Gender inequalities and labour market inclusion. An integrated approach to vocational training in Piedmont*

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Abstract: In the field of public policies there is a lot of interest in vocational training issues, because of spillovers in the labour market as well as on quality of life. Reports by the European Commission show that women are disadvantaged subjects in the labour market but, at the same time, they are more ambitious and achieve best results from an educational point of view. This paper aims to analyse Piedmont Region data on vocational training policies, focusing on the role of women in the labour market. The data refer to subjects who completed training courses in 2011 and our analysis is based on interviews, in order to evaluate the effects of training on the medium-term employment outcomes of trainees. A control sample is selected so as to evaluate the effect of training, with a specific focus on women. Probit models and average marginal effects (AMEs) allow estimating the net impact of training in the labour market. The results suggest that the employment gap between men and women is completely bridged in trainees, also when considering qualitative aspects of employment.

Keywords: Vocational training; inequality; gender studies; professional integration; labour market

Jel codes: I24, I25, I28, J71

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* A preliminary version of this paper was presented at the XVII Congress of the Italian Evaluation Association (AIV), Naples, 10th-11th April 2014. Data and results derive 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». The authors gratefully acknowledge the Region of Piedmont, which is the sole owner of data and reports, for allowing us to use the results for scope of research and advances in methodology.

1. Introduction

The Lisbon Treaty[1] (Council of the European Union, 2008) aims to attain equal opportunities for men and women and it urges Member States to work towards equal treatment, not only in the labour market, but also in terms of protection and social security. Since most welfare systems are not ready to fully support women in labour market inclusion, this may be achieved through programmes specifically aimed at "work and family" reconciliation (Stratigaki, 2004) and at fostering women's equal opportunities by strengthening their human capital. Article 157 establishes that "with a view to ensuring full equality in practice between men and women in working life, the principle of equal treatment shall not prevent any Member State from maintaining or adopting measures providing for specific advantages in order to make it easier for the underrepresented sex to pursue a vocational activity or to prevent or compensate for disadvantages in professional careers".

This strong focus on gender policies is justified by international statistics, which show that gaps between women and men do persist in most industrialised economies (OECD, 2012a). In fact, the labour market has evolved dramatically over time (Kluve, 2010) and, especially in recent years, internal mobility processes, first-entry channels, and market reinclusion have changed. Various social groups are strongly affected by these dynamics, in particular the weaker subjects, such as immigrants, the young and, of course, women. Although the local specificity of disadvantage depends on regional market features (Bergemann and Van Den Berg 2008; Hujer et al., 2006; Card et al., 2010), the OECD (2012c) reports that employment rates are on average much lower for women than for men, despite women showing higher attainment rates. In Italy, the overall gap of 24 percentage points in employment rates (75.4 men vs. 51.4 women) decreases to 10 percentage points among individuals with tertiary education (80.8 men vs. 70.7 women), but its value is still critical. Certainly, difficul-

[1] The Lisbon Treaty represents the consolidated version of the Treaty on European Union and the Treaty on the functioning of the European Union. It is available at: http://register.consilium.europa.eu/doc/srv?l=EN&t=PDF&gc=true&sc=false&f=ST%206655%202008%20INIT

ties in work-family reconciliation – which are outside the scope of the policies considered in this paper, although they cannot be neglected as they may clarify our results – are one of the main reasons for this problem. The World Bank (2012) stresses that gender gap is small in high-income countries with fully-fledged social protection systems and in societies offering part-time options and, more generally, with a very flexible labour market.

When considering the effect of the global economic crisis on gender gap, one can observe some signs pointing in opposite directions, which ought to be assessed correctly. As a matter of fact, the global recession has affected young people the most, which further hinders and postpones their transition from education to work (OECD, 2012b). In Piedmont – the region in the North-West of Italy considered in this study – the 25/34-year-old group has suffered the direst consequences of the crisis (Badalassi and Zanoni, 2011). On the other hand, the gender gap has been somehow reduced, since the crisis has mostly affected economic sectors typically preferred by men, such as industry, engineering, and manufacturing, while services (typically preferred by women) have been less severely stricken. Yet, this cannot be interpreted as an improvement in the condition of women in the labour market, but rather as a heavy levelling-down effect, which has resulted in great hardship for Piedmont's families. In any case, women's working conditions are persistently worse than men's, since their average wage is 40% lower and women hold managerial positions in less than 30% of the cases.

The gender gap in the labour market for the new generations is not associated with lower educational profiles. Analysing gender differences in secondary education, the OECD (2012c) highlights that today young women are more interested than young men in completing their secondary studies and in gaining better professional skills (OECD, 2012d). Indeed, if the portion of men finishing secondary school is on average slightly higher (75% vs. 73%), an opposite result is found when considering young people (80% men vs. 83% women). Moreover, in all OECD countries except Germany, the number of young female graduates is higher.

Yet, cultural attitudes strongly influence the gender composition of job sectors. Science, engineering, manufacturing, and construction are still considered mainly "male" professions, while typically "female" professions are in care-related fields, such as education and health. This attitude consistently affects working careers in the labour market (OECD, 2012e). A recent survey shows that, even in perspective terms, young girls have become more ambitious than boys, but there is still a wide cultural divide in access to specific professional fields. In Italy, about 5% of 15-year-old girls plan a

career in engineering and computing versus 21% of boys, while 9% of boys plan a career in health and services versus 16% of girls (OECD, 2011).

This sectorial segregation might help to explain why in Italy choosing a vocational educational path (technical and professional schools) seems to be ineffective in reducing the gender gap. In general, attending technical schools results in higher employment rates. In 2010, OECD countries displayed higher employment rates for students from vocational schools: the average employment rate of people with ISCED level 3/4 vocational qualification was about 6 percentage points higher than that of people with ISCED level 3/4 general qualification (63.4 vocational vs. 57.0 general). In Italy, this gap increases to 10 percentage points (75.1 vocational vs. 64.4 general). But this placement effect is higher for men than for women. A significant gender gap is evident among general graduates (15 points for ISCED 3/4 - 75.0 vs. 60.0), but it becomes even greater among vocational training students (it is close to 20 percentage points - 82.9 for men vs. 64.7 for women). We may thus argue that, while education is key to reducing work disadvantage, providing girls with a professional qualification might prove insufficient.

2. Which is the role of vocational training in reducing the gender gap?

The transition from school to work is generally very difficult for everybody. In most countries – and in Italy in particular –, secondary education mainly aims to prepare students for university, so that skills which can be immediately and directly spent in the labour market are not or insufficiently acquired in most types of schools. This means that firms must often invest in practical training, generally leading to various instances of discrimination and selection which are adverse to women. In this context, vocational training (VT) policies can provide professional training, improving the chances of employment for unemployed women, and thus becoming a strategic tool to fight discrimination.

Training can be useful for women in two main cases:

- when providing professional qualifications to women with no qualifications (or possessing non-eligible qualifications, which is often the case for migrants). These are the weakest of the weak, especially if they are young or if they are grown-ups re-entering the labour market after long periods of inactivity (e.g. spent caring for the children or the elderly);

- when adding professional content to general diplomas holding little value in the labour market.

This is the case for a wide set of training policies implemented by the VT system in Piedmont. Hence, this paper aims to evaluate whether vocational training policies can offer better opportunities to women, as suggested by Estévez-Abe (2005), Pollak and Hafner-Burton (2000), and True (2003). This investigation is further justified by the specific role of VT policies in Italy, and especially in Piedmont, which act against the characteristic integration and employment gap of their weak targets (Ragazzi and Sella, 2014).

When focusing on weak targets, and women in particular, a good evaluation cannot be limited to the quantitative aspects of employment, but it must assess the qualitative characteristics of the jobs found thanks to the training received. It is a fact that women are not equally distributed across the labour market. Due to the general lack of public services reconciling family and work, women tend to concentrate in jobs allowing them to look after their families; hence, their professional activity is generally poorly remunerated and with limited career progress (Rosti 2006). This phenomenon is referred to as "gender occupational segregation", and it may be either vertical (obstacles to promotion to higher career levels) or horizontal (unequal and discontinuous distribution across occupations). In this paper we concern ourselves more with the latter aspect, since training policies might actually endorse and amplify social stereotypes hampering labour market mobility, especially when courses are organised based on labour demand. For this reason, great attention will be paid to the measurement of "labour quality", although we are aware of the serious problems encountered when measuring occupational segregation (Blackburn 2009).

3. Methodological framework

The analysis is performed on a representative sample of VT students trained in year 2011. The Region of Piedmont financed the policy also by

means of ESF resources[2]. In order to evaluate net effects, all courses considered in the sample provided a certificate (either professional qualification or specialisation) and they were mostly addressed to unemployed people. For the sake of generality, courses for highly disadvantaged groups (e.g. prison inmates or disabled individuals) are not included in this study.

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

3.1. The target population

The target population includes all students who successfully attended a course and received a final certificate in 2011. In order to evaluate the net impact of VT, the analysis is restricted to individuals who were not employed upon registering for the courses, thus focusing on policies aimed at bridging the employment gap of the weak targets, rather than on policies devoted to generic human capital accumulation. The approach is justified in Ragazzi *et al.*, 2013.

Since the data are extracted from monitoring and administrative archives, some careful pre-processing is needed for the correct quantification of the target population[3], which comprises a total of 9,605 individuals. It must be noted that this number includes the experimental Vocational Education and Training (VET) activity in compulsory education (OI), which is outside the scope of this paper.

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

[3] Duplicates are reduced to single records prioritising more successful and longer treatment, while incomplete records are matched to administrative SILP data.

Notwithstanding local peculiarities in VT policy programming, our preliminary work advised against stratifying the sample by territory and action (Benati *et al.*, 2014). Hence, the sample is stratified by type of certification (compulsory education, qualification, or specialisation) and active participation in labour market policies (LMP)[4].

Table 1 – Target population by certification type and active participation in 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 focus of the paper is on foreign BAS and SPE student (grey area).*

3.2. *Sampling design and quality assessment*

The optimal sampling strategy may vary and it entirely depends on the evaluation objectives. In our case, several requirements must be met:

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] This is due to our specific interest in the transition from training to the labour market. Obviously, administrative data refer solely to labour market services offered by institutional subjects (employment agencies, Municipality and Province services) and do not include informal activities (provided by training and temp agencies, private employment agencies, labour unions, religious and voluntary associations).

4. Net impact estimate (improving policy effectiveness);
5. Investigation of labour market transitions.

Clearly, some of the above requirements are in mutual contrast. For instance, point 1 calls for a large treated sample and point 4 for a large counterfactual sample, but no more than 2,000 interviews can be collected based on the terms of contract for the evaluation activity.

In the end, a 2-dimensional sampling strategy is implemented, accounting for the type of certification and for active participation in any LMP after VT enrolment (6 strata in total). This allows us to focus on the peculiarities of each training action, accounting for the effect of other labour market policies. At the stratum level, proportional allocation is performed, controlling for individual characteristics which influence employment outcomes (gender, citizenship, age). Practically, the ratios observed in each stratum of the target population are reproduced in both the treated and the comparison sample, hence controlling for composition effects.

In the treated sample, the optimal size is set at 1,532 individuals[5] (Cochran, 1977). This represents 16.0% of the target population and achieves a satisfactory level of precision when compared to similar evaluation exercises (Lalla and Fiorani, 2004; Centra and Falorsi, 2007; IRPET, 2011). Individuals are then split across the 6 strata, increasing the smaller subpopulations in order to reduce the sampling error associated with the most critical strata[6]. Hence, individuals are extracted randomly, following the above proportional allocation design.

The overall response rate is 52.4%, confirming the presence of a considerable "hard-core" portion of individuals who systematically refuse to be interviewed or cannot be reached, possibly affecting the estimates

[5] The standard formula for finite populations is $n_e = \frac{\frac{z^2_{1-\alpha/2} P(1-P)}{e^2}}{1 + \frac{1}{N}\left(\frac{z^2_{1-\alpha/2} P(1-P)}{e^2} - 1\right)}$, where ***e*** is the absolute error in estimating the unknown proportion ***P*** of the target population ***N***; $z_{1-\frac{\alpha}{2}}$ is the abscissa when the normal distribution function equals ***(1-α/2)***; ***α*** is the desired significance level. The chosen values are e = 2.31, P = 0.5, and α = 0.1.

[6] The overall absolute error is 2.3% and each stratum is below the 7% threshold.

(Cochran, 1977). Non-respondents are replaced by individuals in the same stratum, thus keeping representativeness constant but possibly increasing the non-sampling error (Levy and Lemeshow, 2008). Moving on to the only subset under investigation in this paper (BAS+SPE), the response rate is 56.5%, which is slightly higher than the overall rate but still not enough to avoid distortions. Comparing observable characteristics between respondents and non-respondents (Table 2), it emerges that they are equally distributed by gender, but non-respondents are somehow more likely to be migrants and young. Hence, the final results might slightly overestimate the effect of training, since the performance of non-respondents might be worse in the labour market, especially if they are particularly weak targets, such as migrants and young people.

Table 2 – Target population by certification type and active participation in labour market policies. Absolute and % values.

Variable	*Modality*	*Respondents*	*Non-respondents*
Gender	Male	42.3	42.1
	Female	57.7	57.9
Citizenship	Italian	73.4	68.2
	Migrant	26.6	31.8
Age group	16-25	38.9	43.8
	26-35	32.1	29.7
	36+	29.0	26.5

3.3. The counterfactual sample

The identification of a proper comparison group is a fundamental step in net impact evaluation and this requires a comparison sample as similar to the treated sample as possible. In principle, the main group and the comparison group should differ solely with respect to the treatment itself – in this case, successful VT courses attendance. In fact, counterfactual impact evaluation should answer the question "what if the (training) policy had not been supplied?". But this is no easy task (White, 2010), and it is even more difficult when the comparison group is not designed *ex ante*, as is the case in pure experimental design (randomised control trial), but must be identified *ex post*, like in the present case (Ciravegna *et al*., 1995). Also, in evaluation the size of the control group is necessarily limited by other objectives (see section 3.2).

A careful analysis of the evaluation contest suggests extracting the control sample from the so-called drop-outs and no-shows (Bell *et al.*, 1995), i.e. students who did not attend the courses (treatment) and were not employed at the time of enrolment. These individuals are similar to the treated group in their attitude towards training, which represents a proxy of some latent characteristics affecting selection bias. In Italy, the unemployed attending VT courses are generally weaker than the average unemployed. Hence, controlling for such unobservables makes it possible to mitigate the selection bias. In addition, it is rather unlikely that members of the control group attended private training courses, since Piedmont's VT system provides free training to the unemployed, which mostly displaces private initiatives.

However, as a large part of drop-outs and no-shows quit their training because they are hired[7] – hence showing more autonomy and employability in the labour market –, the net effect assessed using this design might partly underestimate the real effect of VT. Yet, alternative strategies, such as (propensity score) matching based on administrative employment databases (in Italy, COB data), also have their shortcomings. Indeed, the latter would certainly be the best strategy if administrative data were more reliable, because it would afford both a precise reconstruction of past work histories, which are one of the best predictors of future employment outcomes, and the extension of the evaluation exercise to very large samples. Nonetheless, Ragazzi and Sella (2014) show that there are inconsistencies between survey and administrative data, so that careful investigation is needed before relying on the latter source.

Other possible strategies are also not viable due to unfeasibility constraints. In particular, the "pass list strategy" overcomes selection bias by directly comparing the placement outcomes of the last individual admitted and the first individual excluded, but no pass lists are available for VT courses in Piedmont. Moreover, a counterfactual analysis built on employment agency lists cannot be carried out, since the comparison group would be too heterogeneous compared to the treated group. In fact, employment agency lists refer to a particular subgroup of unemployed individuals, who presumably differ from the overall group in several unobservable character-

[7] Monitoring data are unreliable in this regard, but survey data show that 48% of the control individuals dropped out of their courses because they were hired.

istics (e.g. motivation, proactive attitude, individual abilities, background) which substantially influence employment outcomes. Finally, many individuals who are registered with public agencies as unemployed are not actually looking for a job but rather for welfare grants.

Table 3 – Counterfactual sample, absolute and % values regarding 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	

Table 3 describes the counterfactual sample, which resembles the stratified sampling designed for the treated sample (see section 3.2). Hence, the factual and counterfactual samples show similar characteristics in relation to gender, age, and citizenship[8], which generally influence employment outcomes. The absolute error is small (3.7), confirming the rather good quality of the sample.

4. Gross impact evaluation

The gross impact of VT policies is evaluated considering variations in the trainees' work situation in the medium term, i.e. about 12 months after obtaining their qualification (October 2012). In fact, the labour market tran-

[8] In detail, the sample includes 44% women and 56% men; about 40% are youth under 26, 32% are individuals aged 26-35, and 28% are people over 35; about 30% are migrants and 70% are Italian. No proportional sampling is designed on previous employment histories, since this information is unavailable in monitoring databases.

sition of individuals who were not employed at enrolment measures the gross impact of training, with no reference to the counterfactual situation. This section explores two complementary gross indicators: a macro measure, based on aggregate placement outcomes, and a micro measure, based on the individuals' integration scores.

4.1. A macro approach: gross placement indicators

Placement outcomes can be evaluated by means of two nested indicators, each representing a specific situation within the labour market (ISFOL, 2003). Figure 1 defines these indicators. Employment rate refers to the portion of trained people who were employed[9] in October 2012, hence holding a "strong" position within the labour market. The success rate indicator incorporates individuals who either have a "weaker" position within the labour market (e.g. *traineeship* and on-the-job training) or are still attending training courses.

Figure 1 – Placement indicators: Definition.

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

$$\text{Success rate} = \frac{\text{Trained with working activity (employed + traineeship) + Students}}{\text{Total trained}}$$

An investigation of placement indicators by gender (*Table 4*) shows that women perform better than men, displaying higher employment rates. However, the impact is clearly different across actions: the employment gap is more than 5 percentage points in basic (qualification) courses and less than 3 percentage points in advanced (specialisation) courses. The gap is almost completely bridged in SPE when also considering on-the-job

[9] Including redundancy funds.

training and re-entries in education, with a success rate of about 50%. Symmetrically, overall unemployment affects 48.1% of women and 51.3% of men, while the inactivity rate is slightly lower among men (0.7 vs. 2.2).

Table 4 – Placement indicators in October 2012 by gender and training type, % values.

	Employment rate			*Success rate*		
	F	*M*	*TOT*	*F*	*M*	*TOT*
BAS*	50.2	44.9	48.1	50.2	45.9	48.5
SPE**	45.2	42.4	43.9	50.9	50.0	50.5
TOT	47.7	43.5	45.9	50.5	48.2	49.5

* Basic courses for low-educated adults; ** Specialisation courses.

These results confirm a high level of inclusion of women in the labour market, more so in basic professional positions (BAS) than in specialised careers (SPE). However, these rough indicators consider the trainees' status at a certain point in time, neglecting any qualitative aspect of labour market inclusion. Surely, integration is a multidimensional aspect, and a possible definition of it is that an individual becomes fully integrated into the labour market when he/she has a job that is stable/secure, adequate to his/her education, and guarantees a good income (Blangiardo, 2011). Hence, a range of indicators ought to be considered in order to assess labour market integration. This can be done through individual integration scores, which adopt a micro-approach to investigate differential aspects of integration in various sub-populations.

4.2. A micro approach: individual scores of labour market integration

The survey data allow investigating three of the four aspects mentioned in the above definition of labour market integration, i.e. *employment posi-*

tion, *security*, and *income level*[10]. Instead, *over-qualification* is dealt with by considering the individuals' level of education at enrolment (from monitoring data) in relation to the type of training received.

Individual scores are calculated for every statistical unit by referring to these four integration variables, selected according to the specified definition of integration. Every statistical unit is assigned 4 partial scores, according to the modality of each variable. Each individual partial score depends on the relative frequencies of the sample distribution of the selected variable[11]. Then, an average of the 4 scores is calculated for each statistical unit, i.e. the integration score, with range (-1;1) Finally, averages of individual integration scores for particular target groups can be calculated (Cesareo and Blangiardo, 2009).

Table 5 confirms the previous results, showing higher integration scores for women in BAS (diff. -0.064). This outcome is stronger than the previous one, as it involves a multidimensional definition of labour market integration. On the contrary, no significant gender differential is found in SPE. In any case, this approach cannot control for composition effects (see section 5.2). People attending specialisation courses are generally younger and better educated than people in basic training; hence, the gender gap is smaller in their case (OECD, 2012c). The higher female integration score in BAS is mainly due to the very good employment outcomes of courses in the care services field, which are attended mainly by women and target a sector not heavily affected by the economic crisis.

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

[11] The single partial score is calculated by an algorithm, which considers the individual ranking for the corresponding variable. Each rank is assigned a score calculated as the difference between the cumulative relative frequency of the previous item and the ones complement of the cumulative relative frequency of its own item. This algorithm is clearly applied to ordinal variables. The resulting score has a range of (-1;1).

Table 5 – Average integration scores by gender and action among trainees and mean-comparison tests.

		Obs	*Mean*	*Std. Dev.*	*Diff.(M-F)*	Pr(T<t)	Pr(|T|>|t|)	Pr(T>t)
BAS	F	295	-0.252	0.424	-0.061	0.055	0.111	0.944
	M	185	-0.313	0.433				
SPE	F	279	-0.458	0.570	0.018	0.639	0.723	0.361
	M	236	-0.440	0.598				
TOT	F	574	-0.352	0.510	-0.034	0.160	0.320	0.840
	M	421	-0.386	0.535				

Like the previous macro indicators, integration scores calculated for the treated are affected by deadweight effects. To overcome this weakness, average integration scores for the treated and the untreated must be compared: discrepancies can be attributed to the treatment, i.e. vocational training.

5. Net impact evaluation

Since the sampling strategy ensures homogeneity between the treated sample and the counterfactual sample (see section 3.3), a comparison of their average integration scores represents the very first step in the net impact evaluation.

5.1. Differentials in average integration scores

Table 6 shows integration scores for the counterfactual sample. Overall, these scores are higher than the trainees', suggesting that members of the counterfactual sample are systematically stronger in the labour market (Table 7). In fact, about 50% of the controls dropped out of training because they were hired during their courses. Moreover, male drop-outs are significantly better integrated than female drop-outs in SPE (diff. 0.175), while no significant gender difference is found in BAS.

Table 6 – Average integration scores by gender and action in the counterfactual sample and mean-comparison tests.

		Obs	*Mean*	*Std. Dev.*	*Diff.(M-F)*	Pr(T<t)	Pr(|T|>|t|)	Pr(T>t)
BAS	F	86	-0.276	0.310	-0.039	0.807	0.386	0.193
	M	120	-0.237	0.317				
SPE	F	130	-0.144	0.331	0.175	1.000	0.000	0.000
	M	155	0.030	0.350				

TOT	F	216	-0.197	0.329	0.110	0.999	0.000	0.000
	M	275	-0.086	0.361				

Table 7 – Average integration scores among treated and not treated and mean-comparison test.

	Obs	*Mean*	*Std. Dev.*	*Diff.(NT-T)*	Pr(T<t)	Pr(|T|>|t|)	Pr(T>t)
Treated	995	-0.367	0.521	0.232	1.000	0.000	0.000
Not treated	491	-0.135	0.351				

Comparing these values with the mean-comparison tests in Table 5, it can be argued that vocational training strengthens women's integration into the labour market, although it does not completely bridge the overall integration gap. In fact, female BAS trainees show better labour integration, which is not found in the counterfactual sample. Similarly, female SPE trainees offset the gender disadvantage detected among drop-outs.

Hence, it seems that Piedmont's VT globally acts to bridge employability gaps of particularly weak targets. This result is confirmed by the multivariate analysis.

5.2. Multivariate analysis

The net impact of training policies is assessed through a multivariate probit model. This approach allows estimating (in percentage terms) the net impact of training policies on employment probability about one year after training, simultaneously considering the effect of individual characteristics on said probability. This technique avoids the composition effects which affect the rough comparison of outcomes between the treatment group and the counterfactual group (net employment differentials).

The regression model in Table 8 shows a positive and significant effect of age, education, and participation in VT on individual employment probability. In particular, age coefficients have a nonlinear impact on employability: *ceteris paribus*, adults are more likely to find a job than young people (0.082), but their advantage decreases with age (age^2 = -0.001).

The positive impact of education enhances the labour market attractiveness of individuals possessing stronger human capital (0.073). This conclusion is not in contrast with another result, i.e. that training is more effective in the case of basic courses. In fact, education represents an advantage, independently of training. On the other hand, the net impact of VT is overall positive, but it decreases with education, as shown by the negative and sig-

nificant coefficient of the interaction variable between education and training (-0.058). A separate regression for men and women (results not shown) indicates that this negative interaction is significant only in the case of men, while it is negligible for women. This partly explains the evidence that training targeting low-skilled individuals appears to be more effective than specialisation courses. In Piedmont's VT system, training acts to offset the disadvantage of individuals with limited education. However, the different effect by gender highlights the well-known differentiation in education between men and women. Women are more likely to be educated in disciplines which are less attractive in the labour market (e.g., humanities). Hence, training plays an important role in their labour market inclusion. On the contrary, men attending training are probably weaker in their personal attitudes rather than in their education, hence the negative interaction between training and education level.

Among the counterfactuals, students who dropped out of the training courses because they were hired are favoured (0.058), probably because they show a proactive attitude in the labour market. After one year, these individuals are still stronger than trainees, although the latter have strengthened their human capital. Hence, this variable can be interpreted as a proxy of unobservable individual characteristics related to psychological and social expertise, which are fundamental in finding and retaining a job.

Table 8 –Probit model on the treated and counterfactual groups. The symbol # indicates interaction variables.

Variables			
Woman	-0.380***	Training	2.137***
	(0.129)		(0.361)
Age	0.0824***	Training # Education	-0.0584**
	(0.0271)		(0.0257)
Age^2	-0.00124***	Woman # Training	0.395**
	(0.000396)		(0.155)
Education (years)	0.0735***	Non-EU # Training	0.205
	(0.0211)		(0.179)
Non-EU	-0.249*	OSS # Training	
	(0.144)	1 1	0.726***
Upstream unemployment (months)	-0.0256***		(0.120)
	(0.00400)	1 0	0.283
Dropped out because of hiring	0.858***		(0.273)
	(0.126)	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

As for variables negatively influencing employability, we observe that citizenship has a negative impact, with disadvantages for non-EU nationals (-0.249), although this is offset by training (0.205). Moreover, upstream long-term unemployment has a significant and negative impact (-0.026) on employability. All other aspects being equal, a longer unemployment spell before enrolment lowers the probability of finding a job after training.

This highlights two phenomena. Firstly, the share of long-term unemployed is a proxy for the share of highly disadvantaged individuals enrolling in the VT courses analysed. In our sample, 14.2% of individuals were unemployed for more than two years before enrolment, and 25.2% for periods between 12 and 24 months. In many cases, this long-term unemployment represents the effect of latent individual characteristics – behavioural attitudes, cultural and human capital –hampering labour market inclusion. Secondly, exclusion from the labour market generates a disadvantage in terms of employability which persists after training. Staying away from the informal networks driving the demand-supply matching mechanisms, the rapid obsolescence of skills and knowledge, the even quicker deterioration of contacts useful to find a new job, and the psychological and social mechanisms of loss of trust, self-esteem, and social acknowledgement – these are all phenomena which tend to become chronic and can no longer be overcome by the individual.

On the other hand, variables referring to life context (parents' education or material endowments such as a PC, Internet, driving license, private means of transport, and home size and ownership) do not prove to be significant[12]. The model seems to indicate that material and contest difficulties do not actually hamper employability, and certainly do so less than other aspects linked to the individual's motivation and relational sphere.

Other non-significant aspects are territorial differences (at the Province level) and training type. Our results suggest that the regional scale is the most suitable for extensive surveys like the present one, because there is no significant differentiation in VT policies at the sub-regional level, at least within the Italian context. In fact, regional guidelines grant Provinces a certain amount of freedom in both target definitions and organisational aspects, but territorial differentiation is rather limited.

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

Dummies related to training type (BAS, SPE) are also not significant. Hence, the observed differences in both gross impacts and employment differentials between basic training for low-skilled people and specialisation courses are due to composition effects, i.e. a greater concentration in the most successful actions of those disadvantaged individuals for whom training policies are so effective in Piedmont. In models where these individual differences are accounted for, differences in performance disappear.

5.3. Impact on women

Let us now take a closer look at the results concerning women. The descriptive statistics indicate better female employment rates, but the multivariate analysis shows a situation of severe and persistent disadvantage. The negative and significant coefficient of the gender dummy (-0.380) suggests that the probability of finding a job is much lower for women than for men. Women' motivation to work and willingness to accept jobs in difficult conditions (e.g. personal care, night work, or hard environmental conditions) is generally appreciated by the market; yet, they are weaker on equal terms. However, the data also show that training has an effect in the opposite direction: the initial disadvantages are completely offset in the case of trainees.

These results cannot be appreciated by simply observing the coefficients of the model, but the two contrasting effects can be estimated with precision using the Average Marginal Effect (AME). The method calculates the probability of finding a job for each individual in the sample (both treated and non-treated), based on personal characteristics. This is done twice: once under the hypothesis that the person attended a training course and once under the hypothesis that the person did not receive any training. The difference between the two values is the marginal effect; the AME is averaged over all individuals. This is a more precise method than the standard one, in which a theoretical "average individual" is created and then his/her marginal effect is calculated. With no distinction among target groups, the AME method shows a net impact of +14.5 percentage points, meaning that,

with a time lag of one year, treated individuals are almost 15% more likely to find a job than in the case of no treatment[13].

The AME method shows that training policies remove the initial disadvantage of women in terms of employability. In Table 9, the net impact of training by gender is calculated. It can be clearly seen that training increases the chances of finding employment by almost 20% in the case of women, while the chances increase by less than 10% in the case of men.

Table 9 – Average marginal effect of training on men and women.

	AME
Men	0.086**
	(0.044)
Women	0.198***
	(0.039)

Standard errors in parentheses

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

This happens thanks to the special focus of the assessed policies on weak targets, making them more effective in offsetting said targets' disadvantage. Table 10 shows that, on average, the employment gap is equal to 12 percentage points in favour of men among drop-outs, but this effect disappears among trainees. This is possible only if access to the courses is granted to a wide range of people, without selection procedures resulting in the exclusion of lower-employability individuals. Therefore, the implementation of mechanisms aimed at rewarding training agencies for the placement of students, without taking the students' entry level into account, might result in selective enrolment (to the detriment of women, in some industries at least) and in the loss of this valuable effect on removing the existing disadvantage.

Table 10 – Test on VT gender differentials (women vs. men) by treatment.

	AME

[13] It must be observed that this result holds because an appropriate control group is created. A test on selection bias is conducted, estimating a two-equation model: the first equation concerns the probability of completing the whole training path and the second the probability of finding a job based on participation choices (Heckman, 1976). This test excludes the existence of a significant selection bias.

Not trained	-0.115***
	(0.042)
Trained	-0.002
	(0.031)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Finally, Table 11 shows the different impact of training by gender and education. As suggested by the probit rough coefficients, a manifold effect related to education is clearly evident. Independently of gender, training is more effective for low-educated people, increasing employment probability by almost 30% for women and 16% for men. However, no significant effect emerges among higher-educated males, while training still increases the employment probability of higher-educated women by 16%. This evidence confirms that training reduces gender gaps at any education level, particularly supporting higher-educated women in promoting their competencies in the labour market. It is also worth noting that the AMEs are very similar for the two highest education levels, meaning that only two relevant education groups are identified, i.e. low- (no more than professional qualification) and high-educated (diploma or higher) individuals.

Table 11 – Average marginal effects of training by gender and education.

	Females	Males
Junior high school and qualification	0.278***	0.163***
	(0.047)	(0.051)
Diploma	0.160***	0.023
	(0.049)	(0.054)
Degree or higher	0.163**	0.023
	(0.072)	(0.083)

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

6. Conclusions

Our paper does not evaluate a specific gender policy but rather the effects which a broad, active labour policy, i.e. VT courses, may have on reducing gender inequalities. This is because training policies in Italy mostly target weak groups and aim at their labour and social inclusion (Ragazzi Sella 2011).

Our goal is to assess the different responses to public policies by males and females and, in doing so, to collect evidence on the need to implement specific gender policies.

Our study analyses the effect of training courses completed in 2011. Data are extracted from a survey carried out in the Region of Piedmont on a representative sample of treated individuals and on a control group, selected from among no-shows.

Since employability is a multidimensional phenomenon, we adopt a multiple approach analysing the performance of VT policies by means of several complementary techniques:

- a macro approach based on aggregate placement indicators;
- a micro approach based on individual integration scores;
- a net impact evaluation using a multinomial probit regression.

The first approach is useful to provide an aggregate and synthetic overview of gender differences in employment and success rates. It emerges that women perform better than men in both basic and advanced courses. However, the shortcomings of this approach have led us to complete the analysis with individual integration scores and multidimensional econometric regressions.

Firstly, since gender discrimination is often said to be more evident in the qualitative aspects of work than in employment levels, the analysis ought to be complemented with this type of information. To take the multiple aspects of labour integration into account, it is necessary to calculate a composite indicator. Therefore, we adopt an algorithm in which the elementary indicators of labour market integration are weighted based on the individual position of each indicator in the global ranking.

Another problem of aggregate placement indicators is represented by composition effects. Gender differences in employment rates may result not only from actual disparities in the treatment of male and female workers, but also from other personal characteristics affecting employability (age, education, previous work experience, etc.). Hence, it is imperative to adopt a multinomial approach, trying to isolate the effect of individual characteristics, gender, and training policies on the probability of finding a job.

Both approaches are useful but incomplete, since the probit model is based on a dichotomous indicator of work status, while integration scores still suffer from composition effects. For example, regardless of gender, integration scores detect a weakness in the trained group versus the non-trained group. This may be ascribed to the different composition of the treated and non-treated groups in relation to some variables, such as previous education and unemployment, which strongly affect employability – these also being a sort of proxy of hidden individual characteristics.

As for gender differences, both approaches seem to indicate that non-trained women perform more poorly than non-trained men, while trained women perform as well as trained men. But these results have different meanings. In the case of the integration scores, the results for two groups (trained vs. drop-outs and males vs. females) in the sample are compared. In the case of the multinomial regression, the differences are calculated as the average of individual impacts.

Analysing the different types of training policies, in the case of specialisation courses targeting highly educated individuals, the results are the same as in the general case. But, like in basic qualification courses for low-educated adults, trained women are even better integrated in the labour market than males.

Since the initial gender gap is eliminated after the courses, we can conclude that training policies are also effective in reducing gender inequality.

Ongoing further research aims to assess longitudinal aspects of labour integration (survival analysis) and to evaluate the effects of gender stratification in specific professions.

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