

Unemployment *vs* employment transitions in Italy: an evaluation of Public Employment Services

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Abstract

The goal of this paper is to carry out an evaluation of public employment services in Italy, using the LFS data and the propensity score matching technique. With respect to previous papers on this issue for Italy, this paper designs a different structure for the evaluation exercise using three interviews of the Italian LFS, and introduces three main innovations: 1) defining a more homogeneous reference group of treated and not treated; 2) computing - consistently with the propensity score theory- control variables in a pre-treatment stage; 3) carrying out both short (3-months) and long term evaluations (12-months). This new evaluation structure produces different results with respect to previous papers: ATT coefficients are either negative or not significant in the short term - confirming a lock-in effect-, while they become positive and significant in the long term.

Keywords: Public Employment Services, Propensity score matching, Policy evaluation;

JEL codes: C14, J38, J68

1. Introduction¹

According to the European employment strategy, Italian employment services have been reformed in 1997, 2000 and 2003, attempting to increase the efficiency of public employment services (PES) in order to reduce the mismatch between labour demand and supply. The aim of this paper is to evaluate the impact of these reforms on the efficacy of public Italian employment services, using the propensity score matching technique.

We use the labour force survey (LFS) data, collected by the new continuous survey (RCFL) conducted by Istat (for 2004 and 2005). It is worth noting that in 2004 the Italian LFS has been completely renewed (facing up to Eurostat regulations), entailing a relevant increase in data quality, basically because of the use of computer assisted interviews and the new professional interviewers network. Moreover, in the new survey the section dedicated to PES has been improved and enlarged (see Istat, 2006).

Households selected in the LFS sample have to be interviewed four times during a 15 months period, according to a rotation scheme; merging data collected in the first three interviews - t_1 , t_2 and t_3 - we may observe transitions in the labour market ($t_2-t_1 = 3$ months; $t_3-t_2 = 9$ months). The LFS also provides a rich set of control variables, a necessary requirement in order to carry out a proper propensity score matching analysis, based on selection on observables. We use information on the following categories: personal information; household's information; macroeconomic variables estimated at the provincial-NUTS3 level.

In this way we can evaluate whether the unemployment to employment transition probability of "treated" unemployed is significantly greater than the one for non-treated.

In previous papers -see for instance Barbieri *et al* (2002, 2003), the "treated" are usually defined as unemployed enrolled to PES at time t_1 . In this paper we change the evaluation structure and the treatment definition for several reasons. First, because the enrolment to PES in Italy is not always associated to an active job search: for instance, an individual can use this enrolment status to receive unemployment subsidies or to attend some training courses. Second, the enrolment to PES is not closely related to the period in which the interview takes place: an unemployed can be enrolled to a PES and at the same time having no contacts with PES to look for a job. For these reasons, exploiting three interviews of the LFS we define a more homogenous reference group as those

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individuals that are not enrolled to PES at t_1 , and we define as treated those individuals that get enrolled to PES between t_1 and t_2 .

Using this framework we claim that the treatment is more closely related to the time period of the interview, not considering people enrolled some years before to PES that are no longer using PES as a way to look for a job. Finally, we compute both a short (3-months) and long term (12 months) impact of PES.

Another important remark concerns the fact that in previous papers (Barbieri *et al.*, 2002, 2003) control variables and treatment variables are observed in the same instant of time. This entails a methodological problem and possibly biased results, because propensity score matching theory argues that individuals have to be observed in a pre-treatment status, then the treatment takes place and finally the outcome is observed. This means that when treated and non-treated are compared it is important to use pre-treatment variables, comparing individuals that were the same before the treatment took place. In our paper we deal with this problem because we observe the control variables at t_1 , the treatment variables between t_1 and t_2 and the outcome at t_2 and t_3 .

As far as the econometric technique, OLS cannot usually be used to estimate the impact of a treatment mostly because selection into treatment is not random, but can be affected by individual characteristics (self selection issues). To deal with this problem we use propensity score matching, whose basic assumption is the selection on observables (unconfoundedness). More specifically, the selection into treatment is completely determined by observed variables, and when conditioning on these variables the assignment into treatment is assumed as random. Using this assumption it is possible to compute the propensity score, i.e. the probability to participate to the treatment conditioning to the pre-treatment control variables. Finally, comparing treated with non-treated -with the same propensity score- it is possible to estimate the average treatment effect on the treated (ATT). Since it is often unfeasible to have individuals with exactly the same propensity score, several algorithms are usually used to match treated and not treated. In this paper we use four different methods, in order to test the robustness of results: nearest neighbour, radius, stratification and kernel.²

The paper is structured in the following way. Section 2 describes the reforms concerning PES of the last decade, Section 3 provides a short explanation of the LFS data we use. Section 4 describes the PES evaluation exercise while in section 5 identification issues are discussed. Section 6 finally presents the results.

² For further details see for instance Rosenbaum and Rubin, 1983, and Ichino and Becker, 2002, for an explanation of the software we use.

2. Italian reforms concerning PES in the last decade

In the last years the intermediation role of employment services has been investigated in the economic and political debate, both at the European and the Italian level. Actually, the European Employment Strategy (EES), set up in the 1997 and updated several times in the last years, underlined the importance of the reform of the public and private employment services in order to increase the occupability in the labour market, in turn reducing the inefficiency linked to the mismatch between labour demand and supply. As far as the Italian labour market is concerned, several reforms have been introduced: firstly in 1997 with the so-called 'Pacchetto Treu', in 2002 with the act disposal 297/2002 and finally in 2003 with a new act disposal (30/2003). In these reforms, two main goals are pursued: a) the improvement, at the local level, of the PES governance of the labour market; b) the increase of the occupability of those unemployed that have more difficulties to get into the labour market (unskilled, long term unemployed, women, etc.).³

Before these reforms PES were managed by the central government, caring almost exclusively for the administrative certification of recruiting and the listing of job offerings and of job seekers. The efficacy of these services in matching labour demand and supply was very low, being the core of PES activities mostly administrative.

At the end of the nineties, the PES were decentralized to the regions (Regioni - NUTS2), in order to make them more effective in local labour markets. The regions kept for themselves the strategic planning of services, while the ordinary management of PES was in turn decentralized to provinces (Province - NUTS3). For this reason, some geographical differences among regions and provinces may exist due to the different PES organization chosen by local authorities.

Legislative decree 181 of 2000, as amended by legislative decree 297 of 2002, therefore provides for the suspension of the system of lists of 'ordinary' and 'special' employment, on which, in the past, workers had to be registered.

Moreover, the act disposal 297/2002 changed the way how unemployment status is checked by PES. After the 'unemployment declaration' (according to a definition similar to the ILO unemployment definition), PES have to verify the effective permanence in the unemployment status⁴. Moreover the unemployed

³ A second goal of these reforms was to introduce private employment services in the Italian labour market, since up to 1997 the labour intermediation was only public. In this paper we do not analyze the impact of private employment services.

⁴ According to the reforms, PES activities consist of a complex system of functions and actions in order to reduce unemployment duration and to improve the information flow between

has to accept the program established by PES. More specifically, PES have to propose to the unemployed one of the three alternatives:

- a personal consulting interview within three months from the unemployment declaration;
- a proposal of a short professional training course and/or work practise within 6 months from the unemployment declaration; this time period reduces to 4 months in case of young and of women that have been out of the labour market for two years
- a job proposal;

In this paper we want to evaluate if these specific proposal have an impact on the unemployment *vs* employment transitions for unemployed.⁵

3. The Labour force survey data

In this paper we use the LFS data provided by Istat. This survey has been completely renewed in 2004, passing from the old RTFL (Rilevazione Trimestrale Forze Lavoro) to the RCFL (Rilevazione Continua Forze Lavoro), according to the Eurostat guidelines. For our analysis two elements are worth to mention. First of all, the data quality has significantly increased, because of the computer assisted technique utilized for the interviews and the new professional interviewers network. Second, the section related to the employment services has been completely renewed, improving the richness of the collected data.

As for the structure of the Italian LFS, the sample design is the following:

- a two selection stages design: municipalities are the primary units, households are the final units;

demand and supply in the labour market, action that can be summarized in the following general tasks: Hence, besides the creation of the unemployment list, the reform establishes that the main goals of the PES activity are: a) Collection and management of the information on labour supply and labour demand in the local labour market; b) Identifying priority target groups (long term unemployed, unskilled, women, disabled, immigrant citizens), providing individual services and placement programs; c) Supporting the job searching and the participation to professional training courses, easing the access to the labour market; d) Consultancy to companies, concerning information and support on facilitation and incentive for the engagement, the planning of re-training and reconversion, initiatives for workers on the "mobility" lists, assistance on outplacements; e) Self-employment promotion (job creation schemes).

⁵ It is also important to stress that even if reforms begun in 1997 the adjustment processes of each local PES to the new setting have been taking place very slowly. For a detailed juridical, economic and political description of this reform process see Pirrone & Sestito (2006).

- stratification of the primary units, based on the resident population;
- a 2-2-2 households rotation scheme: households participate to the survey for 2 consecutive quarters, then they temporally exit from the sample for the following 2 quarters, and then come back in the sample for 2 quarters, after which they definitely exit, as shown in figure 1.

We use LFS data from the first quarter 2004, the official beginning of new survey, and we arrive up to the latest data available, the fourth quarter 2005. As already mentioned, we observe individuals at three interviews, at t_1 , t_2 , t_3 (as in figure 1, the groups F from F1 to F3, G from G1 to G3, H from H1 to H3, and I from I1 to I3). More specifically, the second interview takes place three months after the first one, and the third one 9 months after the second one (12 months after the first one). We use three interviews, instead of the two used by Barbieri et al (2002, 2003), because in the first one (at t_1) we collect information on the control variables in a pre-treatment status, in the second one we derive the treatment variables and the outcome for the short term evaluation, and in the third interview we observe the outcome for the long term evaluation.

Figure 1. LFS structure and rotation group

		Quarter		Rotation group								
				A	B	C	D	E	F	G	H	I
Starting up of the RCFL	1	2003		A2	B1							
	2	2003			B2	C1						
	3	2003				C2	D1					
	4	2003		A3			D2	E1				
New official RCFL	1	2004		A4	B3			E2	F1			
	2	2004			B4	C3			F2	G1		
	3	2004				C4	D3			G2	H1	
	4	2004					D4	E3			H2	I1
	1	2005						E4	F3			I2
	2	2005							F4	G3		
	3	2005								G4	H3	
	4	2005									H4	I3

It is worth noting that in this paper we are interested in evaluating the impact of PES treatment for unemployed aged 15-64 at t_1 , in this way not considering inactive individuals.

LFS also provides a very rich dataset, containing a wide set of control variables, a necessary requirement in order to carry out a proper propensity score matching analysis, based on selection on observables. We use information on the following categories (note that a more detailed description of control variables is presented in appendix):

- personal information: age, gender, education, education delay, search intensity, previous job experience, several reason related to the eventual last job-separation if any (dismissal, retirement, temporary job), occupation in the last job if any, adaptability to fixed term contracts, adaptability to part time contracts, adaptability to geographical mobility, unemployment duration;
- household's information (number of household's members, number of members of the household enrolled in a PES excluding himself/herself, number of members of the family employed);
- macroeconomic variables estimated at the provincial-NUT3 level for each quarter: unemployment rate, employment variation (%), turnover rates as a measure of the labour market dynamics, agriculture share on employment, ISFOL index of declared PES performances⁶, dummies for the related quarter).

4. Structure of the PES evaluation exercise

Previous papers concerning this issue, mainly Barbieri et al (2002, 2003), used the same kind of data and the same technique. With respect to these papers, our contribution introduces three main innovations:

1) We use the new Italian LFS data, characterized by higher data quality and new and updated sections concerning PES.

2) We changes the definition of the reference group and the definition of treated. In Barbieri et al (2002, 2003), all the unemployed enrolled to PES at t_1 were considered as treated. Actually, Barbieri et al (2002) argued that this choice creates some problems: "While most of the PES clients are (even if vaguely) looking for a job (employed job seekers, ILO unemployed and less active unemployed), some of them are apparently registered only for reasons unrelated to labour market outcomes, i.e. because of some benefits they may derive from belonging to the PES registers. It has to be noticed that these benefits are not the standard unemployment benefits, rather underdeveloped in Italy, but local tax rebates, local public transports favoured fares, employment incentives which may accrue to long term unemployed (identified on the basis of PES enrolment duration) etc.". This means it would be possible to detect in the LFS some enrolled to PES that actually are not looking for a job. Moreover,

⁶ The ISFOL index is referred to the year 2004. It is an index composed by several components concerning the quality of PES infrastructure and services (computers, number of employees, etc). It can be considered as a proxy of the PES performance at the provincial level, which might be considered by unemployed in their decisions to get enrolled or not.

the enrolment status is not closely related to the period in which the interview takes place: an unemployed can be enrolled to a PES for 2 years –for instance-, and at the same time having no contacts with PES to look for a job recently.

For all these reasons we change the structure of our evaluation exercise, including in our reference group all those individuals that are not treated at time t_1 , in this way creating a reference group much more homogeneous. Of course, in this setting we have also to change the definition of treated, which are now defined as those unemployed not enrolled to PES at t_1 that get enrolled between t_1 and t_2 . In our opinion it is a better way to capture those unemployed who effectively used the PES services to look for a job in a period of time close to the interview⁷.

3) In previous papers (Barbieri *et al.*, 2002, 2003) control variables and treatment variables are observed in the same instant of time (at t_1), entailing a relevant methodological problem. In fact, propensity score matching theory argues that covariates have to be observed in a pre-treatment status, then the treatment takes place and finally the outcome is observed. This means that treated and non-treated have to be compared using pre-treatment variables, matching individuals that were the same before the treatment took place. In our paper we deal with this problem because we observe the control variables at t_1 , the treatment variables between t_1 and t_2 and the outcome at t_2 and t_3 .

Figure 2 tries to better clarify this issue. As for treatments 1 and 3, they begin at a_1 and a_3 respectively, and so before t_1 , the instant of time in which control variables and treatments are observed in Barbieri *et al* (2002, 2003). This means that at t_1 some controls variables are probably already affected by the treatments started at a_1 and a_3 ⁸.

On the contrary, we consider as treated only individuals that get treated between t_1 and t_2 –treatment 2 and 4 in the scheme- and we observe control variables at t_1 , an instant of time where individuals are in the same status

⁷ Note also that formally since 2002 registration to PES does not longer exist. However, for most of the PES local units the transition periods took so much time that in 2005 there were still many centres using the old structure. Moreover, after 2002 formal registration has been replaced by the formal declaration of the unemployment status, which is sometimes still perceived by the unemployed as the enrolment to PES.

⁸ For instance, Barbieri *et al* (2002, 2003) carry out the PES evaluation considering three different groups: employed, unemployed and inactive observed in t_1 . But also these occupational status might be affected by treatments started at a_1 and a_3 : for instance, an individual is detected as unemployed at t_1 because the PES staff proposed him some job search activities in order to look for a job. This means that in this framework some of the control variables are affected by treatments, are the results of treatments. This means that they cannot be used to match treated and not treated.

(unemployed not treated). As we will show later on, outcomes are observed at t_2 and t_3 .

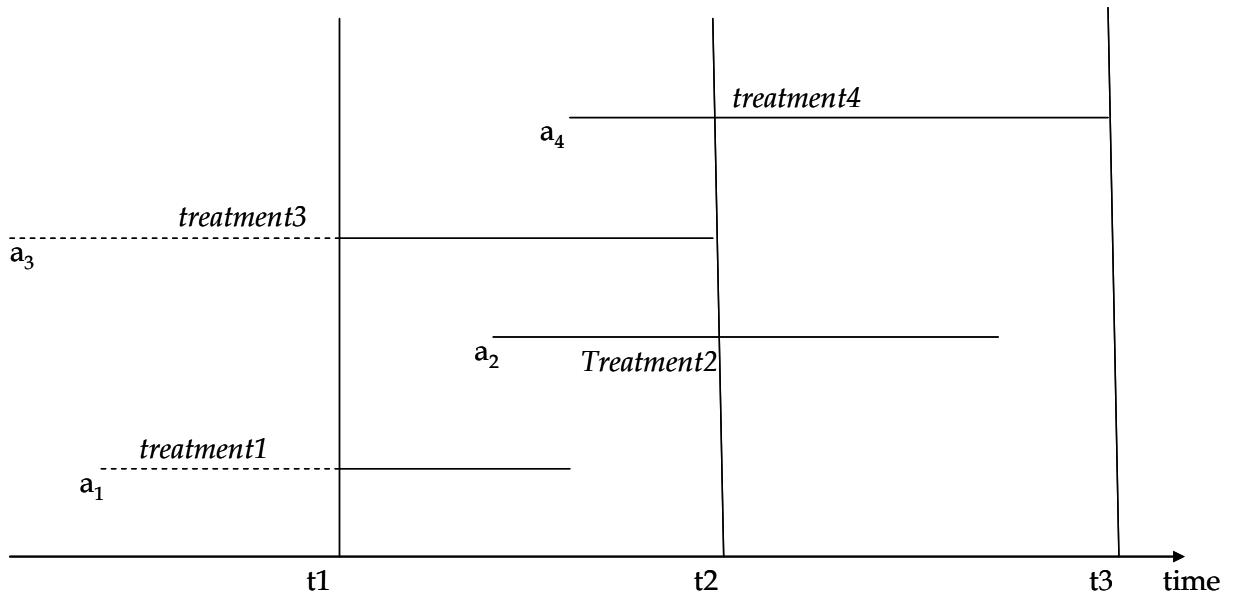


Figure 2: Scheme of critic features of previous papers on PES evaluation in Italy

Figure 3 sums up the structure of our evaluation procedure. We select 1060 individuals that are not treated by PES at t_1 . Then, we observe those individuals who get treated ('enrolment to PES') between t_1 and t_2 (241 individuals). Moreover, at t_2 we can observe the outcome, the occupation status (being employed). Obviously, this scheme implicitly assumes that, for those who are treated and are able to find a job between t_1 and t_2 , the treatment takes place before the outcome. The outcome at three months can be considered as a short term outcome of the treatment, while after 12 months we derive the long term evaluation.

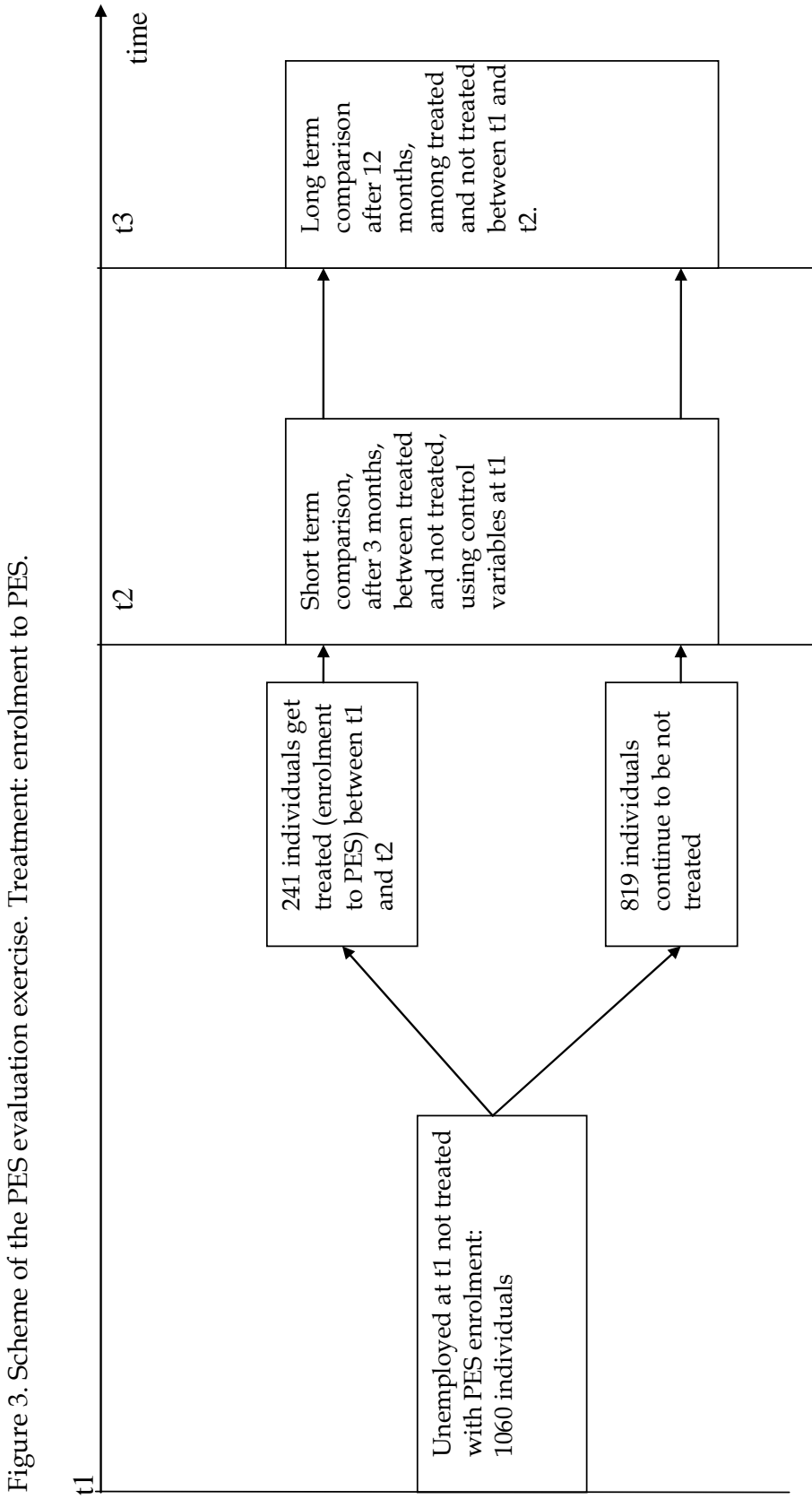


Figure 3. Scheme of the PES evaluation exercise. Treatment: enrolment to PES.

5. Propensity score matching and identification

Given our definition of treatment, we can define $T=1$ if the individual joins the treatment between t_1 and t_2 , and $T=0$ if not. This means that the control group consists of all those individuals who choose not to join, at least not yet, between t_1 and t_2 . In our short term analysis, our outcome variable is derived by the employment status at t_2 ($Y=1$ if employed and $Y=0$ if not employed). If we had data on an experimental design, we would be able to derive the following unbiased ATT:

$$\Delta = E(Y(1) - Y(0) / T = 1) = E(Y(1) / T = 1) - E(Y(0) / T = 1).$$

The first term on the right hand side is identified in the data, the second term -the outcome of the individual in his/her counterfactual treatment situation- is not, as stressed by the program evaluation literature (the usual missing data problem). In order to manage with this issue we use the standard conditional independent assumption (CIA), which states that given a set of covariates X , the counterfactual distribution of the treated between t_1 and t_2 is the same as the observed distribution of $Y(0)$ for not treated.

In other terms it means that: $[Y(0), Y(1) \perp T \mid X=x]$. CIA assumption allow us to eliminate some important biases in the ATT computation. The first bias is due to the difference in the support of X between treated and not treated; the second one is to control for different distribution of X in the common support region. Of course, with this version of the CIA, we cannot manage with another important source of bias, the selection on unobservables. In other words we assume that conditioning on X there are not unobservable variables that influences the selection into treatment. We will discuss this issue in the next section.

Using this CIA condition it is then possible to identify the 'missing counterfactual', since:

$$\begin{aligned} E(Y(0) \mid T = 1) &= E_X[Y(0) \mid X, T = 1 \mid T = 1] \stackrel{CIA}{=} E_X[Y(0) \mid X, T = 0 \mid T = 1] = \\ &= E_X[Y \mid X, T = 0 \mid T = 1] \end{aligned}$$

Hence the ATT we were looking for become:

$$\Delta = E(Y(1) - Y(0) / T = 1) = E_X[E[Y / X, T = 1] - E[Y / X, T = 0]] \mid T = 1.$$

It is also important to stress that the key choice faced by unemployed in the period t_1 and t_2 is not to participate or not, but whether to participate in a program in this period or not to participate, continuing searching for a job out of the program and knowing that one will always be able to participate later on. As in Sianesi (2001a, 2002a, 2004), the treatment in this paper can be considered

as starting a program in a given period of time, more specifically in our case between t_1 and t_2 . This has some implications for the CIA of propensity score matching procedure⁹. As Sianesi (2004) claims: *“What is required is thus that conditional on having reached the same unemployment duration and conditional on all the relevant information observed, the fact that an unemployed individual goes into a program in a given month while another waits longer is not correlated with the future labour market states the joining individual would have experienced had he instead not entered the program at that time. This ensures that the waiting individuals’ (observed) probability distribution of subsequently finding a job or of later joining a program is the same as the (counterfactual) distribution for the observably-similar treated individuals had they decided to wait longer too”*.

Moreover, in this paper we do not have to be worried about individuals that do not enter in a program because they already know that they will start soon a new job. Quoting Sianesi (2004): *“(CIA) would be violated if an individual waiting longer has decided to do so because he has received a job offer and hence knows that he will be hired shortly”*. In Italian LFS database there is a specific question in order to detect this kind of individual, and we drop them from the reference group.

In this framework and using this formulation of CIA assumption, it is possible to compute also a long term evaluation of PES after 12 months from the first interview. More precisely, as treated we consider -as before- individuals that begin a treatment between t_1 and t_2 , while as control group we consider those individuals that were not treated at t_1 , and that do not get treated in the period t_1 - t_2 , no matter if they will be treated between t_2 and t_3 . As already noted, under this version of the CIA, the probability distribution of subsequent outcomes, including participation in the programs, for matched comparisons openly unemployed at a given time, is the same as the one for the observably-similar participants had they at that time decided to wait longer too.

We argue that it is important to distinguish between short term and long term evaluation, especially because treatments in PES structures can imply short training courses and/or orientation periods that might reduce temporarily the probability to find a job. In our mind, we would expect no sizable positive ATT after three months -because of these training program or orientation periods- and a positive and significant ATT after 12 months, meaning that at least for some of the PES clients, these training programs have lead to higher unemployment *vs* employment probabilities. This is consistent

⁹ In this version of the paper we do not describe the propensity score matching procedure. See Sianesi (2004), Rosenbaum & Rubin (1973), Caliendo, M, Sabine, K. (2005), Dehejia, R.H. and Wahba, S. (2002).

with many other papers – the so called lock-in effect -, like for instance Sianesi (2001a, 2001b, 2004).

5.1 How different are treated and untreated individuals?

We claim that the main contribution of our PES evaluation exercise is the three periods structure, basically for two reasons. The first argument concerns the fact that using this evaluation structure we are able to remove most of the observed heterogeneity in the reference group, between treated and not treated. This means that the reference group is much more homogenous, an important property in order to compare treated and not treated using matching techniques. Table 1 shows the comparison for all covariates between treated and not treated considering all unemployed (as in previous papers) and in our reference group. It is clear that differences between treated and not treated decrease almost for all covariates we use. In column (1) are reported the differences considering all unemployed while in column (2) the differences using our framework. For some of them the reduction is substantial, for instance the difference for unemployment duration reduces from 9,60 to 0.97, the unemployment rate at the local level goes from 3.89 to 0.54, the turnover difference decreases from 2.91 to 0.40, the one for the share of agricultural sector from 1.55 to 0.29, and the adaptability for a fixed term goes from 11% to 2%.

The second reason concerns the fact that reducing observed heterogeneity between treated and not treated should also reduce the potential impact of unobserved heterogeneity, if any. For instance, when considering all unemployed the relevant differences between treated and not treated in terms of unemployment duration might hide other unobserved heterogeneity factors regarding people enrolled for long time to PES but still unemployed. In our setting we cancel out all this unobserved heterogeneity. The drawback of this structure, of course, is that our conclusions are valid only for our reference group, and not for the whole unemployed group.

Table 1 points out that treated and untreated in our reference group are very similar, meaning that selection into treatment for this group should not be so important. Nevertheless, in order to be sure to correct for self-selection issues at work, we implement the propensity score matching technique previously presented.

Table 2 shows the estimates of the computation of the propensity score, using a probit¹⁰. While some of the variables are not significant (gender, potential

¹⁰ It is also worth noting that control variables have to affect both outcome and treatment equations –in a sense they might be considered as endogenous variables- in order to correct the

experience, reasons for previous separation, number of employed and dimension of the household, adaptability to fixed term and to geographical mobility, performance of PES, share of agriculture, turnover), for the others we derive the expected coefficients. For instance, the search intensity, the adaptability to a part time job, the unemployment duration (between 12 and 24 months), having a delay in the education career, the employment variation at the provincial level, having had a low occupation in the previous job experience, the unemployment rate, increase the probability to enroll in a PES between t_1 and t_2 , while having a university degree in scientific-economic-juridical issues and having between 15 and 21 years old reduce this probability.

Table 1. Reduction in differences between treated and not treated using our evaluation structure

Covariates	All unemployed		(1)	Our reference group		(2)
	untreated	treated	diff	untreated	treated	diff
Age	33.24	33.05	-0.19	33.29	33.18	-0.11
Gender	1.54	1.53	0.00	1.54	1.52	-0.02
Unemp.duration	17.35	26.95	9.60	19.05	20.02	0.97
Potential experience	15.10	15.22	0.12	15.19	15.07	-0.12
Education	4.41	4.20	-0.21	4.42	4.24	-0.18
Education delay	0.80	1.00	0.21	0.70	1.06	0.36
search intensity	2.10	2.19	0.09	2.19	2.40	0.21
if ever employed before	0.67	0.65	-0.02	0.64	0.65	0.01
previous fixed term contract	0.19	0.26	0.07	0.17	0.19	0.02
previous dismissal	0.15	0.16	0.00	0.15	0.19	0.04
Previous occupation	5.20	5.66	0.46	5.09	5.46	0.37
Adaptability to fixed term	0.74	0.85	0.11	0.84	0.83	-0.02
Adaptability to part time	0.40	0.51	0.12	0.43	0.51	0.07
Adapt- to geogr. mobility	0.14	0.20	0.05	0.16	0.18	0.03
Household- enrolled to PES	0.93	0.76	-0.17	0.93	0.92	-0.01
Household- employed	0.28	0.65	0.37	0.28	0.33	0.05
Household- number of comp.	3.57	3.63	0.06	3.55	3.66	0.10
Unemp.rate at local level	8.95	12.84	3.89	9.09	9.62	0.54
Turnover at local level	12.32	15.22	2.91	12.29	12.70	0.40
Employment var. at local level	0.40	0.29	-0.11	0.19	1.08	0.89
Agriculture empl. shares	5.17	6.72	1.55	5.04	5.32	0.29

It is also worth noting that the pseudo R^2 of this logit is quite low, around 0.10. This confirms that our three periods structure reduces the observed heterogeneity between treated and not treated, and we assume that the remaining heterogeneity is captured by the propensity score.

selection bias into treatment. This is clearly stated in the literature, for instance in Caliendo & Kopeining (2005) or in Blundell et al (2005).

Table 2. Logit estimates for the enrolment to PES

Covariates	Coeff	p-value
age 15-21	-	-
age 22-30	0.413	0.005
age 31-45	0.395	0.010
age 45-	0.321	0.076
no school - primary	-	-
lower secondary	0.104	0.493
upper secondary (liceo)	0.130	0.545
upper secondary (no liceo)	0.172	0.287
Humanistic univ. Degree	-0.104	0.682
Scientific/giuridic/economic degree	-0.448	0.070
no search effort	-	-
search intensity1	0.207	0.102
search intensity2	0.381	0.008
search intensity3	0.651	0.000
adaptability part time	0.219	0.015
unempl.duration (months<=3)	0.158	0.266
unempl.duration (3<months<12)	0.187	0.221
unempl.duration (12<=months<=24)	0.283	0.038
unempl.duration (months>24)	-	-
education delay (less than average)	-	-
education delay (in average)	-0.163	0.234
education delay (more than average)	0.276	0.040
having had previous working experience	-0.224	0.105
previous experience: low skilled occupation	0.582	0.000
previous experience: lower blue collar	0.238	0.139
previous experience: higher blue collar	0.191	0.210
previous experience: managers and white col.	-	-
Household member enrolled to PES	0.130	0.108
Employment var. at local level	0.036	0.010
unemployment rate (<5%)	-	-
unemployment rate (5%=<UR<12%)	0.228	0.044
unemployment rate (UR>12%)	0.295	0.018
first quarter	-	-
second quarter	0.082	0.516
third quarter	0.165	0.189
fourth quarter	-0.372	0.007
constant	-1.856	0.000

Note: All other variables (gender, potential experience, reasons for previous separation, number of employed and dimension of the household, adaptability to fixed term and to geographical mobility, performance of PES, share of agriculture, turnover), are not significant.

6. PES evaluation: estimates and results

In this paragraph we present results concerning the PES evaluation. Table 3 shows the ATT coefficients for the treatment variable we consider, ‘enrolment to PES’ between t_1 and t_2 . At first, we are interested in the short term evaluation, i.e. 3-months transitions from t_1 to t_2 . The first line of table 3 shows that ATT coefficients are negative and significant, meaning that PES enrolment decrease the probability to have an unemployment *vs* employment transition in the short run, no matter the matching procedure used (radius, nearest neighbour, kernel, stratification). It is also worth noting that the balancing properties are always verified (BPNS stands for balancing properties not satisfied), meaning that the control variables are not significantly different (at 1%) for individuals having similar propensity score, between treated and not treated.

Table 3: ATT of employment probabilities for unemployed not treated at t_1

Enrolment PES (between t_1 and t_2)	Num. treated	ATT - Propensity score matching								BPNS
		Radius		Nearest		Kernel*		Stratification		
		coeff	t	coeff	t	coeff	t	coeff	t	
Short Term (3 months)	241	-0.064	-2.15	-0.079	-1.80	-0.065	-2.16	-0.068	-2.08	0
Long Term (12 months)	241	0.077	2.16	0.079	1.62	0.078	2.37	0.078	2.115	0

BPNS stands for balancing properties not satisfied. * is for bootstrapped standard errors

The second line of table 3 shows the corresponding results for the long term evaluation, i.e. unemployment *vs* employment transitions from t_1 to t_3 , after 12 months from the first interview. Also in this case, the treated are defined as those individuals who get treated from t_1 to t_2 . In the long term evaluation the ATT coefficients are positive and significant. More precisely, the ‘enrolment to PES’ treatment produces an increase in the probability to find a job of about 8%.

As in other papers (Sianesi 2001a, 2001b, 2004), it is possible to argue that those individuals who get enrolled between t_1 and t_2 are involved in a lock-in effect in the short run, probably because they spend time in activities such as training courses, preparing cv, orientation periods, etc. In the long run, when these activities are over, the treated display higher probabilities to find a job.

6.1 Robustness checks

In this paragraph we carry out some robustness checks of previous results. First of all, we consider a slightly different definition of reference group. So far we have taken into account those individuals who are not enrolled to a PES at t_1 . As a check we add some additional constraints, more specifically we cancel out those individuals who have benefit in the previous six months (with respect

at t1) from services of private employment services (PRES) and those who are attending a training course. The idea is that these other treatments (PRES and training) can at least partially drive our results. Table 4 shows that it is true only partially. In the short run actually the ATT switch from negative to not significant. This can be explained by the fact that in the previous analysis the not treated group included also individuals attending -for instance- training courses, and these individuals might be characterized in the short run by lower probabilities to find a job. On the contrary, in the long run there are no changes, coefficients are almost always significant and positive.

A final remark concerns the unobserved heterogeneity issue. One might claim that even if our control variables group is very large, including much information at the individual, familiar and macroeconomic levels, there could be some relevant unobserved driving our results. Actually, we argue that this does not seem to be plausible since the set of covariates is really detailed. Nevertheless, it is important to try to understand which should be the direction of a possible bias. In the Italian literature it is usually claimed that PES clients are negatively selected, in the sense that those individuals with relatively worse observed and unobserved characteristics have more probabilities to be enrolled to PES, while those with better characteristics carry out their job search activities for instance sending directly cv to employers, using informal networks, etc. This is confirmed in the first two columns of table 1, when we compared the treated and not treated groups for all unemployed at t1: treated display higher unemployment duration, higher education delay, lower educational levels, higher unemployment rates at the provincial level. For this reason it is plausible to claim that also the unobserved characteristics should move in the same direction.

This means that if treated individual were actually negatively selected and if we were not able to completely control for this unobserved heterogeneity using our wide set of covariates, our estimates would represent lower bounds of the true ATT, both in the short and the long run. This would entail that in the short run the effect might be less negative (or not significant or even positive) and in the long run ATT might be even greater in magnitude, i.e. more than 8%.

7. Conclusion

In the last decade, according to the European Employment Strategy, employment services have been widely reformed in Italy, pursuing mainly an

increase of efficiency of PES. The goal of this paper is to carry out an evaluation of these reforms.

With respect to previous papers on this topic, we introduce three main innovations: 1) we change the structure of the evaluation exercise and the definition of reference group and the one of treated group; 2) we compute control variables in a pre-treatment status; 3) we consider a short term (3 months) and a long term (12 months) evaluations.

Results are different from previous papers. While in the short term the PES impact seems to be either non significant or negative, in the long term the PES clients display a higher probability to find a job (of about 8%) with respect to not treated. This is consistent with other papers, for instance Sianesi (2004), claiming that in the short run the impact of a treatment might be negative because PES users are involved in training courses and orientation periods, in this way temporarily reducing the probability to find a job, probability that increases in the long run when these training activities are over.

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Appendix: List of control variables

Personal information

Gender:

gender 0=male; 1=female

Age classes: (dummy variables)

age4_1 15-21
age4_2 22-30
age4_3 31-45
age4_4 46-64

Highest level of education successfully completed: (dummy variables)

Combining level and field of study

educ6_1 no school - primary
educ6_2 lower secondary
educ6_3 upper secondary "no liceo" (2-3 years schools or 4-5 years professional or technical schools)
educ6_4 upper secondary "liceo" (4-5 years classical, scientific, linguistic or artistic schools)
educ6_5 tertiary or postgraduate (humanistic, sociology, linguistic or artistic field)
educ6_6 tertiary or postgraduate (scientific, economic or legal field)

Delay in education attaining: (dummy variables)

Computed for each level of education comparing the age with the mean age in attaining

delay3_1 less than average
delay3_2 in average
delay3_3 more than average

Potential experience: (dummy variables)

Difference between age and the age of completed education

pot_exp4_1 0-3 years
pot_exp4_2 4-14 years
pot_exp4_3 15-25 years
pot_exp4_4 more than 25

Search intensity, computed for unemployed: (dummy variables)

Number of active actions searching for employment during the 4 previous weeks (excluded PES)

search4_1 no active actions
search4_2 1 or 2 active actions
search4_3 3 or 4 active actions
search4_4 more than 4 active actions

Adaptability in searching for employment: (dummy variables)

According to 3 characteristics: full-time/part-time, permanent/temporary, place of the job searched

adapt_full_part 0=no; 1=yes
adapt_perm_temp 0=no; 1=yes
adapt_place 0=no; 1=yes

Unemployment duration: (dummy variables)

durat4_1 0-3 months
durat4_2 4-11 months
durat4_3 12-24 months
durat4_4 more than 24 months

Previous work experiences:

exp 0=without work experiences; 1=with work experiences

Reason for leaving last work experience, if any: (dummy variables)

reason3_1 retirement
reason3_2 dismissed
reason3_3 temporary job

Occupation in the last work experience, if any: (dummy variables)

According to ISCO88-com classification (first digit)

occ4_1 low skilled: 7-8 first digit
occ4_2 lower blue collar: 6 first digit
occ4_3 higher blue collar: 5 first digit
occ4_4 manager and white collar: 1-4 or 9 first digit (included army)

Household's information

Number of household's members: (dummy variables)

memb5_1	single
memb5_2	2-3 household's members
memb5_3	4 household's members
memb5_4	5-6 household's members
memb5_5	more than 6 household's members

Number of household's members registered at a PES: (numeric variable)

Excluded himself/herself if registered

register	none, one, two or more
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Number of employed persons in the household: (dummy variables)

empl3_1	none
empl3_2	1 employed
empl3_3	2 or more employed

Macroeconomic variables

These numeric variables have been estimated at the provincial-NUTS3 level

Unemployment rate: (dummy variables)

Unemployment rate estimated at t1

unempl3_1	ur<5%
unempl3_2	5%<=ur<12%
unempl3_3	ur>=12%

Agriculture share on employment: (numeric variable)

agric	estimated at t1
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PES efficiency evaluated through LFS: (numeric variable)

The share of employed people that found the present job thanks to PES

pes_effic1	estimated on the first quarter of 2004
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PES efficiency evaluated by ISFOL: (numeric variable)

The ISFOL indicator

pes_effic2	
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Employment variation: (numeric variable)

The employment variation between t1 and t2 (or t3)

empl_var	estimated between t1 and t2 (or t3)
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Unemployment versus employment transition probabilities: (numeric variable)

The share of unemployed people at t1 that become employed at t2 (or t3)

access	estimated between t1 and t2 (or t3)
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Unemployment versus employment or viceversa transition probabilities: (numeric variable)

The share of unemployed people at t1 that become employed at t2 or viceversa (or t3)

turnover	estimated between t1 and t2 (or t3)
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Quarter: (dummy variables)

quart4_1	first quarter
quart4_2	second quarter
quart4_3	third quarter
quart4_4	fourth quarter
