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VOCATIONAL TRAINING AND LABOUR MARKET:
INCLUSION OR SEGREGATION PATHS?
AN INTEGRATED APPROACH ON IMMIGRANT
TRAINEES IN PIEDMONT

Greta Falavigna, Elena Ragazzi and Lisa Sella

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Vocational training and labour market: inclusion or segregation paths? An integrated approach on immigrant trainees in Piedmont

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ABSTRACT: Considering the multidimensional nature of employability, which is a latent notion, and its intrinsic connection with education and training policies, this paper uses a mix of quantitative methods to explore the integration of migrants into the Piedmont VET system (North-West Italy), and their subsequent transition into the labour market. In particular, four different approaches are developed: a macro one, investigating gross placement indicators; a micro one, investigating individual scores of integration into the labour market; a multivariate one, estimating a probit model that controls for individual characteristics; and a duration approach, analysing migrants' survival on the labour market. The counterfactual design allows to estimate the net impact of training. Generally, migrants appear to be disadvantaged with respect to EU nationals, but their gap is filled whenever considering foreign trainees. However, the duration analysis does not detect different paths for the treated migrants, but only different paths for migrants on equal integration levels. Hence, data fully confirm the role of Piedmont training policies to contrast and re-cover the disadvantage of target groups which appear weak on the labour market.

KEYWORDS: migration; work; vocational training policy; counterfactual evaluation; net impact; labour market integration

JEL CODES: J15; J61; I24

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1. INTRODUCTION

Labour, and the better living conditions which could derive from it, have been since long time one of the main engines driving migration flows. Of the several millions people living outside their countries of birth, the ILO estimates that almost 90% are migrant workers and their families. Therefore, the labour market is the major arena where integration has to be pursued, both in a human rights perspective and in a socio-economical one. Moreover, the European Commission itself strongly underlines that social inclusion can more effectively, substantially, and quickly be obtained through work. This is the reason for Social Inclusion being one of the key policy fields for the 2007-2013 ESF Operational Programmes.

The social and economic patterns of the inclusion process have varied along time and space. In the last decades the former prevailing functional model, in which the economic development pulled the flows of low skilled labour force from countries experiencing a supply excess, turned in a very different scenario, in which migration did not follow the needs of the industrial system, but it was pushed by demographic and social changes in the countries of origin (Zanfrini 2013). Italy turned into an immigration country in this phase, starting from the Eighties onwards. In this situation, where immigration flows occurred in a labour market departing more and more from full employment, migrants were progressively perceived as a problem rather than a resource, and their integration became

a topic to be addressed by researchers and policies.

Even in periods of high unemployment and in the present period of crisis, foreign low-skilled and low-educated workers have found job opportunities in many sectors (agriculture, care, but also industry and commerce, as acknowledged by the growth in foreign masculine employment), establishing a model of complementarity in the labour market with the native workforce (Luciano 1991). In this situation, the challenge is not as much helping to find a job, but guaranteeing equal conditions, safe working, and reducing both the information asymmetry and the reputation gap. This can be helped a lot granting an Italian official certificate, as it is the case in the training courses evaluated in this work.

But this has also another implication, i.e. the necessity in policy evaluation to assess not only the presence of a job, but also the quality of the working conditions. In particular, for disadvantaged people integration can be reached firstly by entry (or re-entry) into the labour market and by employment stability, and then by promoting the acceptance of the diversity in the workplace and by combating the discrimination in accessing and progressing into the labour market (McGregor *et al.*, 2012; Ortolano and Luatti, 2007). For this reason, we will measure the employment rates of foreign trainees, but most of all we will assess the characteristics of the jobs they find. In fact, discrimination is generally played on a hidden ground, which mainly involves qualitative aspects, e.g. job duration and security, wage, over-/under-qualification, etc., rather than harsh hiring.

Moreover, whenever the difficulties hampering full labour integration do not depend solely on individual skill gaps, but they involve lacking social abilities, labour market entry takes the form of a long process, in which repeated failures may nullify the positive effects of previous training and other active labour policies. For this reason, it is fundamental to understand whether these policies improve individual survival on the labour market. In particular, this aspect turns out to be fundamental whenever local labour markets are characterized by low dynamism, and losing a job implies a long permanence into unemployment before getting hired again.

Concerning migrations, they often occur in response to demand and supply imbalances for the qualified workers, who should be easily integrated into the labour market. But this may be problematic, in particular when demand is unresponsive to changes in the supply side, and whenever phenomena of job-education mismatch (over-/ under-qualification) appear (Pecoraro, 2011). In this perspective, training policies act in multiple directions, starting from their original mission of filling the skill gaps between labour market requirements and (foreign) workers' human capital endowment, but also in other social aims, such as abating existing social barriers (language, unwritten social rules) and overcoming individual disadvantage.

This paper investigates the effect of vocational training (VT) on the integration of foreign workers. The issue is justified by the role of VT policies in Italy, which specifically act against the characteristic gap in integration and employment of the weak targets.

The study involves both quantitative and qualitative aspects of labour market integration. It is based on a survey occurred in 2011 and 2012 in Regione Piemonte¹, aimed at measuring the net effect of training policies funded by the ESF for the unemployed and the disadvantaged workers (Ragazzi *et al.*, 2012, 2013; Sella and Ragazzi, 2013). This is a rather innovative experience, inverting the dependence on monitoring, financial, and output data lamented by the EU Commission. In fact, it gives the access to survey data, which are directly collected with the final recipients and picture their employment follow-up in the medium term, i.e. about one year after the training.

The most innovative aspect of the work consists in the net impact evaluation, which is usually neglected in practical applications, due to many theoretical and methodological issues concerning the *ex post* identification of a proper comparison group (White 2010). Such goal guided the whole research design, for it allows a clear understanding of the main effects of the programme and it helps assessing the so-called dead-weight loss, i.e. the resource loss experienced whenever subsidising targets which would have been anyway satisfied² (Sestito, 2002; Martini et

¹ Data and results in this paper draw from the activity of the evaluation service «Valutazione del POR FSE della Regione Piemonte ob. 2 “competitività regionale e occupazione” per il periodo 2007-2013», realised by the RTI Isri-Ceris. The authors gratefully acknowledge Regione Piemonte, which is the sole owner of data and of the reports, for letting use the results for scope of research and advances in methodology.

² For a complete discussion of the several theoretical issues concerning impact evaluation and the way they may be handled in practical application see Sella and Ragazzi (2013) and Benati, Ragazzi, and Sella (2013).

al., 2009). In the perspective of this paper, this research design allows us to disentangle two opposite dimensions of migrants' labour integration – the individual gap in employability, and the marginal effectiveness of training – which would otherwise be hidden. Moreover, an attempted linkage between survey and administrative data (Ragazzi and Sella, 2014) allows us to explore issues concerning the duration of employment spells.

2. TRAINING AND INTEGRATION OF FOREIGN WORKERS: IS IT RELEVANT?

In general, training is a tool aimed at improving workers' integration into the labour market. Trainees do face new technological and organizational needs better than other workers. The acquired skills and competences enhance their adaptability and innovation capability, so improving their employability through a better fit to the dynamical needs of the labour market.

Moreover, training is particularly effective in overcoming gaps in transversal skills and social abilities. Inductive pedagogy, participative methods, on-the-task learning, and other pedagogical methods typically applied in VT are useful both to detect and to face relational problems which could hamper the success of labour insertion. This is the reason why VT policies generally address the risk of social exclusion, and jointly serve for labour and social inclusion.

This fact is particularly true in Italy and even more in Piedmont, for historical reasons. In fact, since its first development in the 1800s (De Fort et al., 2011), Piedmont

VT had a social and charitable flavour, principally aimed at recovering the marginalized boys (poor, orphans, hoods) through professions they could honestly practice. The didactical and organisational set-up of VT was less structured and more independent than national education, hence allowing a stronger connection with territorial institutions and needs, and a close adherence with local industrial and economic development. In the recent years, the downfall in the industrial sector and the rising service industry grew out the need for vocational (re)training of the weak and low-educated adult workers, in a life-long learning perspective. New ESF programmes brought specific employment incentives for the weak targets (in particular foreign low-educated and long-term unemployed workers), while programmes for the youngster were experimentally taken into the education system. Some specific interventions were addressed to foreign workers, aiming at their social integration.

This concern of Piedmont regional authorities to join in a single effort both the fight against unemployment and social exclusion, is also acknowledged by the IX CNEL (2013) report. It calculates for each Italian region and province a set of composite indicators, describing the attractiveness of foreigners on the local labour market, their social integration and labour inclusion. In the last report, Piedmont appeared to be at the first place in the ranking of Italian regions, with a value of 64.5 (%) for labour integration, 61.0 for social integration, and an average value of 62.8 for global integration. The second region is Emilia-Romagna, scoring 73.8, 49.7, and 61.7 respectively.

The last region is Calabria with 34.3, 39.4, and 36.8. Torino, although not first in the Province ranking, is the first metropolis (values are respectively 64.5, 54.9, 59.4), far away from Rome (49.9, 83° over 103 provinces) and Milan (49.2, 87° place) and other administrative regional centres.

These data seem to indicate that the relative success of Piedmont in integrating the foreign population comes from a well-balanced process, covering all fields in the life of migrants, and also from a good equilibrium between the metropolitan centre and the rest of the territory.

In Piedmont, in 2012, there were 384,996 foreign residents out of 4,374,052 Italian citizens, representing a share of 8.8%³.

The foreign presence is very concentrated as far as provenience, the first three citizenships (respectively Romania, Morocco, and Albania) accounting for 62% of the total.

The CNEL (2013) analysis is based on elementary indicators registered on a territorial aggregated basis.

In this paper we want to show that training contributes to this balanced integration process by considering the employment outcomes of VT students.

These data are processed by multiple techniques, including composite integration indicators calculated at the individual level, so reinforcing the CNEL macro approach,

and a duration analysis, aimed at assessing the improvement in the capacity to withhold a job in the training-to-work transition.

3. METHODOLOGICAL FRAMEWORK

This paper draws from a wide and ambitious evaluation project, with multiple objectives, which endowed us of a variety of data sets of VT students.

These include:

1. Training policies *monitoring database*; after some preprocessing this was the reference to define the universe and to get some data on VT features;
2. CATI *survey*, aimed at depicting detailed employment status, through a probabilistic sample;
3. *administrative data of employment centres (COB)*. This powerful data-base concerns the whole labour force, and is fundamental to draw individual careers. This instrument would become even more powerful when integrated with individual school paths. It requires a long preprocessing.

The following subparagraphs include some methodological notes on these sources. “For more detailed reference see Sella and Ragazzi (2013) Ragazzi *et al.* (2014) and Ragazzi and Sella (2014)”.

3.1 The survey sampling-design

The survey on the employment status one year later the end of the course is performed on a representative sample of VT students trained during 2011.

³ The share is increased with respect to 2011 (source <http://www.demos.piemonte.it/site/>). This evolution is in line with Avola (2013), who states that although the effects of the crisis in Italy have been much worse than elsewhere, this has not implied a sharp worsening of migrant workers' conditions (at least up to 2012), whose presence in the Italian labour market is a structural feature.

Table 1 – Target population by certification type and active participation to labour market policies. Absolute and % values*.

	OI	BAS	SPE	TOT by LMP	% by LMP
No	2711	1952	2482	7145	74.4
Yes	1078	617	765	2460	25.6
TOT by certification	3789	2569	3247	9605	
% by certification	39.5	26.7	33.8		

* The paper focuses on foreign BAS and SPE students

Regione Piemonte co-financed the policy by means of ESF resources⁴.

In order to clearly evaluate the impact, all courses in the sample issue some final certificate (either professional qualification or specialization) and they are mostly address to unemployed people. For the sake of generality, no highly disadvantaged group is addressed (e.g. detainees or disabled persons).

In quasi-experimental evaluation, the identification of a proper target (the treated) is particularly awkward, since an highly homogeneous control group is needed, which has to be selected *ex post*. Moreover, in both the treated and control samples, an adequate numerosness is needed to guarantee statistical significance.

⁴ The courses were financed within the “Unemployed – Labour Market” directive (MdL) and pertained the four actions: III.G.06.04 (qualification for unemployed foreigners) and IV.I.12.01 (basic knowledge qualification for low-school-attendance adults), BAS from now on; IV.I.12.02 (specialization and brief refresher courses) and II.E.12.01 (post-qualification, post-diploma, post-degree specialization courses), SPE from now on.

3.1.1 The target population

The target population collects all students, who successfully attended a selected course and got the final certificate. In order to evaluate the net impact of VT, the analysis is restricted to individuals not employed at registration, thus focusing on policies aimed at recovering the employment gap of the weak targets, rather than on policies devoted to generic human capital accumulation.

Being the data extracted from monitoring and administrative archives, a careful pre-processing is needed for a correct quantification of the target population⁵, which finally counts 9,605 individuals.

This number includes the experimental VET activity in compulsory education, which is out of the purpose of this paper, which is on the other hand focalised on qualification and specialisation courses, accounting for 5,816 students..

Notwithstanding the local peculiarities in VT policy programming, preliminary work advised against a sampling stratification by territory and action (Benati *et al.*, 2013).

⁵ Duplicates have been reduced to single records prioritising successful and longer treatments, while incomplete records have been matched to administrative SILP data.

Hence, the sample is stratified by type of certification (compulsory education, qualification, specialization) and participation to active labour market policies (LMP)⁶.

3.1.2 Sampling design and quality assessment

The optimal sampling strategy is not unique, rather it depends on the evaluation objectives. In the present case, several tasks have to be satisfied:

1. Reliable estimate of VT students' follow-up (accountability purposes);
2. Focus on the main aspects of local VT policies (evaluation and programming purposes);
3. Focus on individual characteristics and outcomes (target evaluation and programming);
4. Net impact estimate (improve policy effectiveness);
5. Investigate labour market transitions.

Clearly, some tasks are partially in contrast, e.g. point 1 claims for a huge treated sample and point 4 for a large control sample, but contract terms indicated a number of 2000 interviews.

In the end, a 2-dimensional sampling strategy is implemented, accounting for the type of certification and the active participation to any LMP after VT enrolment (6 strata overall). At the stratum-level, a proportional allocation is performed,

⁶ This is due to a special interest in the transition from training to the labour market. Obviously, administrative data can solely pinpoint labour market services offered by institutional subjects (employment agencies, town and Province services), neglecting all informal activity (training and temp agencies, private employment agencies, labour union, religious and voluntary associations).

controlling for individual characteristics that influence employment outcomes (gender, citizenship, age).

Practically, the ratios observed in each stratum of the target population have been reproduced in both the treated and comparison samples, hence controlling for composition effects.

In the treated sample, the optimal size is fixed in 1,532 individuals⁷ (Cochran, 1977). It represents the 16.0% of the target population and exhibits a satisfactory precision with respect to similar evaluation exercises (Lalla *et al.*, 2004; Centra *et al.*, 2007; IRPET, 2011). Then, individuals are split across the 6 strata, oversizing the smaller subpopulations in order to reduce the sampling error associated to the most critical ones⁸. Hence, individuals are extracted randomly, following the above proportional allocation design.

The overall response rate is 52.4%, showing a consistent “hard-core” of individuals who systematically refuse to be interviewed or cannot be reached, possibly affecting the estimates (Cochran, 1977). Finally, the 9.0% non-respondents are displaced by individuals in the same stratum, hence keeping the representativeness constant, but possibly enhancing the non-sampling error (Levy *et al.*, 2008).

⁷ The standard formula for finite populations is
$$n_e = \frac{z_{1-\alpha/2}^2 P(1-P)}{1 + \frac{1}{N} \left(\frac{z_{1-\alpha/2}^2 P(1-P)}{e^2} - 1 \right)}$$
, where e is the absolute error

in estimating the unknown proportion P of the target population N ; $z_{1-\alpha/2}$ is the abscissa when the normal distribution function equals $(1-\alpha/2)$; α is the desired significance level. The chosen values are $e = 2.31$, $P = 0.5$, $\alpha = 0.1$.

⁸ The overall absolute error is 2.3%, while each stratum lies underneath the 7% threshold.

3.1.3 The counterfactual sample

The identification of a proper comparison group is the fundamental step in net impact evaluation. It requires a comparison sample as much homogeneous to the treated sample as possible. In principle, the main and comparison groups should solely differ with respect to the treatment itself, in this case the successful attendance to VT. In fact, counterfactual impact evaluation should answer the question “what if the (training) policy would not have been supplied?”. But this is far from being a simple task. Mostly, it is still more arduous whenever the comparison group has not been designed *ex ante*, as in pure experimental design (randomized control trial), but it has to be identified *ex post*, as in the present case (Ciravegna *et al.*, 1995). Moreover, in the present case the size of the control group is necessarily limited by other evaluation objectives (see §3.2). A careful analysis of the evaluation contest suggested to extract the control sample from the so called no-shows (Bell *et al.*, 1995), i.e. the students who did not attend the course (treatment) and that were not employed at the enrolment. Such individuals are highly homogeneous with the treated group.

The alternative strategies were aborted for unfeasibility constraints. In particular, a “pass-list strategy” is quite desirable, since it overcomes selection bias by directly comparing the placement outcomes of the last-admitted with the first-excluded individuals. However, no pass-lists are available for VT policies. Moreover, this strategy can respond to the aim of estimating the net impact, but not to the one of inferring general employment rates of trainees. A counterfactual built on employment agency lists was neglected too, since the comparison group would be too heterogeneous with respect to the treated. In fact, employment agency lists collect a particular subgroup of unemployed individuals, who presumably differ from the overall group for several unobservable characteristics (e.g. motivation, proactive attitude, individual abilities, background), which substantially influence their employment outcome (selection bias).

Table 2 describes the counterfactual sample, which resembles the stratified sampling designed for the treated sample (see sec. 3.2). The absolute error is restrained (3.7), revealing the quite good quality of the sample.

Table 2 – Counterfactual sample, absolute and % values with respect to the counterfactual population.

	BAS		SPE		TOT by LMP		Error by LMP
	A.V.	% pop.	A.V.	% pop.	A.V.	% pop.	
No	160	30.6	224	30.3	384	30.4	4.2
Yes	46	36.8	61	33.9	107	35.1	7.6
TOT by certification	206	31.8	285	31.0	491	31.3	3.7
Error by certification	5.6		4.8		3.7		

3.2 Transformation and validation of administrative sources for duration analysis

The SILP database, which is a part of a national system managed by the Labour and Social Policy Ministry, registers all compulsory communications (COB – Comunicazioni Obbligatorie) which occur any time when an individual passes through the creation, transformation or expiry of a labour contract.

These communications follow a common form and comply publicity and social security duties.

This set of “events” may be transformed, with a process called longitudinalisation, in a data-base showing the work state of an individual in a selected time-frame.

Further information on training and other active and passive labour policies the individuals has enjoyed, may be found in other sections of the DB, and so it can be used for the evaluation of labour policies (Canu, Conzimu e Garau, 2010).

A careful validation analysis of this data-source has been conducted in Ragazzi and Sella (2014), showing that some procedures in the DB management may still introduce sources of errors and distortions, which should be corrected before that it can become a real substitute of surveys in impact evaluation. The SILP DB is on the other hand the only way to analyse individual paths, since surveys are not reliable for this, due to memory lapses.

A connection to the education register (*Anagrafe degli studenti*, managed by the Ministry of Education), could allow a complete reconstruction of individuals' careers, so allowing the policy maker to

understand the path-dependent element on which to act with special policies to prevent social and labour exclusion, but this is not possible at present.

A complete processing of SILP data concerning VT students led to a complete picture of their training and work careers, before, during and after the course, which will be used to analyse the different capability of different groups to maintain the job they find thanks to training.

4. THE IMPACT EVALUATION

In the assessment of the effect of training policies on the integration for migrants we adopt an holistic approach to data-analysis. Labour integration is in fact a latent variable which cannot be observed, neither measured with quantitative surveys, but which has various manifestations.

This explains why a mix of techniques and indicators is the best way to understand whether and how VT acts in improving working conditions. The gross impact of VT policies is evaluated considering the variation in the working conditions of the trained students in the medium term, i.e. about 12 months later the qualification (October 2012).

In fact, the labour market transition of individuals not employed at enrolment measures the gross impact of training, without caring of the counterfactual situation.

This section explores two complementary gross indicators: a macro measure, based on aggregate placement outcomes, and a micro measure, based on individual integration scores.

4.1 Macro approach: Gross placement indicators

Placement outcomes can be evaluated by three nested indicators (i.e., employment rate, insertion rate and success rate), each representing a specific situation within the labour market (ISFOL, 2003).

The employment rate is the fraction of trained students who are employed (including redundancy funds) on October 2012, hence experiencing a “strong” position within the labour market.

Employment rate =

$$\frac{\text{Trained \& Employed (incl. redundancy funds)}}{\text{Total}}$$

Investigating the employment rate indicator by citizenship (Table 3), it emerges that EU foreigners perform the best, recording a high employment rate with respect to Italian and non-EU citizens.

In fact, more than one over two EU

students are employed one year later, in both qualification and specialization subgroups, with respect to 46.6% Italian and 41.1% non-EU people. These results relieve a good inclusion of EU immigrants in the labour market (even better than that of Italian students) and a worse position of non-EU citizens. However, the above indicator simply considers students’ rough professional position, neglecting any qualitative aspects of labour market inclusion. This is a multidimensional object: a possible definition is that a migrant is fully integrated into the labour market whenever he has a stable/secured job that is adequate to his education and guarantees a good income (Blangiardo, 2011).

Hence, a bulk of indicators has to be considered in order to assess migrants’ integration.

This task can be better addressed by individual integration scores, which adopt a micro-approach to investigate differential aspects of integration by various sub-populations.

Table 3 – Employment rate indicator on October 2012 by citizenship, % values.

	Employment rate		
	EU	ITA	NO EU
BAS	52.1	50.7	42.4
SPE	55.0	44.1	35.9
TOT by nationality	52.9	46.6	41.1
TOT trained		45.9	

Table 4 – Average integration score by citizenship and mean-comparison tests in the main sample.

	Obs	Mean	Std. Dev.	Min	Max
EU	68	-0.235	0.508	-0.999	0.598
ITA	730	-0.377	0.534	-0.999	0.783
Non EU	197	-0.371	0.465	-0.999	0.660

Mean-comparison (t test with unequal variances)			
	Pr(T<t)	Pr(T > t)	Pr(T>t)
EU – ITA	0.984	0.031	0.015
ITA – Non EU	0.965	0.069	0.035

4.2 A micro approach: Individual scores of labour market integration

The available placement data allow to investigate three out of four aspects of the above definition of labour market integration, i.e. the employment position, its security, and the income level⁹. On the contrary, over-qualification is addressed by considering the educational level at enrolment.

Individual scores are calculated for every statistical unit by selecting k integration variables according to the shared definition of labour market integration, and then by processing the frequencies of the sample distribution for the selected variables. Each

statistical unit is assigned k scores according to its modality of the variables.

Each score is calculated by an algorithm, that considers the share of individuals enjoying a better position and the one of people with a worse value of the k -th variable. Finally, an average of the scores is calculated at each statistical unit, i.e. the integration score. The integration score is ranged [-1;1] (Cesareo and Blangiardo, 2009). Table 4 substantially confirms the previous result, showing an higher integration into the labour market for EU immigrants (-0.23), while no significant difference is retrieved between Italian and non-EU citizens (-0.37).

But this result is stronger than the previous one, for it involves a multidimensional definition of the labour market integration.

As well as the previous macro indicators, integration scores calculated over the treated are affected by deadweight effects.

To get rid of such weakness, average integration scores must be compared between the treated and the counterfactual samples.

⁹ The employment position is described by five modalities: inactive, unemployed, student, on-the-job trainee, employed. Job security has three modalities, reflecting contract duration: low for one year or less fixed-term contract, medium for fixed-term contract lasting more than one year, high for open-ended contract. The income level is defined by four classes: <= 500 Euros; 501-1,000 Euros; 1,001-1,500 Euros; more than 1,500 Euros.

5. THE NET IMPACT EVALUATION

Since the sampling strategy guarantees an high homogeneity between the treated and the counterfactual samples (see sec. 3.1.3), a comparison in their average integration scores represents the very first step for the net impact evaluation.

5.1 *Differentials in average integration scores*

Table 5 shows the integration scores over the counterfactual sample. Comparing with table 4, it emerges that all counterfactual sub-populations are more integrated with respect to the trainees into the labour market, thus suggesting that VT drop-outs are systematically stronger. In fact, most of them left the course for they autonomously found a job. However, over the counterfactual sample Italian natives perform significantly better than non-EU migrants, while there is no significant advantage with respect to EU migrants.

Considering the mean-comparison tests (Table 4 and 5), VT plays a significant role in improving the relative labour market

integration of migrants, both EU and non-EU. In fact, on the one side EU migrant drop-outs share the same integration level of Italian drop-outs, while EU trainees are significantly better integrated than Italian ones.

On the other side, non-EU drop-outs show worse labour market integration than Italian drop-outs, while there is no significant difference between non-EU and Italian trainees.

5.2 *The multivariate analysis*

The net impact of training policies has also been assessed through a multivariate probit model. This approach allows estimating in percentage terms the net impact of training policies on the probability of employment about one year later, taking simultaneously into account the effect of individual characteristics on such probability. This technique avoids the composition effects affecting the rough comparison of outcomes between the treatment and counterfactual groups (net employment differentials), but on the other hand measure the outcome as a simple dichotomous status.

Table 5 – Average integration score by citizenship and mean-comparison tests in the counterfactual sample.

Citizenship	Obs	Mean	Std. Dev.	Min	Max
EU	22	-0.176	0.354	-0.986	0.444
ITA	339	-0.106	0.364	-0.986	0.828
Non EU	130	-0.202	0.307	-0.515	0.602

Mean-comparison (t test with unequal variances)			
Group	Pr(T<t)	Pr(T > t)	Pr(T>t)
EU – ITA	0.190	0.390	0.810
ITA – Non EU	0.998	0.005	0.002

Table 6 –Probit model on the treated and counterfactual groups.
The symbol # indicates interaction variables.

Variables	Employed
Woman	-0.380*** (0.129)
Age	0.0824*** (0.0271)
Age ²	-0.00124*** (0.000396)
Education (years)	0.0735*** (0.0211)
No-EU	-0.249* (0.144)
Upstream unemployment (months)	-0.0256*** (0.00400)
Drop-out for hiring	0.858*** (0.126)
Training	2.137*** (0.361)
Training # Education	-0.0584** (0.0257)
Woman # Training	0.395** (0.155)
No-EU # Training	0.205 (0.179)
OSS # Training	
1 1	0.726*** (0.120)
1 0	0.283 (0.273)
Constant	-2.236*** (0.470)
Observations	1,485
Adj. R ²	0.0994

Standard errors in parentheses

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

The regression model in Table shows a positive and significant effect of age, instruction level, participation to VET on individual employment probability. In particular, age coefficients show a nonlinear impact on employability: *ceteris paribus*, it is more likely that adults find a job with

respect to young people (0.082), but their advantage decreases with age (age² = - 0.001). Concerning variables that negatively influence employability, we observe a negative impact of gender to the detriment of women (-0.380), although trained women recover this disadvantage (0.395).

Moreover, upstream long-term unemployment has a significant and negative impact (-0.026) on employability. On equal terms, a longer unemployment spell before the enrolment lowers the probability to find a job after the training.

Variables describing the context of life (parents' education or the family material endowments such as pc, internet, driving license, private transport means, dimension and property of the house) do not prove significant¹⁰.

The model seems to indicate that material and contest difficulties do not really hamper employability, and certainly less than the aspects linked to the motivation and relation sphere of the individual do. This is a very important insight concerning the integration of migrants. The digital and material divide is not so relevant, and not so wide (indicators of endowment for the non-EU trainees are not much smaller than those for the Italians, and those for the EU migrants are even higher¹¹), above all in the case of the policies here evaluated, whose target is the disadvantaged people.

Hence, the action for migrants' integration must be concentrated on the training for social abilities and on the reduction of cultural barriers.

The observed differences in the employment performance (gross impact and employment differentials) of the various types of courses are due to the greater concentration in the most successful actions of those disadvantaged individuals for which the training policies prove so effective in

Piedmont. In models where these individual differences are accounted for, the different performances disappear.

5.3 The impact on migrants

Let's now have a closer look to the results concerning migrants. Although the descriptive statistics show non-EU students' insertion rates comparable to those of EU citizens, the multivariate analysis shows a strong and persistent disadvantage.

The negative and significant coefficient of the nationality dummy (-0.249) tells that the non-Europeans with no training have a much lower probability to find a job than the EU nationals. Although the migrants' motivation to work and willingness to take jobs in difficult conditions (e.g. personal care, night work or hard environmental conditions) is generally appreciated a lot by the market, they are weaker on equal terms.

But the data show also an effect in the opposite direction, i.e. that of training. The initial disadvantage is completely compensated in the case of trainees.

This result cannot be appreciated by simply observing the model coefficients, while the two contrasting effects can be precisely estimated using the Average Marginal Effect (AME) (Fullin 2011).

This method calculates the probability to find a job twice for each individual in the sample (both the treated and non-treated), based on his individual characteristics: one time under the hypothesis he attended a training course, and another as if he had not.

The difference between the two values is the marginal effect; the AME is averaged over all individuals.

¹⁰ The coefficients do not significantly differ from zero neither one by one, nor as a group, via the F test.

¹¹ Complete results can be found in Ragazzi *et al.* (2014).

Table 7 – Average marginal effects of training for non-EU citizens.

	AME
Non-trained	-0.103* (2.40)
Trained	-0.002 (0.06)

* p<0.05; ** p<0.01 Z statistics in parentheses

Table 8 – Test on VT net impact differentials (trained vs. non-trained) by citizenship.

	AME
EU	0.131** (12.96)
Non-EU	0.196** (15.06)

* p<0.05; ** p<0.01 Chi2 statistics in parentheses

With no distinction in target groups, the AME method shows a net impact of +14,5 percentage points, meaning that treated individuals have a probability to find a job (with a time lag of one year) which is nearly 15 points higher than if they had not been treated¹².

The AME method clearly shows that training policies recover the initial disadvantage of migrants in terms of employability. In table 7, the different levels of employability of non-EU nationals in the case of training and without training can be observed. It can be clearly seen that foreign trainees have no significant disadvantage,

while non-trained foreigners lose 10 percentage points in terms of employability.

This happens thanks to the special attention to the weak target groups in the assessed policies, which makes them more effective in the recovery of the disadvantage. In table 8 it can be seen that, on average, attending a training course increases individual employability of 13 points in case of EU nationals, but this effect significantly raises to nearly 20 points in case of non-EU students.

6. DURATION ANALYSIS: TECHNIQUES AND RESULTS

As mentioned before, the transition from training to work is a process that worries a lot the policy maker, since its success is path dependent. Many disadvantaged individuals find a job thanks to their training experience, but their careers remain fragmented. It is

¹² It must be observed that this result holds because an appropriate control group has been created. A test on selection bias has been conducted, estimating a two equation model: the first concerning the probability to accomplish the whole training path, and the second the probability to find a job given the participation choice (Heckman, 1976). This test excludes the existence of a significant selection bias.

very difficult to understand why in some cases this fragmentation evolves towards a progressive consolidation, and why in other cases the first failures mark the individuals leading them to labour exclusion.

The duration analysis presented in this paragraph wants to shed more light on this phenomenon and tries to explain why some individuals are more keen than others to keep their job.

Of course a short duration of contracts doesn't necessarily mean greater weakness, because some careers are characterised by a high dynamism, with a quick interchange of short contracts.

This is why further research work is undergoing, to include in the approach also the complementary analysis of unemployment duration.

6.1 Duration analysis techniques

The field of survival and duration analysis aims at studying the time duration until one or more events happen, such as death in biological organisms and failure in mechanical systems.

This methodology was born in order to identify the effectiveness of experimental clinical treatments on survival possibilities of sick subjects (e.g., Binet et al. 1981; Fakhry et al., 2008; Cox and Oakes, 1984). Nevertheless, survival analysis has been adopted in many different applications, hence modifying the basic starting model (Chung et al., 1991; Van den Berg, 2001; Miller, 2011).

Technical formalizations on survival analysis and Cox regressions can be found in the seminal book by Harrell (2001) or in those by Cleves (2000 and 2008), but models have to be modified on the basis of

the topic addressed, due to different underlying hypotheses.

This complexity has been even more investigated by researchers with the aim to generalize the methodology, considering all possible scenarios, and formulating models even more complex from both technical and computational point of views (Heckman and Singer, 1984; Heckman and Taber, 1994; Gutierrez, 2002; Hougaard and Hougaard, 2000; Kuhlenkasper and Steinhardt, 2011; Hopenhayn, 2004).

The present paper aims at studying the impact of training on the probability of job tenure, with a special focus on foreign subjects.

To our knowledge, contributions applying this methodology to this specific issue have not been presented yet in literature. Many studies focus on the impact of training policies on the employment probability (Bonnal et al., 1997; Van Ours, 2001; Card and Sullivan, 1987; Richardson and Van den Berg, 2002, Sella 2014, Ragazzi 2014) without addressing duration. Some authors investigate gender differences in job matching paths after the training, as Falavigna et al. (2013 and 2014); Flinn (2002) and Eberwein (1997). Nevertheless, few authors applied duration analysis (i.e., survival function, Cox regression, and so on) to training data in order to inspect whether training helps subjects not only in finding, but above all in maintaining a job (Holm, 2002).

From this point of view, the analysis of careers is non-trivial, because a subject can often experience more than one job in a specific time period.

In addition, we apply a counterfactual approach, that allows us to compare the

determinants of job duration between treated and non-treated subjects.

We apply the Cox proportional hazard model with unobserved heterogeneity (Heckman and Singer, 1984; Lin and Wei, 1989) with the aim to investigate whether participation at courses affects the duration of employment.

Other analyses have been made on this field and in particular we refer to Ham and Lalonde (1996) to address the sample selection and the initial conditions in the model; Hujer et al. (2006); Gritz (1993), Abbring and Van den Berg (2003), and Richardson and Van den Berg (2002) to address the model setting.

6.2 *Using the COB data-base for the duration analysis*

In this preliminary study, the data framework was that of multiple-record data with single event (employment) and multiple failures; individual's multiple spells imply several exits from the employment status; the model analyses all individual spells and not only the first exit.

Indeed, each record represents a single employment spell and each subject generally shows multiple records.

Since a subject can have more than one job at the same instant in time (overlapping spells), this situation has to be managed and overlapping spells have to be joined up in a single spell¹³.

Referring to "spell" as the length of the single employment contract, there are some aspects to set in order to build the correct

framework for the duration analysis of individuals' employment histories.

In fact, the diversities of job situations for each subject raise many problems: some people show separated spells, some overlapped, some that start before the individual came under observation (01/01/2009), and some that finish after the end of the observation period (01/07/2013).

Since the database includes all employment contracts that have been activated (or transformed) from January 2009 till the end of June 2013, left-censoring is actually unobserved (i.e. we cannot know whether individuals enter the observation span with an ongoing contract) and a subject first becomes at risk (origin) when he firstly starts a brand new contract from 2009 on.

On the contrary, right-censoring affects all contracts lasting beyond June 2013. Technically, our failure variable implies three distinct values: 0 in the case of right censoring, 1 in the case of transition from employment to unemployment status, 2 in the case of end of an overlapping contract (employment-employment transition).

In addition, the database has been built in order to apply counterfactual analysis, distinguishing between treated (i.e., people that have obtained the final certification) and non-treated (i.e., no-shows and drop-outs, that are people enrolled but not qualified) individuals.

In such context, the analysis complicates a lot, since time spent in training by treated individuals, is generally spent in either employment or job-search activity by non-treated.

¹³ As a consequence, qualitative information about contracts is neglected. Further development will propose specific algorithms preserving such aspect (e.g. contract type, part-/full-time, wage).

Hence, comparing employment paths between factual and counterfactual samples is not obvious: some preliminary diagnostics on observables are necessary to select the most suitable counterfactual group.

In particular, it is fundamental to assess whether to use the whole no-shows and drop-outs control sample, rather than including the sole individuals experiencing fresh employment spells after enrolment. The first approach involves left-truncation (Gritz, 1983).

Table 9 shows descriptive statistics on trainees and control sample.

Following a diff-in-diff approach, comparing employment spells in the factual sample at 12 months before and after the training (putting aside the counterfactual group), it is observed that the number of employment episodes, the time spent in employment, and the proportion of time being employed show larger means after the training.

On the contrary, taking into account the number of failures and the time in employment if individual career presents at

least a gap (i.e., a not employment period), the after-treatment mean is lower.

The mean of employment time in 12 months grows from 36% to 56%.

With reference to the control group, the situation is not so defined, indeed the mean of employment time grows in 12 months from 35% to 51%.

These preliminary results suggest that the training implies slightly better employment paths.

Nevertheless, this approach presents some weaknesses, as suggested by Gritz (1993).

The fact that variations in labour market conditions are not taken into account is patched by comparing trainees to controls. Nevertheless, left- and right-censoring can bias the estimates.

And most of all, selection bias may affect results whenever transition into training (the bias specifically addressed by the sampling design) differs in nature from transition in employment and non-employment.

In simpler words, controls may have different employment-unemployment transition paths than trainees.

Table 9 – Trainees vs. controls: personal and employment descriptive statistics.

<i>Treated sample</i>		<i>Control sample (all)</i>	
<i>Variables</i>	<i>Mean</i>	<i>Variables</i>	<i>Mean</i>
# individuals in the sample: 995		# individuals in the sample: 491	
Age at enrolment	29.47	Age at enrolment	29.24
Education (y)	12.09	Education (y)	12.14
% female	0.58	% female	0.44
% minority	0.06	% minority	0.08
% migrant	0.27	% migrant	0.31
% living alone	0.07	% living alone	0.09
% living with partner	0.37	% living with partner	0.32
% living with sons	0.24	% living with sons	0.20
Unemployment before enrolment – 18 months (m)	15.30	Unemployment before enrolment – 18 months (m)	15.02
Employment spells 12 months before enrolment - # individuals: 360		Employment spells 12 months before enrolment - # individuals: 205	
Number of employment episodes	1.63	Number of employment episodes	1.62
Number of failures	1.40	Number of failures	1.44
Time in employment (d)	134.73	Time in employment (d)	128.93
% with gaps	0.34	% with gaps	0.31
Time in unemployment if gap (d)	51.51	Time in unemployment if gap	38.49
Proportion of time employed	0.36	Proportion of time employed	0.35
Employment spells 12 months after training # individuals: 690		Employment spells 12 months after training - # individuals: 292	
Number of employment episodes	1.97	Number of employment episodes	1.86
Number of failures	1.28	Number of failures	1.24
Time in employment (d)	206.04	Time in employment (d)	220.70
% with gaps	0.43	% with gaps	0.40
Time in unemployment if gap (d)	33.93	Time in unemployment if gap (d)	36.45
Proportion of time employed	0.56	Proportion of time employed	0.60
		Employment spells 12 months after enrolment - # individuals: 287	
		Number of employment episodes	1.88
		Number of failures	1.26
		Time in employment (d)	186.68
		% with gaps	0.43
		Time in unemployment if gap (d)	33.81
		Proportion of time employed	0.51

Hence, the use of continuous duration models is fundamental.

Table 10 shows higher homogeneity on observables between the trainees and the whole control sample, rather

than the subset of controls experiencing fresh employment spells after enrolment (i.e., the baseline).

This fact suggests using the whole controls as counterfactual sample.

Table 11 – Which control sample? Descriptive statistics comparing fresh controls to whole controls.

Variables	Employment spell after the baseline		
	Treatments	Controls (all)	Controls (fresh)
Age at enrolment	30.42 (9.17)	30.01 (9.43)	28.29 (9.34)
Education (y)	12.01 (2.90)	12.33 (3.19)	12.17 (3.09)
% female	0.58 (0.49)	0.41 (0.49)	0.39 (0.49)
% migrant	0.28 (0.45)	0.30 (0.46)	0.23 (0.42)
% living alone	0.07 (0.25)	0.08 (0.28)	0.10 (0.31)
% living with partner	0.37 (0.48)	0.30 (0.46)	0.24 (0.43)
% living with sons	0.13 (0.34)	0.11 (0.31)	0.09 (0.29)
% never employed before enrolment	0.19 (0.39)	0.15 (0.35)	0.24 (0.43)
Unemployment before enrolment – 18 months (m)	14.83 (4.80)	14.19 (4.93)	18.00 (0.00)
Unemployment before enrolment – CATI (m)	9.10 (8.91)	8.21 (7.3)	7.93 (8.15)
% unemployment spells after enrolment	0.98 (0.15)	0.98 (0.14)	1.00 (0.00)
% fresh unemployment spells after enrolment	0.82 (0.38)	0.81 (0.39)	0.78 (0.41)
N	784 over 995	348 over 491	144 over 491

6.3 Survival of foreign trainees on the labour market

In this section we present results of the Cox proportional hazard model.

Preliminary descriptive analyses on Kaplan-Meier survival functions (Figure 1 and 2) show that migrants survive in employment significantly more than Italians,

while no significant difference is retrieved between trainees and controls. Hence, observing univariate survival functions it can be concluded that factual and counterfactual samples show the same hazard. On the contrary, Cox proportional hazard model allows us to investigate the effect of training controlling for individuals' characteristics.

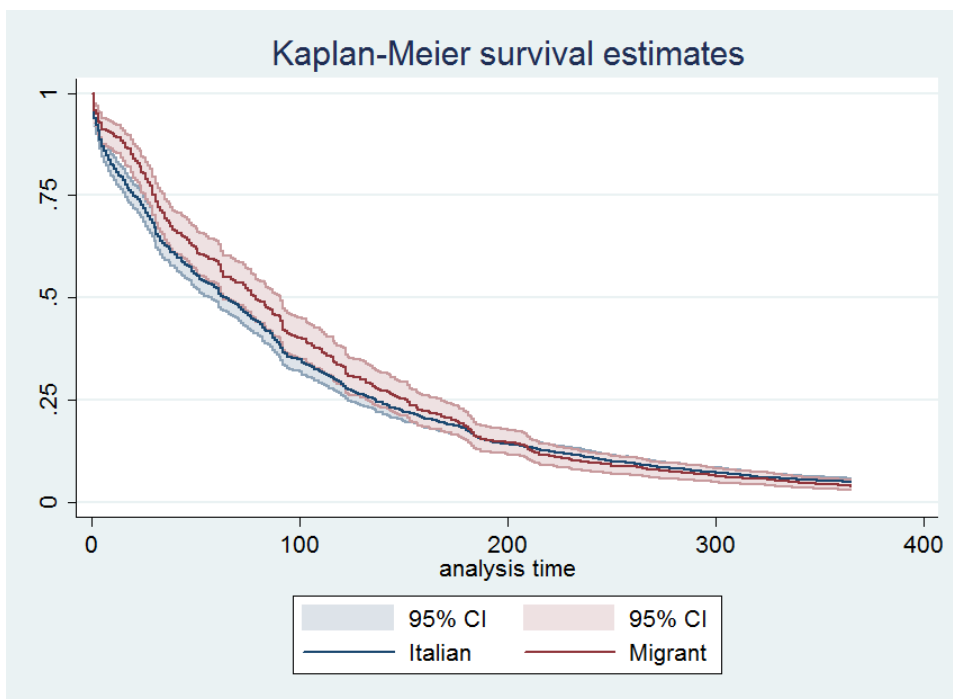


Figure 1 - Kaplan-Meier functions, Italians vs. migrants.

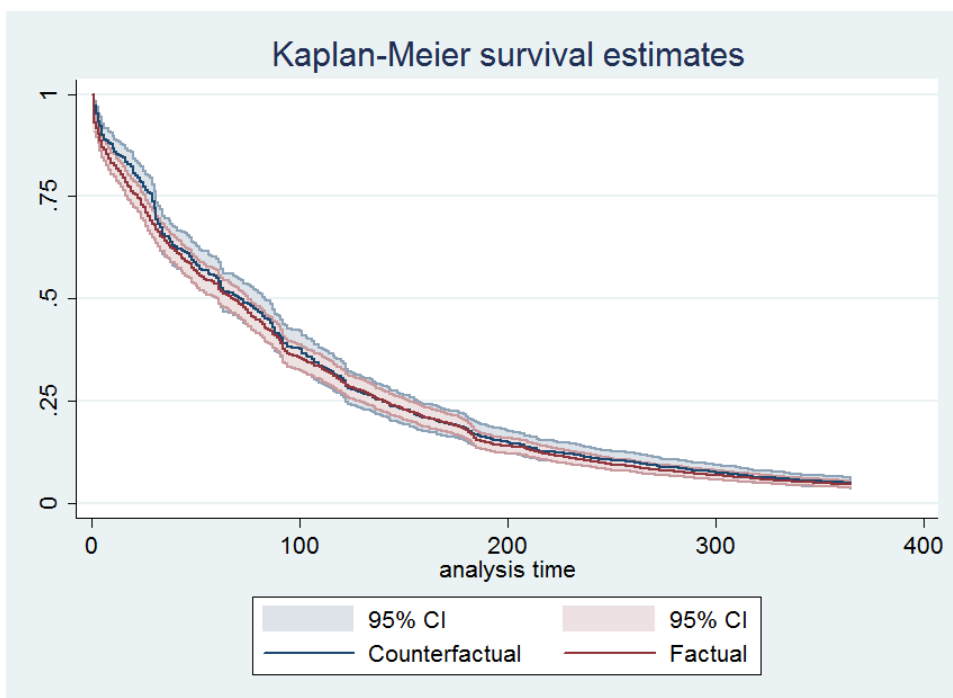


Figure 2 - Kaplan-Meier functions, factual vs. counterfactual.

Tables 11 and 12 present results referred to two Cox proportional hazard model with unobserved heterogeneity. The models differ in interaction variables characterizing the training type. Negative significant coefficients indicate a reduction of the hazard, i.e. the risk associated to a job loss. The lower the hazard ratio, the higher the probability of maintaining the job.

In both models the effect of training is significant but very small. This could be due to the fact that the present work concerns the sole employment spells. Hence, employment duration is addressed, but not its frequency.

This issue can be addressed by 2-state competing risk models that include unemployment spells. Presumably, most effect of the training addressed to the weak subjects concerns a reduction of unemployment spells, rather than an increase in employment duration. In any case, the evaluated training courses generally refer to sectors characterized by high job mortality (e.g., waiters, caregivers, etc.).

The second model shows training efficacy in both specialized careers and the socio-sanitary sector.

Table 11 - Cox probability hazard model with unobserved heterogeneity, model.

Invariant Variables	Coeff.	Hazard	Time-varying Variables	Coeff.	Hazard
Female	.0122 (.098)	1.012	Age	.0001 (.000)	1.000
Education (y)	-.0029 (.012)	.997	Age_sq	-.0000 (.000)	.999
Belt_1	-.1104 (.179)	.895	Training	-.0004** (.000)	.999**
Belt_2	-.2011 (.257)	.818			
Belt_9	-.3213** (.134)	.725**			
Integration score					
_____ Italian, male	-.8672*** (.149)	.420***			
_____ Italian, female	-.8263*** (.144)	.438***			
_____ Migrant, female	-.5909*** (.137)	.553***			
_____ Migrant male	-.4340*** (.182)	.647***			

Table 12 - Cox probability hazard model with unobserved heterogeneity, model 2.

Invariant Variables	Coeff.	Hazard	Time-varying Variables	Coeff.	Hazard
Female	.0777 (.107)	1.080	Training	.0003 (.000)	1.000
Education (y)	.0128 (.014)	1.013	Training _specialization	-.0011*** (.000)	.999***
Belt_9	-.3059** (.134)	.736**	Training _OSS	-.0010*** (.000)	.999***
Integration score	-		Training _female	-.0002 (.000)	.999
_____ Italian, male	.9111*** (.150)	.402***			
_____ Italian, female	.8671*** (.152)	.420***			
_____ Migrant, female	.5570*** (.144)	.573***			
_____ Migrant male	-.3760** (.179)	.687**			

Specifically regarding the immigrants, the model detects significantly differentiated behaviour by gender and nationality, depending on the degree of labour market integration (integration score). In particular, more integrated individuals clearly show lower hazards, but equally integrated individuals show higher hazards if they are migrant, with some advantages for women with respect to men. This result is an effect of the specific training under evaluation. They include many courses for caregivers, which generally perform very high employment rates and are mostly attended by migrant women.

They generally drive to permanent contracts, which are however characterized by very high mortality rates (due to either death of the elderly or to hard working condition in personal care sector).

7. CONCLUSIONS

This paper analyses the effect of training policies on a particular target of disadvantaged people, the migrants, compared with the national trainees. We draw data from a survey performed in Regione Piemonte (in the north west of Italy), based on a representative sample of

treated and on a control group, selected from no-shows.

The performance of VT policies has been analysed with a multiple approach:

- a macro approach based on aggregate placement indicators;
- a micro approach based on individual integration score;
- a net impact evaluation assessed by a multinomial probit regression;
- a duration analysis to verify the improvement in the survival on the labour market of foreign trainees.

All the paths converge to the same direction: migrants appear to be disadvantaged with respect to EU nationals, but this gap is filled when one considers individuals having completed their training up to a qualification or specialisation. However, duration analysis does not detect different paths for treated migrants, but only different paths for migrants on equal integration levels. Probably, most efficacy of training on work careers of migrant and weak individuals in general does not come from prolongation of employment duration, but rather from the reduction of unemployment spells. In fact, the analyzed courses pertain to sectors characterized by high contract mortality (e.g., waiters, caregivers, and so on). Hence, we expect most training effect being related to reduction of unemployment duration, rather than extension of employment contracts.

We can conclude that data fully confirm the role of training policies in the Piedmont region to contrast and recover the disadvantage of target groups which appear weak on the labour market (Falavigna *et al.*, 2013; Sella and Ragazzi, 2013). In the case of migrants, this goal is pursued offering

special courses to them, providing a qualification as other actions for low-skilled adults, but integrating the courses with special modules of Italian language and active citizenship. These act properly on those social barriers that hamper full integration. Moreover, these courses have special organization features (time schedule, modular organization) which allow attendants to combine training with part-time work, and consequently self-sustainment. Hence, these courses are highly requested and show very good finalization rates (ratio of qualified on enrolled). It must nevertheless be observed that participation of foreign students is high in all types of action (21.7% on average), and particularly in all qualification actions, even when not reserved to non-EU citizens.

Further extension of the work will include also the analysis of unemployment spells after the first job, so observing also the improvement in the resilience of trained foreigners.

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