Over education among immigrant workers in Italy

Carlo Dell'Aringa[*] and Laura Pagani[**]

Preliminary Draft – Do not quote

Abstract: This paper analyses the incidence of over education among immigrant male employees in the Italian labour market, trying in particular to test whether it changes with years of permanence in the host country. To perform our analysis we used data from the Istat Labour Force Survey (LFS) for the years 2005-2007. We found that immigrants, especially those from Eastern Europe, suffer much more than Italian workers from over education. We also found that the length of stay in the host country, when sufficiently extended (more then 10 years), is related to better matches in terms of a reduction in the incidence of over education. This result is robust to selection effects that operates on the decision about the time to spend in the host country: taking into account that the length of permanence in the host country is not exogenous to the quality of immigrants' matches by means of two stage techniques, we find a stronger positive effect of length of stay on the incidence of over education.

Sottosessione tematica: Migrazioni (n.5)

---

[*] Istituto di Economia dell'Impresa e del Lavoro, Università Cattolica, Milano, Italy. E-mail: carlo.dellaringa @unicatt.it.

[**] Dipartimento di Economia Politica, Università di Milano Bicocca, Milano, Italy. E-mail: laura.pagani @unimib.it

1. Introduction

Since Duncan and Hoffman (1981), who first distinguished between the attained level of education and the education level needed in the job, a large amount of literature analysed the incidence and the consequences of over education, meaning with it the fact that workers possess higher qualifications than those required for the job they do.

Over education is an important issue, due to its consequences both at the micro and at the macro level: having an education level higher than the skill requirement of own job is likely to reduce job satisfaction, and a bad match is less productive than a good match. Indeed, there is evidence that returns to education are lower for the over educated than for the properly matched workers (Hartog, 2000).

To date, little research has been undertaken on immigrants over education. Battu and Sloane (2002) provide evidence that immigrant workers suffer higher incidence of over education in Australia and in the UK, and this under-utilisation of immigrant's skills is likely to produce a productivity loss.

No research has been done on this issue for Italy. However, research on this topic is particularly important, given the rise in the share of immigrant workers that has taken place since the nineties. In Italy, like in other Mediterranean countries, migration is a quite recent process, and the greatest share of migrants is of "first generation". However, the share of migrants is increasing at a very fast rate: it was around 1.1 % (738,000 units) in 1995, while it amounted to 5.0 % of the overall population (2,939,000 units) in 2006. Moreover, migrants are concentrated in younger ages and thus their share in the labour force is even higher. In 2006 migrants made up 6.4% of the Italian labour force (the EU25 average was 5.9 %) (Istat, 2008).

Various reasons can be proposed for the higher over education of migrant workers. For example, immigrant workers have less country-specific labour market information and network than native workers, and this hinders a proper match. Moreover, it is possible that employers value less schooling obtained abroad than domestic schooling and thus, for a given job, they require higher education levels from immigrants than from native workers. This may be due either to discrimination or to the fact that human capital acquired outside the host country could provide less country-specific skills, which boost productivity. In a sense, the national origin of migrants education and experience may be an important determinant of their labour market performance.

However, as immigrants spend time in the host country, they gradually expand their network and acquire country-specific labour market information and skills through work experience in the host country, and thus we expect that their labour market performance gets better over time. Moreover, their language proficiency improves and this is likely to have a positive effect on returns to human

capital as well. For all these reasons, over education should decrease with years of permanence in the host country and mismatch can be a temporary status.

In view of these points, the aim of this paper is twofold. First, the objective is to analyse the incidence of over education among immigrants in the Italian labour market; the second objective is to investigate the relationship between over education and years of stay in the host country.

The remainder of this paper is structured as follows. Section 2 describe the dataset used for the analysis and some methodological issue, Section 3 presents descriptive results, Section 4 shows and discusses the econometric results while Section 5 concludes.

2. Data and some methodological issue

To perform our analysis we use data from the Istat Labour Force Survey (LFS) for the years 2005-2007. The Istat LFS for the years 2005-2007 contains a question that allows to identify migrant workers, that is individuals with non Italian citizenship. Restricting our analysis to employee male migrants from Eastern Europe, Asia, Centre and South America and Africa (i.e. excluding migrants from Western Europe, North America and Oceania) and pooling the 2005, 2006 and 2007 surveys, gives us with a sample of 13,404 migrant workers. Almost half of them (45.95%) comes from Eastern Europe. Immigrants from Maghreb are the second group of immigrants with a share of around 21%, followed by Asians (16.29%), Africans (10.26%) and Centre-South Americans (6.26%) (see Table 1).

A problem with the Istat LFS is that, despite most immigrants enters Italy with qualifications from different educational systems, the education level is reported according to the Italian coding, and this may be a source of measurement errors[1]. Moreover, the survey does not allow to know if the education level of the worker has been obtained in the country of origin or in the host country. This information can be gained only for a subset of the sample matching information about age, education level and years of stay in the host country[2].

In the literature over education is measured in three different ways. The first refers to evaluations made by professional job analysts who provide, for each occupation, the level and type of education required; in case the education level possessed by the worker is higher than that established by the job analyst, he/she is considered over educated. The second measure considers workers' self assessments of educational requirement for the job they do; in this case over education is established comparing the actual level of education with that required. Finally, a statistical

---

[1] It may also happen that some education level is formally of the same standard of the Italian level but actually of different (lower or higher) substance and quality.
[2] In addition, all workers with more than ten years of stay in the host country are merged, so we are not able to distinguish length of permanence when it lasts more then ten years.

definition is used; according to it, observing the realized matches over education is ascertained when the education level is higher than the mean or modal level for a given occupation (for a discussion of the merits and limits of the three measures see Hartog 2000, Chevalier 2003 and Verhaest and Omey 2006). In this paper we use the statistical definition of over education.

Some important points regard our variable of interest, that is years of stay in the host country. First, in the ISTAT dataset answers of migrants in Italy since ten years or more are joined, so we are not able to know the precise length of stay for migrants in Italy since more than ten years. Moreover, we can not exclude that some respondents base their answer on when they have obtained a regular stay permit in Italy, although they may have spent a period of irregular permanence in the country before.

Finally, if we want to ascertain a causal relationship between over education and length of stay, a potential concern is that the length of stay in the host country may suffer from endogeneity and simultaneity bias. More specifically, it is very likely that the decision relative to the length of permanence is not exogenous to the quality of immigrants' matches. For example, it is possible both that workers with worse matches go back earlier to their country of origin due to job dissatisfaction and that they stay longer in the host country waiting to achieve their migratory project.

Moreover, migrants are likely to self-select into different lengths of stay based on unobservable characteristics, including their ability. For instance, we may assume that more productive workers are, *ceteris paribus*, more likely to be successful earlier in their migratory project so that they decide to go back earlier to their country of origin. If this is the case, the length of stay selects the "worse" immigrants (negative out-migration). On the contrary, better workers may select into longer permanence if they feel better in the host country due to good job achievements (positive out-migration).

In any case, it is unlikely that the decision about the length of stay is exogenous with respect to over education. Knowing who leaves the country and who stay is very important, as selective return migration influences the estimation of outcome variables such as the quality of job match. Accordingly, if we want to identify causal relationship between over education and length of stay, and not simple correlations, we have to deal with this issue.

To infer properly the causal effect between permanence in the host country and over education, we would have to observe migrants who leave the country after a given number of years and compare them with those who stay. However, the data we use do not allow us to follow individuals when they leave the country, so we observe migrants only as long as they reside in Italy.

We reach identification using two stages techniques with exclusion restrictions. In order to do so, we have to find a valid instrument for the length of stay, that is a variable correlated with years of permanence in the host country but uncorrelated with over education.

3. Descriptive results

Table 1 reports the distribution of education levels and occupations of male immigrants compared to the Italian employees' sample. Overall Italian employees have higher education levels than immigrants. A share of 14.49% of Italian workers possess a degree or more and 61% have at least upper secondary school, while the comparable figures for immigrants are, respectively, 5.98% and 42.52%. However, important differences emerges when comparing different ethnic groups: while immigrants from Eastern Europe and Centre-South Americans have qualifications not very different from Italian workers, we observe a much lower education level for employees from Asia, Maghreb and Africa.

Turning to the distribution by occupation, the differences between immigrants and Italian workers are striking: 96.82% of immigrants are blue-collar workers, 2.77% are low-skilled white-collars and only 0.41% are middle and general management. The corresponding shares for natives are 46.94%, 42.47% and 10.49%. Moreover, despite the significant differences in the qualifications by ethnic groups, there are not comparable differences among ethnic groups in the occupation distribution.

Table 1: Distribution by education and occupation (%)

	primary	lower secondary	upper secondary	degree	blue-collars	low-skilled white collars	high-skilled white-collars	total	over-educated
Italy	6.82	32.35	46.33	14.49	46.94	42.57	10.49	-	25.41
Eastern Europe	8.98	39.44	45.84	5.75	97.40	2.29	0.31	45.95	48.76
Asia	20.38	45.65	27.43	6.55	94.96	4.03	1.01	16.29	31.09
Magreb	28.98	40.57	25.01	5.44	97.79	2.07	0.14	21.24	28.49
Africa	28.58	37.16	27.85	6.40	97.24	2.47	0.29	10.26	29.60
Centre-South America	11.68	35.64	45.41	7.27	93.44	5.84	0.72	6.26	47.20
All immigrants	17.26	40.22	36.54	5.98	96.82	2.77	0.41	100.00	39.86

Reading together the figures above reported we may infer that over education is considerably more spread among immigrants: although Italian workers have higher education levels than workers from other countries, the distribution of employees by occupation appears much more concentrated among low-level jobs for this latter category. This fact is confirmed by the last column of Table 1, which reports the incidence of over education among male immigrants and native workers[3]. Around 1 Italian dependent worker over 4 is over educated, while this is true for almost 40% of immigrants.

---

[3] A worker is considered over educated if his/her education level is higher than the modal level of his/her occupation.

Also in this case differences among ethnic groups can be observed: Eastern Europeans and Centre-South Americans are the most over educated - the incidence of over education is equal almost to 50% - due to an education level considerably higher than other immigrants, which is not translated into higher-level jobs. For immigrants from Asia, Africa and Maghreb over education is observed for around one worker over 3.

Given the striking differences emerged from the above descriptive analysis between Italian and migrant workers regarding the incidence of over education, we believe that a deeper investigation of their causes is deserved.

One explanation for this stylized fact is that human capital acquired abroad is less highly valued in the labour market than education acquired in the host country. Indeed, upon arrival in the host country, immigrants have less country-specific skills and experience, and this fact is likely to reduce returns to a given education level. For example Friedberg (2000), using the Israeli Census of Population and Housing conducted in 1972 and 1983, finds that education acquired abroad is significantly less valued in terms of wages than human capital obtained domestically. Chiswick and Miller (2009) find that foreign labour market experience has a negative impact on current occupational status due to the limited transferability of skilled acquired on the job for US immigrants.

If this is the case, we should expect than with years of stay in the host country immigrants gain host country-specific experience and knowledge and language proficiency and, thus, the returns to human capital acquired in their country of origin (in terms of both higher wages and better matches) should increase. In addition, if one of the reasons for higher over education among immigrants is their lack of network, also in this case their permanence in the host country should enable them to realise better job matches, as their network should improve with time spent in the host country.

As a first evidence of this hypothesis, Table 2 reports the incidence of over education by years of arrival in the host country. The Table shows that the incidence of over education is not very different for immigrants in Italy from less than 5 years (41%) and from 5 to 10 years (42%)[4]. However, the incidence of over education decreases for immigrants with more then 10 years of stay in the host country (36%)[5]. Notice, however, that these results for the overall sample of immigrants hide important differences among ethnic groups: after 10 years in the host country the incidence of over education decreases for workers from Eastern Europe and Centre-South America, while it increases for other immigrants, especially Asians. For this latter group, the incidence of over

---

[4] The difference of mean over education for the two groups is not statistically different (t test=-0.53 and corresponding p-value 0.6).

[5] The differences of mean over education between immigrants with more than 10 years of stay and 0 to 5 years and between immigrants with more than 10 years of stay and 5 to 10 years of stay are statistically different (respectively, t test= 10.77 and 12.46 and corresponding p-values 0.00 and 0.00).

education grows from 24% when in the host country since less than 5 years to 34% when in the host country since more than 10 years.

Table 2: Incidence of over education by length of stay (%)

	< 5 years	5 - 10 years	>10 years
All immigrants	40.70	42.23	36.16
Eastern Europe	49.64	50.94	44.97
Asia	24.32	31.51	34.36
Magreb	27.12	28.28	29.04
Africa	26.40	32.63	28.49
Centre-South America	46.13	49.43	44.38

In order to obtain some indication relative to the kind of selection process operating trough the length of stay, we can compare some average observable characteristics of migrants at different points after arrival. In Table 3 we show the average age, work experience, education and occupation of those resident in the country since less than 5 years, since 5 to 10 years and since more than 10 years[6] by geographical origin.

Overall, comparing average education, the figures in the table suggest that more educated immigrants leave relatively earlier, with the incidence of secondary and university education dropping after 10 years of permanence and that of primary and lower secondary education increasing. Average age decreases to a smaller extent than it would do if return migration were random along the age distribution, suggesting that older workers tend to go back earlier to their country of origin; the same is true for work experience, indicating that relatively more experienced workers stay less time in the host country. Considering the occupation distribution, on the whole data reveal no significant change over the migration process: there are just very slight signals of upgrading towards better occupations.

The data in the table reveal also significant differences by area of origin. For example, considering education, migrants from Asia are on average more educated when they are in Italy since more years. Workers from Eastern Europe and Centre-South America improve more their occupational level with time (increasing more their share in white collar occupations and reducing more their

---

[6] Changes in the average values of age are certainly due to the selection process, while for experience, education and occupation we are not able to say whether changes in their average values are due to selective return migration or to assimilation, since these characteristics may change during the stay period. In order to reduce this interpretation problem, the values of education are referred to the sub-sample of immigrants with more than 23 years, whose change in the average education level should be due mostly to the selection process.

share in blue collar jobs), while migrants from Africa and Maghreb upgrade less their position with their permanence in Italy.

Table 3: Average characteristics by length of stay (%)

	All	EE	AS	M	AF	CSA
Age						
< 5 years	32.59	32.84	31.67	32.72	30.85	33.69
5-10 years	35.52	35.76	35.16	34.68	36.27	35.77
>10 years	40.94	39.25	41.86	41.51	42.95	41.05
Work experience						
< 5 years	14.61	15.24	13.34	14.03	11.94	14.93
5-10 years	16.05	16.95	14.98	15.44	14.16	15.43
>10 years	20.36	20.15	19.94	20.94	19.82	21.67
Primary						
< 5 years	17.47	10.71	27.54	26.77	30.81	15.06
5-10 years	16.63	9.37	24.22	27.56	25.67	12.77
>10 years	19.48	8.08	14.60	31.32	31.95	9.20
Lower secondary						
< 5 years	36.34	32.57	45.51	43.48	40.91	29.34
5-10 years	37.02	34.64	41.65	41.27	36.67	32.83
>10 years	40.01	41.75	46.50	37.36	33.88	36.78
Upper secondary						
< 5 years	38.66	48.86	19.76	24.26	21.72	45.17
5-10 years	39.73	49.38	28.28	24.44	29.34	48.02
>10 years	34.69	45.28	30.84	25.98	28.25	46.55
Degree						
< 5 years	7.53	7.86	7.19	5.49	6.57	10.42
5-10 years	6.63	6.61	5.85	6.73	8.31	6.38
>10 years	5.82	4.89	8.06	5.34	5.92	7.47
Blue-collars						
< 5 years	97.47	98.28	96.03	97.31	98.00	94.84
5-10 years	97.12	97.48	96.70	97.70	96.48	94.83
>10 years	96.13	96.50	92.95	97.96	97.38	88.20
Low-skilled white collars						
< 5 years	2.21	1.55	2.48	2.69	2.00	4.84
5-10 years	2.47	2.22	2.28	2.07	3.05	5.17
>10 years	3.39	3.06	6.26	1.91	2.33	8.99
High-skilled white-collars						
< 5 years	0.32	0.18	1.49	0.00	0.00	0.32
5-10 years	0.41	0.30	1.02	0.23	0.47	0.00
>10 years	0.48	0.44	0.80	0.14	0.29	2.81

Overall, these descriptive results suggest that return migration is not random along observable characteristics and that the selection process operating with the length of stay select older, less experienced and lower educated individuals. Moreover, the selection process of return migration is

very different between ethnic groups. Finally, we can not exclude that selection operates also by means of unobservable characteristics. In order to investigate the relationship between over education and length of stay we have to take this selection process properly into account.

4. Determinants of over education

In this section we present results from a linear probability model for the incidence of over education[7]. The dependent variable is a binary variable taking value of 1 when the immigrant worker is over educated. It is expressed as a function of individual, job and firm characteristics.

In order to test whether the country-specific skills and information gaps reduce over time spent in the host country and, consequently, the incidence of over education, we control for years of stay by means of two dummy variables: length of permanence between 5 and 10 years and length of permanence more then 10 years (with reference category length of permanence less than 5 years). We control for the effect of the length of stay also by means of the continuous variable stating the number of years in the host country and comprised between 1 and 10, this latter value indicating a permanence lasting more than 10 years. We estimate the model with continuous length of stay in order to compare estimation results from this baseline model and results from IV estimation.

Besides length of stay, we control for many individual demographic variables, job and firm characteristics; we consider also the effect of ethnic "enclaves" on over education: it is likely that the kind of job match realised by the immigrant worker is influenced by the density of own community at the local level. For this reason, we include among controls the share of own ethnic group in the overall immigrant population at provincial level. The ethnic concentration may produce two opposing effects on over education: immigrants are more likely to be employed by members of their own community when concentration is high and this fact on the one hand reduces the information lack and thus facilitate a better match but, on the other hand, it may favour segregation of immigrant workers in a restricted group of jobs. Also, a higher ethnic concentration is likely to help immigrants gaining information about job opportunities, thus facilitating good matches also when the employer is not a member of own community.

We have also included the provincial unemployment rate at the time of each survey in order to control for labour market conditions. We expect that when the local unemployment rate is high immigrants are less "picky" in accepting jobs and, thus, the incidence of over education should be positively related to unemployment rate.

As a measure of job satisfaction, we have inserted a dummy variable indicating whether the worker is looking for another job. We expect to see a positive correlation between this variable and over

---

[7] Marginal effects computed after probit estimation are reported in the Appendix.

education: over educated workers are more likely to be dissatisfied and, for this reason, to be in search of a different job.

Table 4. Determinants of over education

Variable	OLS 1	OLS 2	OLS 3	OLS 4	IV
Age	0.030 ***	0.038 ***	0.038 ***	0.039 ***	0.055 ***
	0.003	*0.004*	*0.004*	*0.004*	*0.004*
Squared age	0.000 ***	0.000 ***	0.000 ***	0.000 ***	-0.001 ***
	0.000	*0.000*	*0.000*	*0.000*	*0.000*
Married	0.098 ***	0.092 ***	0.088 ***	0.087 ***	0.138 ***
	0.009	*0.010*	*0.010*	*0.010*	*0.012*
Asia (ref. Eastern Europe)	-0.173 ***	-0.223 ***	-0.242 ***	-0.335 ***	-0.264 ***
	0.012	*0.014*	*0.014*	*0.021*	*0.024*
Centre-South America	-0.022	-0.052 ***	-0.067 ***	-0.145 ***	-0.177 ***
	0.017	*0.019*	*0.019*	*0.024*	*0.026*
Maghreb	-0.193 ***	-0.226 ***	-0.231 ***	-0.303 ***	-0.221 ***
	0.011	*0.012*	*0.012*	*0.017*	*0.021*
Africa	-0.182 ***	-0.233 ***	-0.251 ***	-0.337 ***	-0.247 ***
	0.015	*0.016*	*0.017*	*0.023*	*0.026*
North (ref. South of Italy)	0.131 ***	0.114 ***	0.095 ***	0.211 ***	0.183 ***
	0.013	*0.015*	*0.015*	*0.030*	*0.032*
Centre	0.103 ***	0.092 ***	0.083 ***	0.180 ***	0.188 ***
	0.015	*0.017*	*0.017*	*0.027*	*0.029*
Permanence 5-10 Years (ref. permanence < 5)	-0.010	-0.007	-0.007	-0.003	
	0.011	*0.012*	*0.012*	*0.012*	
Permanence More 10 Years	-0.066 ***	-0.075 ***	-0.079 ***	-0.074 ***	
	0.012	*0.014*	*0.014*	*0.014*	
Lenght of stay (continuous)	-0.010 ***	-0.012 ***	-0.013 ***	-0.012 ***	-0.091 ***
	0.002	*0.002*	*0.002*	*0.002*	*0.009*
High-skilled white collars (ref. blue collars)		0.173 **	0.133 *	0.126 *	0.105
		0.075	*0.075*	*0.075*	*0.081*
Low-skilled white collars		0.039	0.004	0.000	0.024
		0.028	*0.028*	*0.028*	*0.031*
Permanent		-0.001	-0.011	-0.012	0.003
		0.014	*0.014*	*0.014*	*0.015*
Full Time		-0.053 **	-0.032	-0.028	-0.048 **
		0.022	*0.022*	*0.022*	*0.024*
Experience (years)		-0.010 ***	-0.010 ***	-0.010 ***	-0.010 ***
		0.001	*0.001*	*0.001*	*0.001*
Tenure (years)		0.002	0.002	0.002	0.020 ***
		0.001	*0.001*	*0.001*	*0.002*
Search another job		0.076 ***	0.070 ***	0.063 ***	0.066 ***
		0.015	*0.015*	*0.015*	*0.016*
Work at evening		0.027 *	0.000	0.002	0.011
		0.016	*0.016*	*0.016*	*0.018*
Work at night		0.032 *	0.026	0.027	0.023
		0.017	*0.017*	*0.017*	*0.019*
Work on Saturday		0.017 *	0.018 *	0.014	0.011
		0.010	*0.010*	*0.010*	*0.011*
Work on Sunday		0.039 **	0.035 **	0.034 **	0.038 **
		0.016	*0.016*	*0.016*	*0.017*
Shift work		0.059 ***	0.051 ***	0.050 ***	0.050 ***
		0.015	*0.017*	*0.016*	*0.018*
Work own municipality		-0.008	-0.007	-0.007	-0.032 ***
		0.009	*0.009*	*0.009*	*0.010*
Agriculture (ref. construction)			-0.041 *	-0.034	-0.009
			0.021	*0.021*	*0.023*
Manufacturing			0.051 ***	0.050 ***	0.066 ***
			0.013	*0.013*	*0.014*
Trade			0.029	0.027	0.076 ***
			0.019	*0.019*	*0.022*
Other industry			0.100 ***	0.095 ***	0.124 ***
			0.015	*0.015*	*0.016*
Firm size < 20 (ref. firm size >250)			-0.038 *	-0.039 *	-0.065 ***
			0.022	*0.022*	*0.024*
Firm size 20-49			-0.014	-0.015	-0.037
			0.023	*0.023*	*0.025*
Firm size 50-249			-0.010	-0.011	-0.019
			0.023	*0.023*	*0.024*
Ethnic district density				-0.204 ***	-0.159 ***
				0.036	*0.040*
District unemployment				0.016 ***	0.008 **
				0.003	*0.004*
Constant	-0.241 ***	-0.343 ***	-0.333 ***	-0.398 ***	-0.161
	0.055	*0.075*	*0.079*	*0.090*	*0.099*
Number of obs	13404	11040	11040	11040	10975
Prob > F	0.000	0.000	0.000	0.000	0.000
Adj R-squared	0.070	0.096	0.1017	0.1059	

legend: * p<.1; ** p<.05; *** p<.01. Standard errors in italicus.

Finally, we also controlled for work experience and for tenure, entered in the model as continuous variables. Estimation results from different specification are shown in the 4 columns of Table 4.

Overall, the incidence of over education is higher for older Eastern European workers located in the Centre-North of Italy. Considering job characteristics, high-skilled white collars are more likely to be over educated than blue collars and part-time workers are worse matched than full-timers. The incidence of over education is not related to the kind of contract (whether permanent or temporary). A set of controls for own job requiring working at evening, at night, on week ends and on shifts are included, but only working on Sunday and on shifts appears positively related to over education. As regard the sector of employment, the incidence of over education is higher in manufacturing while a small firm size (less than 20 employees) is related to less over education. One explanation for this latter result may be that a small firm size favours a better match due to less information problems than in large firms.

The coefficient of the variable measuring own ethnic concentration at provincial level is negative and significant, suggesting that enclaves actually help the matching process and/or employers of own ethnic groups are more likely to recognise foreign qualifications (a similar effect is found by Battu and Sloane, 2002 for UK immigrants). The positive and significant sign of the coefficient of provincial unemployment rate indicates that immigrants are more disposed to accept jobs requiring qualifications lower than those hold when job opportunities are scarce.

As expected, we find a positive relationship between over education and the fact that workers are searching for another job; this result suggests that over education is a source of job dissatisfaction inducing workers to try to change their job.

Also work experience has a positive effect on the quality of job matches, given that an year more of experience on average decreases the likelihood of a bad match by 1%.

Turning to our variables of interest, we find that the length of stay in the host country, when sufficiently extended (more then 10 years), is related to a better match in term of a reduction in the incidence of over education. However, we find no length of stay effect for immigrants in the host country from less then 10 years. So, our results suggest that after a considerable length of time in the host country, the value of immigrants human capital increases and allows to improve their labour market performance in terms of better job matches. Notice however that the positive effect of the length of stay appears after 10 years of permanence in the host country. This result indicates that for immigrants in the Italian labour market the path to assimilation is long and that discrimination is likely to play a significant role in immigrants labour market performance for a long time-period since arrival.

However, these results do not consider selection effects that operates on the decision to stay in the host country. This may have caused both under estimation of the positive effect of the length of stay on over education if the length of stay select the worse immigrants and over estimation of the same effect if the selection process operates the other way round. For this reason, so far our results should be interpreted as simple correlations and not as causal relationships since they have been obtained assuming exogeneity of length of permanence with respect to over education, neglecting that duration of stay is likely to be jointly determined with over education.

In order to ascertain a casual relationship between the two variables, the last column of Table 4 reports two stages estimates of the over education equation. As instrument for the length of stay we used the average length of stay by country of origin. This latter variable is likely to be correlated with the decision about the time to stay in the host country through the type of migration process that is partly determined by own country cultural models. However, we have no reason to suppose that it is correlated with the incidence of individual over education.

Observing the coefficients of the continuous variable "length of stay" reported in the different columns of Table 4, we always observe a negative and significant sign, suggesting that over education tend to reduce with permanence in the host country. However, while results from the different specification of the OLS models provide a value of this coefficient of around -0.01, when using IV the coefficient decrease to -0.09. Thus, once controlled for the migrants' selection process, a stronger positive effect of the length of stay on over education is found. This result suggests that with years of stay in the host country the "worse" immigrants, i.e. those with unobservable characteristics correlated to poorer job matches, are selected. For this reason, once controlled for this selection process operating on return migration, we find a greater positive effect of length of stay in terms of reduction of the incidence of over education.

5. Conclusions

This paper analysed the incidence of over education for immigrant male employees in the Italian labour market, focussing in particular on the impact of years of permanence in the host country. We found that immigrants, especially those from Eastern Europe, suffer much more than Italian workers from over education. Moreover, we found that ethnic concentration favours better matches probably because of a greater network effect or because employers of own ethnic groups are more likely to recognise foreign qualifications.

With regard to our variable of interest, length of stay in the host country, we found that when it is sufficiently extended (more then 10 years), it is related to a better match in terms of a reduction in the incidence of over education. The positive effect of the length of stay emerges only after 10 years

of permanence in the host country, so it is likely that that discrimination plays a major role in immigrants labour market performance for a long time-period since arrival and that immigrants assimilation is a very long process.

These results are robust to selection effects that operates on the decision to stay in the host country. Taking into account that the decision on the length of permanence in the host country is not exogenous to the quality of immigrants' matches by means of two stage techniques, we find a stronger positive effect of length of stay on the incidence of over education, suggesting that with years of stay in the host country immigrants with unobservable characteristics correlated to poorer job matches are selected. For this reason, once controlled for the selection process which operates on return migration, we find a greater positive effect of length of stay in terms of reduction of the incidence of over education.

References

Battu, H. and P. J. Sloane (2002), To what extent are ethnic minorities in Britain over-educated?, *International Journal of Manpower*, 23(3):192-208.

Battu, H. and P. J. Sloane (2004), Over-education and ethnic minorities in Britain, *The Manchester School*, 72(4): 535–559.

Chevalier, A. (2003), Measuring Over-education, *Economica*, 70:509-531.

Chiswick, B.R. and Miller, P.W. (2009), Earnings and occupational attainment among immigrants, *Industrial Relations*, 48(3): 454-465.

Duncan, G. and Hoffman, S.D. (1981), The incidence and wage effects of over education, *Economics of Education Review*, 1(1): 75-86.

Friedberg, R.M. (2000), You Can't take it with you? Immigrant assimilation and the portability of human capital, *Journal of Labor Economics*, 18(2): 221-251.

Green, C., Kler, P. and Leeves, G. (2007), Immigrant overeducation: Evidence from recent arrivals to Australia, *Economics of Education Review*, 26(4): 420-432

Hartog, J. (2000), Over-education and earnings: where are we, where should we go?, *Economics of Education Review*, 19: 131-147.

Kler, P. (2007), A Panel data investigation into over-education among tertiary educated Australian immigrants, *Journal of Economic Studies*, 34 (3): 179-193.

Istat (2008), Gli Sstranieri nel mercato del lavoro, Istat, Roma.

Verhaest, D. and Omey, E. (2006), Discriminating between alternative measures of over-education, *Applied Economics*, 38:2113-2120.

Appendix

Table A1. Over education: Probit marginal effects

Variable	Model 1	Model 2	Model 3	Model 4
Age	0.034 ***	0.043 ***	0.043 ***	0.044 ***
Squared age	0.000 ***	0.000 ***	0.000 ***	0.000 ***
Married	0.101 ***	0.097 ***	0.094 ***	0.094 ***
Asia (ref. Eastern Europe)	-0.166 ***	-0.216 ***	-0.233 ***	-0.306 ***
Centre-South America	-0.022	-0.055 ***	-0.070 ***	-0.147 ***
Maghreb	-0.189 ***	-0.227 ***	-0.233 ***	-0.295 ***
Africa	-0.173 ***	-0.221 ***	-0.236 ***	-0.299 ***
North (ref. South of Italy)	0.143 ***	0.128 ***	0.108 ***	0.231 ***
Centre	0.122 ***	0.110 ***	0.099 ***	0.214 ***
Permanence 5-10 Years (ref. permanence <	-0.011	-0.007	-0.007	-0.003
Permanence More 10 Years	-0.069 ***	-0.079 ***	-0.084 ***	-0.079 ***
Lenght of stay (continuous)	-0.011 ***	-0.013 ***	-0.014 ***	-0.013 ***
High-skilled white collars (ref. blue collars)		0.188 **	0.144 *	0.138 *
Low-skilled white collars		0.040	0.002	-0.002
Permanent		0.000	-0.011	-0.012
Full Time		-0.058 **	-0.036	-0.032
Experience (years)		-0.011 ***	-0.011 ***	-0.011 ***
Tenure (years)		0.002	0.002	0.002
Search another job		0.085 ***	0.079 ***	0.071 ***
Work at evening		0.030 *	0.000	0.002
Work at night		0.034 *	0.029	0.029
Work on Saturday		0.018 *	0.018 *	0.015
Work on Sunday		0.043 **	0.037 **	0.037 **
Shift work		0.064 ***	0.056 ***	0.055 ***
Work own municipality		-0.010	-0.009	-0.008
Agriculture (ref. construction)			-0.051 **	-0.044 *
Manufacturing			0.055 ***	0.055 ***
Trade			0.034	0.032
Other industry			0.110 ***	0.105 ***
Firm size < 20 (ref. firm size >250)			-0.040 *	-0.041 *
Firm size 20-49			-0.013	-0.015
Firm size 50-249			-0.009	-0.010
Ethnic district density				-0.221 ***
District unemployment				0.018 ***
Constant				
Number of obs	13404	11040	11040	11040
Prob > chi2	0.000	0.000	0.000	0.000
Pseudo R2	0.055	0.076	0.082	0.086

legend: * p<.1; ** p<.05; *** p<.01.