 | 1 | 98.1 | 0.23 | 0.814 |
| 18 years | Unmatched | 0.08 | 0.09 | -5 |  | -1.98 | 0.048 |
|  | Matched | 0.08 | 0.07 | 5 | 1.2 | 1.6 | 0.11 |
| 19 years | Unmatched | 0.03 | 0.10 | -29.6 |  | -9.99 | 0 |
|  | Matched | 0.03 | 0.03 | 1.7 | 94.3 | 0.74 | 0.46 |
| 21 years | Unmatched | 0.02 | 0.13 | -43.9 |  | -13.9 | 0 |
|  | Matched | 0.02 | 0.02 | -1.6 | 96.4 | -0.87 | 0.382 |
| 22 years | Unmatched | 0.01 | 0.13 | -50.1 |  | -15.41 | 0 |
|  | Matched | 0.01 | 0.02 | -3 | 93.9 | -2.01 | 0.045 |
| 23 years | Unmatched | 0.01 | 0.15 | -53.5 |  | -16.35 | 0 |
|  | Matched | 0.01 | 0.02 | -3.4 | 93.6 | -2.36 | 0.018 |
| 24 years | Unmatched | 0.00 | 0.16 | -59.6 |  | -17.95 | 0 |
|  | Matched | 0.00 | 0.01 | -3.3 | 94.4 | -2.86 | 0.004 |

# Table 7: Matching of PQPI-FIAP participants to non participants

| | | Mean | | | | t-test | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | Type | Treated | Control | % Bias | % Reduction Bias | t | p-value |
| From Spain | Unmatched | 0.51 | 0.72 | -45 | | -12.96 | 0 |
| | Matched | 0.51 | 0.52 | -2.9 | 93.5 | -0.56 | 0.577 |
| From the EU | Unmatched | 0.01 | 0.04 | -14 | | -3.29 | 0.001 |
| | Matched | 0.01 | 0.01 | 1.7 | 87.8 | 0.47 | 0.639 |
| From outside the EU | Unmatched | 0.48 | 0.24 | 50.7 | | 14.92 | 0 |
| | Matched | 0.48 | 0.47 | 2.4 | 95.3 | 0.45 | 0.653 |
| Speaks english | Unmatched | 0.07 | 0.14 | -23.2 | | -5.66 | 0 |
| | Matched | 0.07 | 0.07 | 0.3 | 98.8 | 0.07 | 0.944 |
| Dissability | Unmatched | 0.01 | 0.01 | -2.2 | | -0.57 | 0.572 |
| | Matched | 0.01 | 0.01 | -1.9 | 12.1 | -0.38 | 0.702 |
| Indiferent to labor journey duration | Unmatched | 0.97 | 0.97 | -0.5 | | -0.14 | 0.887 |
| | Matched | 0.97 | 0.97 | -0.5 | -0.5 | -0.1 | 0.917 |
| Only reduced time job demanded | Unmatched | 0.01 | 0.01 | -2 | | -0.53 | 0.597 |
| | Matched | 0.01 | 0.01 | 0 | 98.9 | 0 | 0.996 |
| Only full time job demanded | Unmatched | 0.02 | 0.02 | 2.3 | | 0.66 | 0.512 |
| | Matched | 0.02 | 0.02 | 0.6 | 71.9 | 0.13 | 0.9 |
| One type of occupation demanded | Unmatched | 0.77 | 0.36 | 90.8 | | 23.56 | 0 |
| | Matched | 0.77 | 0.76 | 2.3 | 97.5 | 0.49 | 0.626 |
| Occupability index | Unmatched | 0.68 | 0.45 | 46.9 | | 12.54 | 0 |
| | Matched | 0.68 | 0.66 | 3.7 | 92.2 | 0.76 | 0.449 |
| Unemployment benefit | Unmatched | 0.01 | 0.30 | -88.7 | | -18.12 | 0 |
| | Matched | 0.01 | 0.03 | -8 | 91 | -3.73 | 0 |
| Less than three months in unemployment | Unmatched | 0.91 | 0.76 | 43.5 | | 10.28 | 0 |
| | Matched | 0.91 | 0.90 | 2.6 | 94 | 0.66 | 0.511 |
| Between three and twelve months in unemployment | Unmatched | 0.07 | 0.22 | -43.8 | | -10.21 | 0 |
| | Matched | 0.07 | 0.08 | -2.7 | 93.8 | -0.71 | 0.476 |
| More than twelve months in unemployment | Unmatched | 0.02 | 0.02 | -4.8 | | -1.24 | 0.216 |
| | Matched | 0.02 | 0.02 | 0 | 99.1 | -0.01 | 0.992 |
| Has worked before | Unmatched | 0.14 | 0.70 | -136.7 | | -33.68 | 0 |
| | Matched | 0.14 | 0.16 | -6.4 | 95.4 | -1.45 | 0.147 |
| Number of trimesters worked before | Unmatched | 0.41 | 4.32 | -125.4 | | -26.41 | 0 |
| | Matched | 0.41 | 0.68 | -8.7 | 93 | -3.14 | 0.002 |
| Worked under long term contract | Unmatched | 0.01 | 0.23 | -69 | | -14.38 | 0 |
| | Matched | 0.01 | 0.03 | -5.3 | 92.3 | -2.19 | 0.029 |
| Work under full time job | Unmatched | 0.12 | 0.63 | -124.4 | | -29.57 | 0 |
| | Matched | 0.12 | 0.14 | -6.3 | 95 | -1.54 | 0.124 |
| ST Baix Llobregat | Unmatched | 0.17 | 0.19 | -6.1 | | -1.63 | 0.103 |
| | Matched | 0.17 | 0.18 | -2.6 | 56.4 | -0.54 | 0.59 |
| ST BCN | Unmatched | 0.20 | 0.11 | 25.3 | | 7.84 | 0 |
| | Matched | 0.20 | 0.19 | 1.2 | 95.4 | 0.21 | 0.833 |
| ST Girona | Unmatched | 0.08 | 0.14 | -17.4 | | -4.38 | 0 |
| | Matched | 0.08 | 0.08 | -1 | 94 | -0.24 | 0.814 |
| ST Tarragona | Unmatched | 0.14 | 0.11 | 8.8 | | 2.54 | 0.011 |
| | Matched | 0.14 | 0.13 | 2.8 | 68.2 | 0.55 | 0.585 |
| ST Terres de l'Ebre | Unmatched | 0.06 | 0.03 | 14.8 | | 4.84 | 0 |
| | Matched | 0.06 | 0.05 | 3.2 | 78.6 | 0.57 | 0.572 |
| ST Valles Occidental | Unmatched | 0.14 | 0.18 | -9.3 | | -2.47 | 0.014 |
| | Matched | 0.14 | 0.15 | -0.8 | 91.5 | -0.17 | 0.869 |
| ST Valles Oriental | Unmatched | 0.17 | 0.20 | -6.9 | | -1.84 | 0.066 |
| | Matched | 0.17 | 0.18 | -0.8 | 88.8 | -0.16 | 0.874 |
| 16 years | Unmatched | 0.46 | 0.09 | 91.6 | | 33.38 | 0 |
| | Matched | 0.46 | 0.47 | -0.7 | 99.2 | -0.11 | 0.909 |
| 17 years | Unmatched | 0.28 | 0.13 | 39.7 | | 12.63 | 0 |
| | Matched | 0.28 | 0.27 | 2.8 | 92.8 | 0.5 | 0.614 |
| 19 years | Unmatched | 0.05 | 0.19 | -41.1 | | -9.46 | 0 |
| | Matched | 0.05 | 0.06 | -0.5 | 98.7 | -0.15 | 0.884 |
| 20 years | Unmatched | 0.04 | 0.20 | -53.1 | | -11.67 | 0 |
| | Matched | 0.04 | 0.04 | -2.8 | 94.8 | -0.88 | 0.377 |
| 21 years | Unmatched | 0.02 | 0.23 | -68.9 | | -14.45 | 0 |
| | Matched | 0.02 | 0.03 | -4.7 | 93.2 | -1.89 | 0.059 |

27

# References

Arellano, A. (2010). Do training programmes get the unemployedback to work?: A look at the spanish experience. *Revista de Economía Aplicada 28*, 39–65.

Bell, D. A. and D. Blanchflower (2010). Youth unemployment: déjà vu? Discussion Papers 4705, IZA.

Betcherman, G., K. Olivas, and A. Dar (2004). Impacts of active labor market programs: new evidence form evaluations with particular attention to developing and transition countries. Social Protection Discussion Paper Series 0402, World Bank.

Black, D. and J. A. Smith (2004). How robust is the evidence on the effects of college quality? evidence from matching. *Journal of Econometrics 121*, 99–124.

Blackwell, M., S. Iacus, G. King, and G. Porro (2010). cem: Coarsened exact matching in stata. *Stata Journal 9*, 524–546.

Brodaty, T., B. Crépon, and D. Fougère (2001). Using matching estimators to evaluate alternative youth employment programs: evidence from france 1986-1988. In M. F. Pfeifer (Ed.), *Econometric evaluation of labour market policies*, Volume ZEW Economic Studies, Chapter 13. Physica-Verlag.

Burgess, S., C. Propper, H. Ress, and A. Shearer (231-309). The class of 1981: the effects of early career unemployment on subsequent unemployment experiences. *Labour Economics 10*, 3.

Caliendo, M. and S. Kopeinig (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys 22*, 31–72.

Caliendo, M., S. Künn, and R. Schmidl (2011). Fighting youth unemployment: the effects of active labor market policies. Discussion Paper 6222, IZA.

Card, D., J. Kluve, and A. Weber (2010). Active labour market policy evaluations: a meta-analysis. *The Economic Journal 120*, 452–477.

Corkett, J., S. Bennett, J. Stafford, M. Frogner, and K. Shrapnell (2005). Jobcentre plus evaluation: summary of evidence. Research Report 252, UK Department for Work and Pensions.

Cueto, B. and F. J. Mato (2009). A nonexperimental evaluation of training programmes: regional evidence for spain. *Annals of Regional Science 43*, 415–433.

Dehejia, R. H. and S. Wahba (1999). Causal effects in nonexperimental studies: reevaluating the evaluation of training programs. *Journal of the American Statistical Association 94*, 1053–1062.

Doiron, D. and T. Gorgens (2008). State dependence in youth labor market experiences and the evaluation of policy interventions. *Journal of Econometrics 145*, 81–97.

Dolton, P. and D. O'Neill (1996). Unemployment duration and the restart effect: some experimental evidence. *The Economic Journal 106*, 387–400.

Dorsett, R. (2006). The new deal for young people: effect on the labour market status of young men. *Labour Economics 13*, 405–422.

Fredriksson, P. and P. Johansson (2008). Dynamic treatment assignment: the consequences for evaluations using observational data. *Journal of Business and Statistics 26*, 435–445.

Greenberg, D., C. Michalopoulos, and P. Robins (2003). A meta-analysis of government-sponsored training programs. *Industrial and Labor Relations Review 57*, 31–53.

Gregg, P. and E. Tominey (2005). The wage scar from male youth unemployment. *Labour Economics 12*, 487–509.

Heckman, J. J., R. Lalonde, and J. Smith (1999). The economics and econometrics of active labour market programs. In O. Ashenfelter and D. Card (Eds.), *Handbook of Econometrics*, Volume 3, Chapter 31, pp. 1865–2097. Elsevier.

Hotz, V. J., G. Imbens, and J. Klerman (2006). Evaluating the differential effects of alternative welfare-to-work training components: a rreanalysis of the california gain program. *Journal of Labor Economics 24*, 521–566.

Ibarran, P. and D. Rosas (2009). Evaluating the impact of job training programs in latin america: evidence from idb funded operations. *Journal of Development Effectiveness 1*, 195–216.

Imbens, G. and J. Wooldridge (2009). Recent developments in the econometrics of program evaluation. *Journal of Economic Literature 47*, 5–86.

29

International Labor Organization (2011). *Global Employment Trends for Youth: 2011 Update*, Geneve. International Labor Organization.

Jacobi, L. and J. Kluve (2007). Before and after the hartz reforms: The performance of active labour market policy in germany. *Journal for Labour Market Research 40*, 45–64.

Kluve, J. (2010). The effectiveness of european active labor market programs. *Labour Economics 17*, 904–919.

Kluve, J., D. Card, M. Fertig, M. Góra, L. Jacobi, P. Jensen, R. Leetmaa, L. Nima, E. Patacchimi, S. Schaffner, C. Schmidt, B. V. der Klaauw, and A. Weber (2007). *Active Labor Market Policy in Europe: Performance and Perspectives*. Berlin: Springer.

Kluve, J. and C. Schmidt (2002). Can training and employment subsidies combat european unemployment? *Economic Policy 35*, 409–448.

Kluve, J., H. S. A. Uhlendorff, and Z. Zhao. Evaluating continuous training programs using the generalized propensity score. *Journal of the Royal Statistical Society Series A*. Forthcoming.

Lechner, M. and C. Conny (2011). Sensitivity of matching-based program evaluations to the availability of control variables. Discussion Papers 5553.

Lechner, M., R. Miquel, and C. Wunsch. Long-run effects of public sector sponsored training in west germany. *Journal of the European Economic Association*. Forthcoming.

Martin, J. and D. Grubb (2011). What works and for whom: a review of oecd countries' experiences with active labour market policies. *Swedish Economic Policy Review 8*, 9–56.

nos Repiso, J. M. C. M. and A. S. Braza (2009). Evaluación del programa de escuelas-taller y casas de oficio a partir de su efecto sobre el tiempo de búsqueda del primer empleo. *Estudios de Economía Aplicada 27*, 1–22.

OCDE (2007). Activating the unemployed: what countries do. In *OECD Employment Outlook*, Paris. Organisation for Economic Co-Operation and Development.

OCDE (2011). How does spain compare? In *OECD Employment Outlook*, Paris. Organisation for Economic Co-Operation and Development.

Pissarides, C. (2010). Regular education as a tool of counter-cyclical employment policy. *Studier i Finanspolitik 6*, 1–20.

Quintini, G. and J. M. çand S. Martin (2007). The changing nature of school-to-work transition process in oecd countries. Discussion Paper 2582, IZA.

Ramos, R., J. Surinach, and M. Artís (2009). The effectiveness of regional active labour market poclicies to fight against unemployment: an analysis for catalonia. Discussion Papers 4649, IZA.

Rosenbaum, P. and D. B. Rubin (1983). The central role of the propensity score in observational studies for causal effects. *Bioimetrika 70*, 41–50.

Rubin, D. B. (1974). Estimating causal effects of treatment in randomized and non-randomized studies. *Journal of Educational Policy 66*, 688–701.

Scarpetta, S., A. Sonnet, and T. Manfredi (2010). Rising youth unemployment during the crisis: how to prevent negative long-term consequences on a generation? OECD Social, Employment and Migration Working Papers 106, OECD.

Schochet, P., J. Burghardt, and S. McConnell (2008). Does job corps work? impact findings from the national job corps study. *American Economic Review 98*, 1864–1886.

Sianesi, B. (2004). An evaluation of the swedish system of active labor market programs in the 1990s. *Review of Economics and Statistics 86*, 133–155.

Smith, J. and P. Todd (2005). Does matching overcome lalonde's critique of non-experimental estimators. *Journal of Econometrics 125*, 305–353.

Urzúa, S. and E. Puentes (2010). La evidencia del impacto de los programas de capacitación en el desempeño en el mercado laboral. Notas Técnicas de la Unidad de Mercados Laborales del Sector Social 268, Banco Interamericano de Desarrollo, Washington DC.

van Reenen, J. (2003). Active labor market policies and the british new deal for the young unemployed in context. Working Paper Series 9576, National Bureau of Economic Research.