UNIVERSITA' CATTOLICA DEL SACRO CUORE

WORKING PAPER

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Dipartimenti e Istituti di Scienze Economiche

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IEIL0058- January - 2010

UNIVERSITA' CATTOLICA DEL SACRO CUORE
- Milano -

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n. 58 – gennaio 2010

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* La Redazione ottempera agli obblighi previsti dalla Legge n. 106 del 15.04.2006, Decreto del Presidente della Repubblica del 03.05.2006 n. 252 pubblicato nella G.U. del 18.08.2006 n. 191.

Labour Market Assimilation and Over Education: The Case of Immigrant Workers in Italy

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January 2009

Abstract

In this paper we study the assimilation of immigrants into the Italian labour market using over-education as an indicator of labour market performance. The main objective is to assess the extent to which work experience in the host country's labour market favours the international transferability of immigrants' human capital. Using data from the Istat Labour Force Survey for the years 2005-2007, we find that foreigners are much more likely to be over-educated than natives upon their arrival in Italy and that work experience gained in the country of origin is not valued in the Italian labour market. Moreover, we find that not even experience acquired in Italy is helpful in improving immigrants' educational job matches, suggesting that catch-up by foreigners seems unachievable, even after they adapt their skills to the host country labour market.

Keywords: Assimilation, Over education
JEL Classification: F22, J24, J61

1 Introduction

The assimilation of immigrants into the host country's labour market is a very important topic for migration economics. This issue, mainly as regards earnings assimilation, has been thoroughly studied for many OECD countries (among others by Chiswick, 1978; Borjas, 1985, 1987, 1995; LaLonde & Topel, 1992; Card, 2005 for the US; Baker & Benjamin, 1994 for Canada; Bauer & Zimmermann, 1997 and Constant & Massey, 2003 for Germany; Hayfron, 1998 and Longva & Raaum, 2003 for Norway; Friedberg, 2000 for Israel; Husted, Nielsen, Rosholm & Smith, 2001 for Denmark; Venturini & Villosio, 2008 for Italy).

The seminal work by Chiswick (1978), based on US data, showed that the significant earning gap between natives and immigrants upon arrival tends to disappear with integration in the host labour market. Borjas (1985, 1995) argued that this result had been obtained without taking account of the decline in immigrants' quality over time, and he showed that the speed with which assimilation takes place is actually lower than estimated by Chiswick (1978). Friedberg (2000), using data from the Census of Population in Israel, introduced the issue of the "portability" of human capital in the analysis of assimilation, assuming that foreign and domestic human capital may not be homogeneous factors. He demonstrated that the most important cause of the earnings gap between immigrants and natives is the source of their human capital (both education and work experience).

The assimilation of immigrants has been studied from perspectives other than earnings profiles. Various studies have analysed immigrant assimilation by considering other indicators of labour-market performance such as employment prospects (Bevelander & Nielsen, 2001; Husted et al., 2001; Wheatley Price, 2001; Amuedo-Dorantes & de la Rica, 2007; Zorlu & Hartog, 2008; Fernandez & Ortega, 2008), unemployment (Bauer & Zimmermann, 1997; Zorlu & Hartog, 2008; Fernandez & Ortega, 2008), or job quality (Amuedo-Dorantes & de la Rica, 2007; Zorlu & Hartog, 2008; Chiswick & Miller, 2009a).

With regard to the last indicator, poor job quality may be due either to a worker's low human capital or to an improper job match in terms of human capital. More precisely, it is possible that immigrants hold jobs of lower quality than those of equally educated natives because they more often possess qualifications higher than those required for the job; put differently, they are more often over-educated.

In this paper we study the assimilation of immigrants into the Italian labour market using over-education instead of earnings as an indicator of labour-market performance. Analysis of assimilation using over-education is important for various reasons. Firstly, over-education may be a way to differentiate the returns to education between natives and immigrants[1]. In this regard, assimilation

[1] There is evidence that returns to education are lower for over-educated than for properly-matched workers (e.g. Hartog, 2000).

consists in the progressive reduction of the education wage premium differential with years of stay in the host country. Obviously, this interpretation may be more appropriate to European countries, where stronger labour market institutions make wage adjustments more difficult than in the US labour market, where, on the contrary, individual wage bargaining is more widespread.

Second, persistent over-education may be viewed as a failure by immigrants to assimilate, and as indicating that the labour market is unable to absorb the immigrant labour supply efficiently.

Finally, over-education also has consequences at the individual level, given that having an education level higher than the skill requirements of the worker's job is likely to reduce his/her job satisfaction.

Various reasons can be adduced for the higher over-education of migrant workers. The first refers to the "portability" issue. As suggested by Friedberg (2000), human capital obtained abroad may be less valued than domestically obtained human capital; hence, for a given job, employers require higher education from immigrants than from native workers. This may be due either to the fact that human capital acquired outside the host country provides less country-specific skills, which reduces productivity, or to a lower quality of foreign schooling and of work experience. In these cases, immigrants are only "formally" over-educated because they are actually less productive than equally educated native workers. However, as immigrants spend time in the host country, they gradually acquire country-specific skills through work experience, so that their productivity should increase over time. Moreover, their language skills improve, and this is likely to have a positive effect on returns to human capital as well. As a consequence, "formal" over-education should decrease with years of permanence in the host country, and mismatch may be just a temporary status.

Immigrants are instead actually more over-educated than natives when they hold jobs of a lower level than those of equally educated and productive native workers. "Actual" over-education may derive from imperfect information when immigrant workers, for any given education-productivity pair, have fewer networks and less country-specific labour market information than natives, and this makes the job search more difficult and hampers achievement of a good job match. It is also possible that, at the moment of hiring, education obtained abroad is less a signal of unobserved ability than education acquired in the home country (Chiswick & Miller, 2009b). However, in these two latter cases as well, the incidence of over-education should decrease over time in the host country.

Finally, discrimination towards foreigners in the form of segregation into low-quality and low-paid jobs may play a role in explaining their higher over-education. In this case, it is unlikely to decrease with the duration of the migratory experience.

To date, little research has been undertaken on immigrants' assimilation in terms of a reduction of over-education towards the level of natives. Various studies have analysed the issue of immigrants'

over-education and its consequences on earnings, but they have not examined how over-education changes with years of stay and with work experience in the host country (Battu & Sloane, 2002 and 2004 for the UK; Green, Kler & Leeves, 2007 and Kler, 2007 for Australia; Nielsen, 2007 for Denmark; Wald & Fang, 2008 for Canada).

Chiswick and Miller (2009b) use the 2000 US Census to study the assimilation of immigrant male workers in terms of over-education. They find that greater pre-immigration labour market experience is correlated to poorer job matches, and that longer residence in the US is associated with a steady decrease in the probability of being over-educated (10% after 30 years since migration). Lindley (2009) studies the over-education of immigrants in the UK using the LFS for the period 1993-2003, finding that the most recent immigration cohorts are more likely to experience over-education and that there is little evidence of economic assimilation. Fernandez & Ortega (2008), using the Spanish LFS for the 1996-2005 period, find that there is no assimilation of immigrants towards the lower incidence of over-education of observationally similar natives, at least within the first years of residence in Spain.

Very little research has been conducted on immigrant assimilation in Italy, mainly because of a lack of data. However, studying this topic is particularly important, given the increase in the share of immigrant workers that has taken place since the 1990s. In Italy, migration is a quite recent process, and the largest proportion of migrants belong to "first generation". However, the share of migrants is increasing very rapidly: 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 age groups, so that their share in the labour force is even larger: in 2006 migrants made up 6.4% of the Italian labour force (the EU25 average was 5.9%) (Istat, 2008). An immigration pattern similar to Italy's is common to other Mediterranean countries, and it is important to understand how efficiently labour markets can absorb the marked labour-force growth arising from the recent immigration waves.

Venturini & Villosio (2008) is one of the few exceptions in that it examines the labour-market assimilation of foreign (i.e. non-citizen) workers in Italy by considering the wages and days of employment of male workers. Using a matched employer/employee administrative panel dataset from 1990 to 2003[2] and controlling for selective emigration, they find that foreign employees in the private sector earn the same wages as natives upon entry, but the two earnings profiles then diverge, to the disadvantage of immigrants, with work experience. Moreover, the initial differential between natives and foreigners in the number of days worked by year increases over time. Thus, the main finding of Venturini & Villosio's study is that immigrants in the Italian labour market do not assimilate from either an earnings or an employment perspective.

The aim of the present paper is to contribute to the literature on the assimilation of immigrants

[2]The main drawback of this dataset is that it does not contain information on education.

into the Italian labour market by using over-education as an indicator of labour market performance. The analysis is based on data taken from the Italian Labour Force Survey (LFS) for the period between 2005 and 2007. The main objective is to test the "portability" hypothesis, distinguishing the effect of human capital acquired abroad and domestically on the quality of job match. The study takes account of different methodological issues such as selective return migration and cohort effects. It also conducts an analysis to obtain deeper understanding of the reasons for the difficult assimilation of immigrants in the Italian labour market.

The article is structured as follows. The next Section describes the data used for the analysis and discusses some methodological issues Sections 3 and 4 set out, respectively, the descriptive and econometric results. Section 5 presents some auxiliary results in order to furnish further insights into the immigrant assimilation issue, and Section 6 summarizes and concludes.

2 Data and some methodological issues

We use data from the Italian Labour Force Survey (LFS) from Istat (the Italian Institute of Statistics). The analysis is carried out by pooling the LFS for the years 2005-2007, because only for these years does the LFS contain both a question that enables identification of migrant workers (i.e. individuals with non-Italian citizenship) and a question about the duration of immigrants' residence in Italy[3]. The LFS only covers foreigners registered at municipal registry offices; hence the study does not consider illegal immigration.

In order to obtain a more homogeneous sample of migrant workers, we exclude migrants from EU15, North America, Oceania and Japan: immigration from these countries is very limited in Italy and, most importantly, it is very different from immigration from the rest of the world. We thus restrict our analysis to employee male migrants from Eastern Europe, Asia, Centre and South America and Africa.

We consider only workers with at least vocational education (10 years of education) because, given the way in which we measure over-education, workers with less than vocational education would never be over-educated[4]. Moreover, over-education is certainly a more important issue for more educated workers, for whom the productivity loss stemming from over-education is potentially very large.

Following Friedberg (2000), we start by estimating the following baseline equation:

[3] In order to improve the quality of data on foreigners, the LFS employs a number of ad hoc strategies to collect data on the immigrant population. For example, interviews in households with a foreigner head are made using the Capi technique (Computer assisted personal interviewing) instead of the Cati technique (Computer assisted telephoning interviewing). Moreover, since 2004 further constraints referring to foreigners separately by gender and citizenship have been introduced into the procedure of computing individual weights.

[4] Male employees with at least vocational education are, respectively, 42.5% and 54.6% of the samples of immigrants and natives.

$$OE = \alpha + \beta_1 M + \beta_2 EXP + \beta_3 YSM + \beta_4 X + \varepsilon$$

where the dependent variable OE is a binary variable taking value 1 when the individual is over-educated, M is a dummy for immigrants, EXP is potential overall work experience computed as age minus years of education minus 6, YSM is years elapsing since migration (hence it is 0 for natives) and X is a vector of individual characteristics. This last includes marital status, some job and firm characteristics (permanent contract, full-time work, firm size, and geographical location of the firm) and, in order to control for local labour market conditions, provincial unemployment rate. As in Chiswick & Miller (2009b), we omit workers' actual education from the model, because its inclusion would introduce a spurious link between the left-hand-side and right-hand-side variables which would depend on this measurement issue and, hence, would not derive from workers' characteristics[5].

The coefficient of M measures the initial over-education gap of immigrants upon arrival relative to comparable natives, while the coefficient of YSM measures how this gap varies as immigrants spend time in the host country.

To be stressed is that, in the LFS, the YSM variable is continuous for values lower than 10, while the replies of migrants who have been in Italy for 10 years or more are merged, with the consequence that it is not possible to know the precise length of stay for this group of migrants. In order to obtain a continuous variable for work experience, we exclude from the analysis migrants who have been in Italy for more than 10 years; accordingly, the sample of migrants is made up of foreigners who arrived in Italy between 1995 and 2007. Knowing the exact length of stay is also necessary in order to deal with the cohort effect issue (see below).

This shrinkage of the sample should not be a problem since the vast majority of migrant flows into Italy have occurred since the late 1990s. Moreover, research has shown that the largest part of emigrants return to their countries of origin within the first 5 years of arrival (Constant & Massey, 2003). Hence we can also consider how our results are affected by return migration. However, in the final part of Section 4 we present some econometric results for the entire sample of immigrants obtained by dichotomising the YSM variable.

In order to test the portability hypothesis, we shall estimate separately of the effects of work experience obtained abroad and in the host country on over-education. Thus, following Friedberg (2000), we split total work experience according to its source:

$$EXP = EXP_O + EXP_D$$

[5] We estimated the models including education among the regressors, but we obtained unrealistically high coefficients and t statistics for this variable. These results are available on request.

where O stands for country of origin and D for stands for destination country[6] .

We compute experience in the destination country as

$$EXP_D = YSM - ED_D$$

where ED_D is education acquired in the destination country[7].

The second equation we estimate is thus:

$$OE = \gamma + \delta_1 M + \delta_2 EXP_O + \delta_3 (EXP_D \times M) + \delta_4 (EXP_D \times N) + \delta_5 X + \varepsilon$$

where M and N are, respectively, dummies for immigrants and natives, δ_2 measures the value of work experience obtained in the country of origin (only for immigrants), and δ_3 and δ_4 measure the value of work experience obtained in the destination country respectively for migrants and natives.

With regard to the dependent variable, we need a procedure with which to identify over-educated workers. In the literature, over-education is measured in three different ways. The first refers to evaluations made by professional job analysts who determine, for each occupation, the level and type of education required; if the education level possessed by the worker is higher than that established by the job analyst, s/he is considered to be over-educated. The second measure considers workers' self assessments of the educational requirement for their jobs; in this case, over-education is established by comparing the actual level of education with that required. Finally, a statistical definition is used. By means of this definition, on observing the realised 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 & Omey, 2006).

In this paper we use the statistical definition (or realised matches procedure) of over-education; that is, we consider a worker to be over-educated when his/her education is higher than the modal level of his/her occupation[8]. Obviously, the modal level is computed with reference to the overall sample (natives and immigrants). Occupations are classified according to the 3-digit ISCO classification (121 occupations).

The use of pooled cross sections rather than panel data to study immigrant assimilation leads to two potentially serious methodological drawbacks that may result in biased results if not taken into

[6] Obviously for natives $EXP = EXP_D$.

[7] Let AED and AIM denote, respectively, age at completed education and age at immigration, then $ED_D = Max(0, AED - AIM)$. In our sample of immigrants, less than 3% have a positive value of ED_D, hence for the vast majority of immigrants $EXP_D = YSM$. Considering that immigrants often enter Italy illegally, we can not exclude that, when answering on YSM, some immigrants refer to years of legal migration. In this case, observed EXP_D is lower than actual EXP_D. However, the increase in human capital brought about by illegal work experience should be negligible.

[8] A potential measurement error may arise from the fact that qualifications obtained outside Italy are reported according to the Italian coding.

account; these are selective return migration and changes in the quality of immigration cohorts.

The first source of bias derives from the fact that the length of stay in the host country is not random in the presence of selective return migration. The literature has thoroughly analysed this issue and its impact on migrants' assimilation paths (Borjas, 1987; Borjas & Bratsberg, 1996; Dustmann, 1997, 2000, 2003; Constant & Massey, 2003; Husted et al., 2001). The direction of the bias induced by selective return migration in not obvious ex ante: with the length of stay it is possible that both "worst" (negative out-migration) and "best" (positive out-migration) immigrants are selected. Positive out-migration occurs both when the best migrants feel better in the host country due to good job achievements, and thus self-select into longer permanence, and when the worst migrants, experiencing worse-than-expected outcomes, decide to return earlier to their home countries. Negative out-migration may instead occur when the decision to return depends on the attainment of a given saving target. Best immigrants are more likely to succeed earlier in their projects and, accordingly, to return to the country of origin before worst immigrants, who need more time to achieve their saving target. Obviously, both negative and positive out-migration may occur at the same time, and some empirical papers have shown that neither of the two kinds of return migration prevails (Constant & Massey, 2003). In any case, whatever the kind of selection process operating through return migration, it is necessary to take this latter into account if one wants to identify causal effects on over-education, not simple correlations.

In order to obtain some information relative to the kind of selection process operating through the length of stay, we can compare certain average observable characteristics of migrants at different points after arrival. Graph 1 shows the distribution of age, potential work experience, and education by years since migration. Changes in the average values of age and potential experience different from those arising from the simple passage of time are certainly due to a selection process. Moreover, since we have found that foreigners do not resort to the Italian educational system in order to improve their education levels once in the host country (see footnote 7), also in the case of education changes in its distribution by YSM imply that a selection process is at work.

FUGURE 1 HERE

The evidence in the graph suggests that, with years in the host country, no selection seems to operate via education, whose distribution between the three different levels considered in our sample (vocational school, upper secondary school and university education) does not change with duration of stay. On the contrary, 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 applies to work experience, indicating that relatively more experienced workers stay less. Overall, these descriptive results suggest that return migration is random along education while the selection process operating with the length of stay selects

younger and less experienced individuals. Obviously, we cannot exclude that selection operates also by means of unobservable characteristics. To deal with this issue, ideally we would have to observe migrants who leave the country after a given number of years and compare them with those who stay. However, no available dataset for Italy makes it possible to follow individuals when they leave the country, so that migrants are observed only as long as they reside in Italy. In this study, therefore, selective return migration is controlled for by using two-stage techniques with exclusion restrictions.

The empirical literature on return migration has shown that out-migration is strongly affected by economic conditions in the source country (Borjas & Bratesberg, 1996) as proxied by home country GDP. In other words, immigrants tend to return to richer countries more often than to poorer countries. Thus, we use the GDP of the country of origin as an exclusion restriction. The underlying assumption is that income in the home country affects the decision to out-migrate but not the quality of the immigrant's job match in the destination country.

The second source of bias when estimating assimilation using cross-section data arises from the fact that the quality of different entry cohorts may not be the same (cohort effect). This may happen because the distribution of the source countries changes; but in this case cohort effect is not an issue if immigrants are distinguished by country of origin. Moreover, we will show that the distributions of the observable indicators of human capital (age at immigration, education and experience abroad) are similar for different entry cohorts.

Graph 2 shows the education distribution of successive entry cohorts of immigrants, and it highlights that it does not differ for different entry cohorts. Only a very slight increase in the share of immigrants with university level education is observed for the cohort of immigrants entering between 2004 and 2006, but this observed modest change is likely due to the fact that more recent immigrants are on average younger and thus more educated, given the increase in education levels that has taken place in most sending (and receiving) countries. Moreover, both the age and experience abroad distributions are similar for the different entry cohorts (see panel B of Graph 2).

FUGURE 2 HERE

Hence, the descriptive evidence does not show significant differences in the human capital of the immigrant cohorts that entered Italy between 1995 and 2006. Different cohorts of entrance are similar with regard to their education, age and work experience. Accordingly, we can be quite confident that our results are not biased by substantial changes in the observed quality of immigrants over time.

Obviously, cohort effect is still an issue in the case of changes in unobserved quality. Nonetheless, our analysis is restricted to immigrants who entered Italy between 1995 and 2006, and it is unlikely that a significant change in foreigners' unobservable characteristics took place in such a short time

period.

3 Descriptive results

Table 1 shows some basic characteristics of our sample divided between immigrants and natives. Recall that our sample is made up of native and foreign male employees with at least vocational education. On average, immigrants in our sample are 5 years younger than natives, and they have resided in Italy for 6.2 years. Their overall mean work experience is 17 years, which is shorter than that of their native counterparts (21 years). Around two thirds of migrants' overall experience has been obtained in their home country, and only one third (on average 6 years) in Italy. Considering job characteristics, immigrants are on average less frequently hired on permanent contracts (84% vs. 89%), and they more frequently (52% vs. 48%) have jobs with flexible working hours (i.e. evening, night, or weekend work, or shift-work). Immigrants are much more concentrated in smaller firms (fewer than 50 employees) than natives (81% vs. 56%).

TABLE 1 HERE

Overall, Italian male employees have higher education levels than immigrants: 20.6% of the Italian workers in our sample possess a university level education; 64% have attended at least upper-secondary school, and 15% have a vocational education, while the comparable figures for immigrants are, respectively, 13.9%, 59.5% and 26.5%.

Turning to the distribution by occupation, the differences between immigrants and Italian workers are striking: 95.3% of immigrants are blue-collar workers, 4% are low-skilled white-collars and only 0.7% work in middle and general management. The corresponding shares for natives are 32.3%, 47.9% and 19.8%. This evidence shows that in Italy almost all foreigners (excluding those from the richest countries, who are not included in our sample) have manual jobs, even when their education level is equal to or higher than vocational school.

Joint consideration of the above figures evidences that, although Italian workers have education levels higher than those of workers from other countries, the distribution of employees by occupation appears to be much more concentrated among low-level jobs in the case of foreigners, and, accordingly, that over-education is dramatically more common among immigrants than among natives. Indeed, the share of over-educated immigrants amounts to 96%, while the corresponding share for Italians is 41%. (see Table 1)

Given this marked difference in the incidence of over-education between immigrants and natives, deeper investigation into the mechanisms behind this evidence is warranted.

As said, there are three potential explanations for the higher over-education of immigrants. The first concerns the limited transferability of the skills acquired in the country of origin. In

this case there is no real over-education because immigrants' productivity is actually lower than that of equally educated natives. However, in this case it is likely that, with years of stay in the host country, immigrants acquire host country-specific experience, knowledge and language skills, so that their productivity, for given human capital at the moment of immigration, should increase. As a result, this kind of "formal" over-education is expected to decrease with the time spent in the host country. The same should happen if the reason for higher over-education among immigrants is their informational disadvantage, because a longer stay in the host country should improve their information set, enabling them to realise better job matches.

The third reason for the higher over-education of immigrants may be discrimination by employers. In this case, it is unlikely that the quality of educational job matches will improve over time. However, if we observe no reduction in the frequency of immigrant over-education, we cannot conclude that it is due only to discrimination, because it is also possible that highly-educated immigrants, holding low-quality jobs on entry into the host country, are subjected to depreciation of their human capital and to a productivity loss. In other words, the length of stay may even worsen the portability of immigrants' human capital into the destination country.

As preliminary evidence on the relationship between over-education and work experience in the host country, Graph 3 depicts the incidence of over-education by years of experience in Italy (EXP_D).

FIGURE 3 HERE

The graph clearly shows that the incidence of over-education for immigrants does not change at all with work experience in the destination country, while it evidences a remarkable reduction for natives (from 67% to 53%). Hence, the preliminary descriptive evidence does not show that foreigners are able to use work experience in the destination country to improve their educational job matches and that the gap with respect to natives widens over time: assimilation in terms of the educational job match seems beyond the reach of immigrants in the Italian labour market.

In order to verify whether this result holds after controlling for individual characteristics and taking account of the potential non-randomness of return migration, we turn to econometric analysis in the following section.

4 Labour Market Assimilation: Estimation Results

The first column of Table 2 shows the results from the baseline regression (equation 1), where returns on work experience are constrained to be the same for natives and immigrants and do not change depending on the country where they have been obtained.

TABLE 2 HERE

The results confirm the descriptive evidence by showing that immigrants are considerably more likely to be over-educated than similar natives upon arrival. The estimated probability of being over-educated is reduced by overall work experience. However, for given total work experience, the immigrants' probability of over-education does not decrease with years of stay, given that the YSM coefficient is not statistically significant. Other coefficients indicate that the likelihood of over-education is lower for married individuals with permanent and full-time jobs and working in larger firms located in the North and Centre of Italy. Finally, and contrary to expectations, a higher local unemployment rate is linked to a lower probability of over-education.

The second and third columns of Table 2 show the estimates of equation (2), which enables testing of the portability hypothesis. Firstly, by comparing δ_2 and δ_3 we can verify whether the work experience of immigrants has different effects according to where it has been acquired; secondly, by comparing δ_3 and δ_4 we can see whether experience in the destination country differently affects the over-education of immigrants and natives. Column 2 reports the results when selective return migration is not taken into account, so that work experience in the destination country for immigrants is considered exogenous. Column 3 presents the IV estimates.

The results of estimating equation (2), shown in columns 2 and 3 of Table 2, confirm that immigrants are much more likely to be over-educated than natives upon their arrival. Moreover, a couple of results obtained when allowing the effect of human capital to vary according to the source of its acquisition, and to vary between immigrants and natives, are worth discussing. First, work experience gained in the home country does not affect over-education; second, while more experienced natives are less likely to be over-educated, in the case of immigrants not even experience acquired in Italy is helpful in improving their educational job matches. Thus, these results, which emerge also after controlling for selective return migration, highlight firstly that experience abroad is not valued in the Italian labour market, and secondly that catch-up by foreigners seems not possible even after adapting their skills to the host country.

Assimilation is consequently very difficult to accomplish for foreigners in the Italian labour market, where immigrants are demanded mainly for low-skilled manual jobs which do not offer career opportunities. Similar results have been obtained by Venturini & Villosio (2008), who show that migrants tend not to catch up in either wages or days of employment.

4.1 Assimilation in the long term

Our results thus far have evidenced that immigrants in the Italian labour market do not improve their educational job matches with work experience, at least not in the first 10 years after arrival. In order to gain some evidence regarding the assimilation of immigrants residing in Italy for more than 10 years, in this section we replicate our estimates on the entire sample of immigrants. Recall that, in the LFS, the variable YSM is continuous for values lower than 10, while the replies by

foreigners in Italy for more than 10 years are aggregated into a single value. Thus, when estimating equation (2) on the entire sample of immigrants (including those resident in Italy for more than 10 years), it is not possible to know the exact duration of the migratory experience for a sub-sample of them and, accordingly, to measure the exact duration of their work experience in the host country. Moreover, it is not possible to address the cohort effect issue because we cannot compute the year of arrival for this sub-sample of immigrants.

Bearing these caveats in mind, Table 3 sets out the results obtained by estimating slightly modified versions of equations (1) and (2) on the entire sample of immigrants. More precisely, we have dichotomised the previous continuous EXP_D variable by splitting it between more or less than 10 years' work experience in the destination country. Columns 1 and 2 show the results obtained on assuming the exogeneity of the duration of work experience in the destination country, while column 3 presents the IV estimates.

TABLE 3 HERE

The results once again highlight that immigrants have a significantly higher probability of over-education than immigrants. It is evident from column 1 that foreigners with more than 10 years since immigration are not less likely to be over-educated than more recent arrivals. The results in column 2, obtained by assuming the exogeneity of EXP_D, indicate a slight reduction in the probability of over-education for foreigners in Italy for more than 10 years. However, firstly the same probability is considerably higher for Italians, so that the immigrants/natives gap widens over time, and secondly, when taking account of the endogeneity of EXP_D through IV, the coefficient of this latter variable is no longer statistically significant, highlighting that immigrant human capital is not portable even after more than 10 years in the host country.

Another result worth noting is that, as in Chiswick & Miller (2009a), we find that foreign labour market experience has a small but significant positive impact on the probability of being overeducated, which confirms the absence of international transferability of skills acquired on the job in the country of origin.

Overall, the impossibility of immigrant assimilation into the Italian labour market that has emerged from our results may stem from difference sources. First, if we assume that work experience in the host country actually contributes to increasing the transferability of skills acquired in the home country and immigrants' productivity, for instance through better knowledge of the language, the impossibility for immigrants to improve their job matches may partly ensue from discrimination. The perception of being discriminated against may also produce a discouragement effect such that immigrants do not even try to improve the quality of their jobs because they believe it is impossible to obtain high-quality ones. We furnish some evidence in this regard in the following section.

Otherwise, it is also possible that immigrants' human capital fails to increase with length of

stay because holding low-level jobs contributes to depreciating the human capital of highly-educated immigrants. Put differently, years spent in the destination country working in jobs which require education levels lower than those possessed may deteriorate the productivity of immigrants.

Although it is difficult to distinguish between supply- and demand-related factors when explaining occupational segregation by ethnicity, we will try to gain some insights into the potential mechanisms at work in the next section.

5 Over-education and job search

The hypothesis tested in this section is that over-education yields different consequences for immigrants and natives. Indeed, if immigrants feel more discriminated against than natives do, they will probably try less than the latter to improve their educational job matches, with the consequence that the occupational segregation of immigrants will persist. In other words, we expect to find that immigrants, differently from natives, do not try to change their jobs, even though these are not correctly matched with the educational requirements of their occupations, because they presume that they will be discriminated against. Clearly, this is an unwanted result because the fact that a section of the working population is excluded from a certain range of occupations weakens the competitive pressure of immigrants in the Italian labour market.

In order to test our hypothesis, we estimate a probit model for the willingness to change own job as a function of worker and job characteristics, one of which is over-education. The aim is to ascertain whether there are differences between the behaviours of immigrants and natives in regard to the "reservation quality" of jobs.

The LFS comprises a question which asks workers if they are searching for another job. Hence, the dependent variable of our analysis is a dichotomous variable taking value 1 for employed individuals who state that they are looking for another job. Since we expect to find that immigrants and natives behave differently, we let all the slopes vary according to workers' ethnicity and consequently estimate separate equations for immigrants and natives.

Besides over-education, the dependent variable is regressed on a set of worker and job characteristics: age and its square, marital status, type of contract (permanent or temporary), working hours (part time or full time), disadvantageous working hours (work in the evening, at night, on shifts or at weekends), firm size, tenure in the current job, and type of occupation (manual or non-manual). Finally, we control for local labour market conditions by the district unemployment rate.

The estimation results for immigrants and natives are shown in columns 1 and 2 of Table 4. As expected, educational mismatch is a factor which induces a search for a new job by natives but not by immigrants: the probability of searching for another job is higher for over-educated natives than for properly-matched Italian employees, while for immigrants over-education does not affect

the probability of searching for a new job. Similarly, holding a job with disadvantageous working conditions is related to a higher probability that natives will search for a new job, while it does not affect the probability for foreigners. Migrants are more likely to search for another job both when they are hired on temporary contracts, although the positive effect of a temporary job is higher for Italian employees, and when they work part-time.

TABLE 4 HERE

Overall, these results suggest that immigrants are more willing than natives to accept poor working conditions and therefore to remain segregated in low-quality occupations. It is quite likely that, at least to some extent, these results arise from the perception by immigrants that they are discriminated against in the labour market: Discrimination generates a discouragement effect that inhibits immigrants from trying to improve the quality of their jobs.

6 Conclusion

This paper has analysed the assimilation of immigrants into the Italian labour market in terms of over-education using the Italian LFS for the period between 2004 and 2007. It is only for this period that the LFS contains both information on individuals' nationality and, for foreign-born individuals, on the years elapsing since migration. Our main objective has been to assess the role of work experience in the host country's labour market in favouring the international transferability of immigrants' human capital.

Assimilation of immigrants into the host country's labour market has been studied mainly in terms of earnings assimilation for many OECD countries, while to date little research has been undertaken on immigrant assimilation in terms of improved job quality and reduced over-education. However, analysis of assimilation through over-education is important because over-education may be a factor with which to differentiate returns to education between natives and immigrants, especially in countries where the labour market institutions prevent wage differentials between observationally equivalent workers.

The scarcity of research on the assimilation of immigrants in Italy is mainly due to a lack of data. However, studying this topic is particularly important, given the recent rise in the share of immigrant workers, who in 2006 made up 6.4% of the Italian labour force. Venturini & Villosio (2008) is one of the few studies conducted on the labour-market assimilation of foreigners in Italy. The main result of Venturini & Villosio's paper is that immigrants do not assimilate into the Italian labour market from either an earning or an employment perspective. Our results are in line with this finding. Firstly, they show that immigrants are much more likely to be over-educated than natives upon their arrival in Italy. Secondly, they show that work experience gained in the home

country in not valued in the Italian labour market, and that not even experience acquired in Italy is helpful in improving immigrants' educational job matches. Thus, our results, which emerge also after controlling for selective return migration, highlight that catch-up by foreigners seems impossible even after they adapt their skills to the host country. Assimilation is very difficult for foreigners in the Italian labour market, where immigrants are demanded mainly for low-skilled manual jobs which do not offer career opportunities.

Various explanations can be put forward for these results. Firstly, if work experience in the host country actually contributes to increasing the transferability of skills acquired in the home country and the productivity of immigrants, the lack of assimilation may in part be due to discrimination. The perception of being discriminated against may produce a discouragement effect such that immigrants do not even try to improve the quality of their occupations because they believe it is impossible to obtain high-quality jobs. In order to test this hypothesis, we estimated a probit model for the willingness to change job as a function of worker and job characteristics, including over-education, and we found that educational mismatch induces natives to search for new jobs but not immigrants. Hence, immigrants are more willing than natives to accept poor working conditions and, therefore, to remain segregated in low-quality occupations. It is quite likely that, at least to some extent, these results arise from the perception by immigrants that they are discriminated against in the labour market.

The lack of assimilation may also be due to the fact that foreigners' human capital depreciates, rather than appreciating, with work experience in the host country. Immigrants incorrectly matched with the educational requirement of their jobs for a long time after migration are more likely to undergo a worsening of their human capital even if they are highly educated.

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Table 1: Summary statistics

	Immigrants		**Natives**	
	Mean	*Std Dev*	*Mean*	*Std Dev*
Age	35.30	8.54	40.32	10.83
YSM	6.26	2.25	-	-
Total experience	16.79	8.49	20.98	10.72
Experience abroad	10.70	8.08	-	-
Married	0.62	0.49	0.58	0.49
Permanent contract	0.85	0.36	0.89	0.31
Full time	0.95	0.21	0.96	0.19
North	0.72	0.45	0.49	0.50
Centre	0.19	0.40	0.16	0.37
South	0.08	0.28	0.34	0.48
Firm size < 50	0.82	0.39	0.56	0.50
Blue-collar	0.95	0.21	0.32	0.47
Low-skilled white-collar	0.04	0.20	0.48	0.50
Middle and general management	0.01	0.09	0.20	0.40
Vocational school	0.27	0.44	0.15	0.36
Upper secondary	0.60	0.49	0.64	0.48
University	0.13	0.34	0.21	0.40
Over education	0.96	0.20	0.41	0.49

Table 2: Assimilation estimates

	Equation 1	**Equation 2**	**Equation 2 - IV**
Immigrant	0.4450 ***	0.3104 ***	0.1968 **
	0.0144	*0.0140*	*0.0850*
EXP	-0.0089 ***	-	-
	0.0002	-	-
YSM	0.0064	-	-
	0.0021	-	-
EXP_O	-	0.0007	0.0006
	-	*0.0000*	*0.0010*
EXP_D x Immigrant	-	0.003	0.0218
	-	*0.0020*	*0.0140*
EXP_D x Native	-	-0.0092 ***	-0.0092 ***
	-	*0.0000*	*0.0000*
Married	-0.0228 ***	-0.0219 ***	-0.0225 ***
	0.0037	*0.0040*	*0.0040*
Permanent	-0.0579 ***	-0.057 ***	-0.0577 ***
	0.0052	*0.0050*	*0.0050*
Full time	-0.0406 ***	-0.04 ***	-0.04 ***
	0.0081	*0.0080*	*0.0080*
North	-0.0375 ***	-0.0372 ***	-0.0371 ***
	0.0068	*0.0070*	*0.0070*
Centre	-0.0314 **	-0.0313 ***	-0.0312 ***
	0.0063	*0.0060*	*0.0060*
Firm size < 50	0.0671 ***	0.0664 ***	0.0664 ***
	0.0031	*0.0030*	*0.0030*
District unemployment	-0.0068 ***	-0.0067 ***	-0.0067 ***
	0.0007	*0.0010*	*0.0010*
Constant	0.7314 ***	0.7347 ***	0.7349 ***
	0.0127	*0.0130*	*0.0130*
Number of obs	163,844	163,844	163,844

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

Table 3: Assimilation in the long term

	Equation 1	**Equation 2**	**Equation 2 - IV**
Immigrant	0.4864 ***	0.3840 ***	0.3516 ***
	0.0049	0.0077	0.0189
EXP	-0.0088 ***	-	-
	0.0002	-	-
YSM > 10	0.0067	-	-
	0.0104	-	-
EXP_O	-	0.0020 ***	0.0018 ***
	-	0.0005	0.0005
EXP_D > 10 x Immigrant	-	-0.0329 ***	0.0758
	-	0.0099	0.0554
EXP_D >10 x Native	-	-0.1484 ***	-0.1476 ***
	-	0.0047	0.0048
Married	-0.0222 ***	-0.0583 ***	-0.0593 ***
	0.0036	0.0036	0.0037
Permanent	-0.0581 ***	-0.0703 ***	-0.0710 ***
	0.0051	0.0052	0.0052
Full time	-0.0379 ***	-0.0338 ***	-0.0330 ***
	0.0079	0.0079	0.0079
North	-0.0372 ***	-0.0305 ***	-0.0302 ***
	0.0068	0.0068	0.0068
Centre	-0.0307 ***	-0.0289 ***	-0.0287 ***
	0.0063	0.0063	0.0063
Firm size < 50	0.0668 ***	0.0723 ***	0.0727 ***
	0.0030	0.0031	0.0031
District unemployment	-0.0068 ***	-0.0066 ***	-0.0066 ***
	0.0007	0.0007	0.0007
Constant	0.7264 ***	0.6824 ***	0.6816 ***
	0.0125	0.0126	0.0126
Number of obs	166,939	166,915	166,915

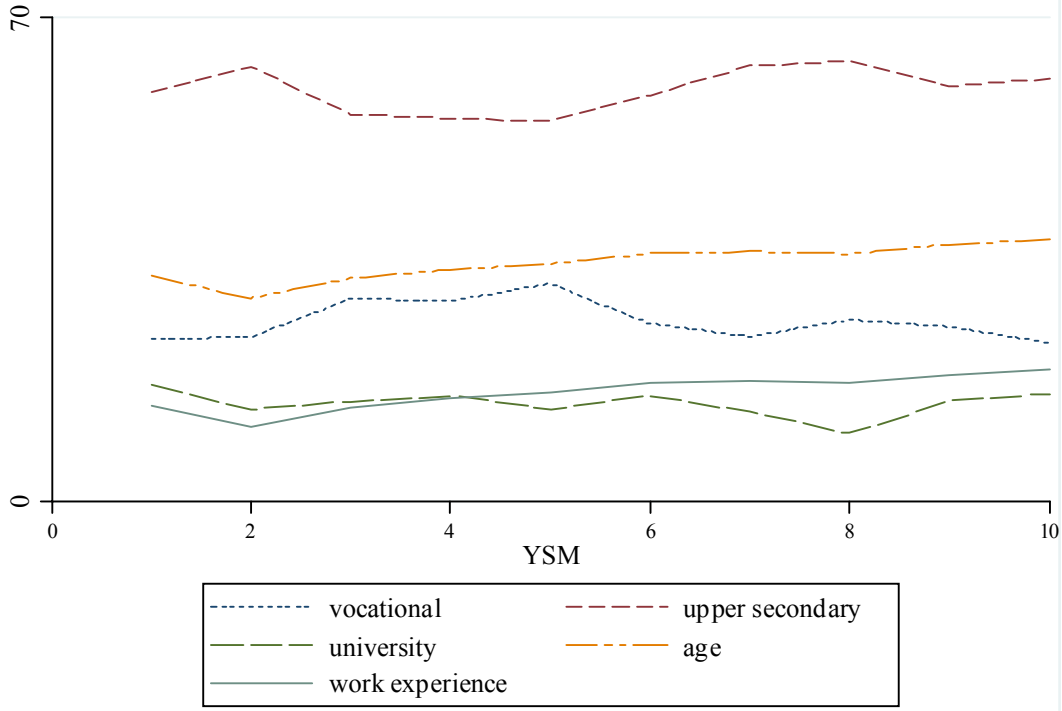
Notes : Standard errors in italicus; * p<.1; ** p<.05; *** p<.01.

Table 4: Probability of searching another job

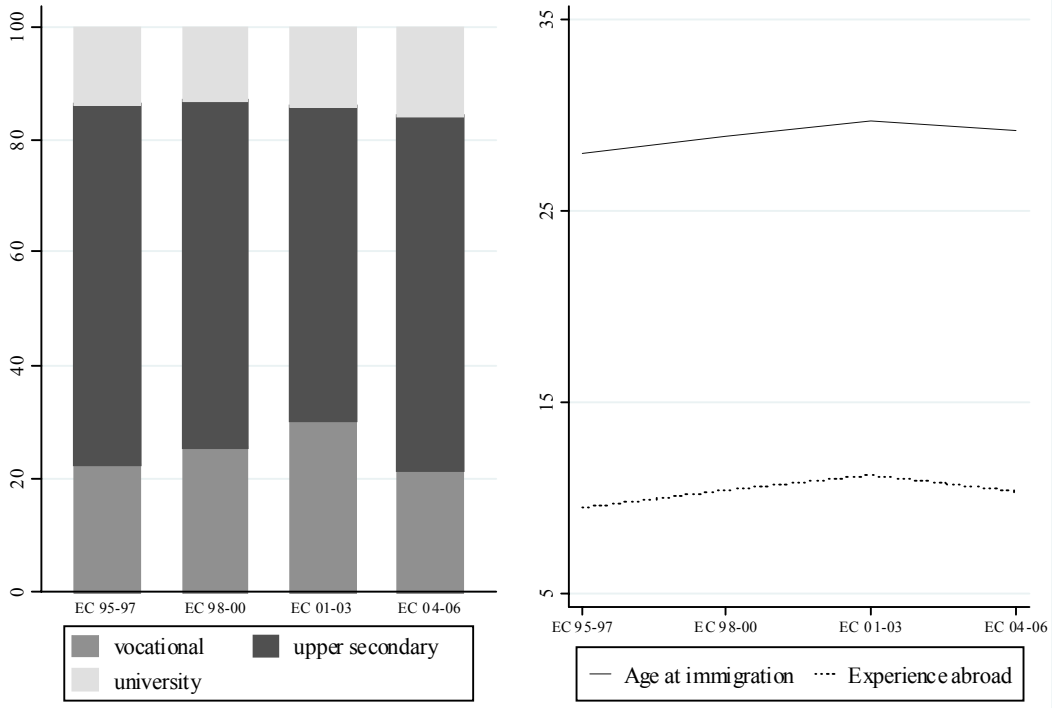
	Immigrants	**Natives**
Over educated	0.2802	0.0828 ***
	0.1871	*0.018*
Bad working conditions	0.008	0.0753 ***
	0.0746	*0.0148*
Age	-0.017	0.0785 ***
	0.0347	*0.0058*
Squared age	0.0002	-0.001 ***
	0.0005	*0.0001*
Married	0.0689	-0.1039 ***
	0.0797	*0.0193*
Temporary	0.3211 ***	0.4524 ***
	0.0977	*0.019*
Part time	1.142 ***	0.5655 ***
	0.1376	*0.0255*
Firm size < 50	-0.1592 *	0.0193
	0.0945	*0.0155*
Tenure (years)	-0.0867 ***	-0.0292 ***
	0.0205	*0.0013*
Manual worker	0.1728	0.1104 ***
	0.2193	*0.0185*
District unemployment	0.0043	0.0238 ***
	0.0137	*0.0015*
Constant	-1.1604	-3.0697 ***
	0.6444	*0.1098*
Number of obs	3437	160,407

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

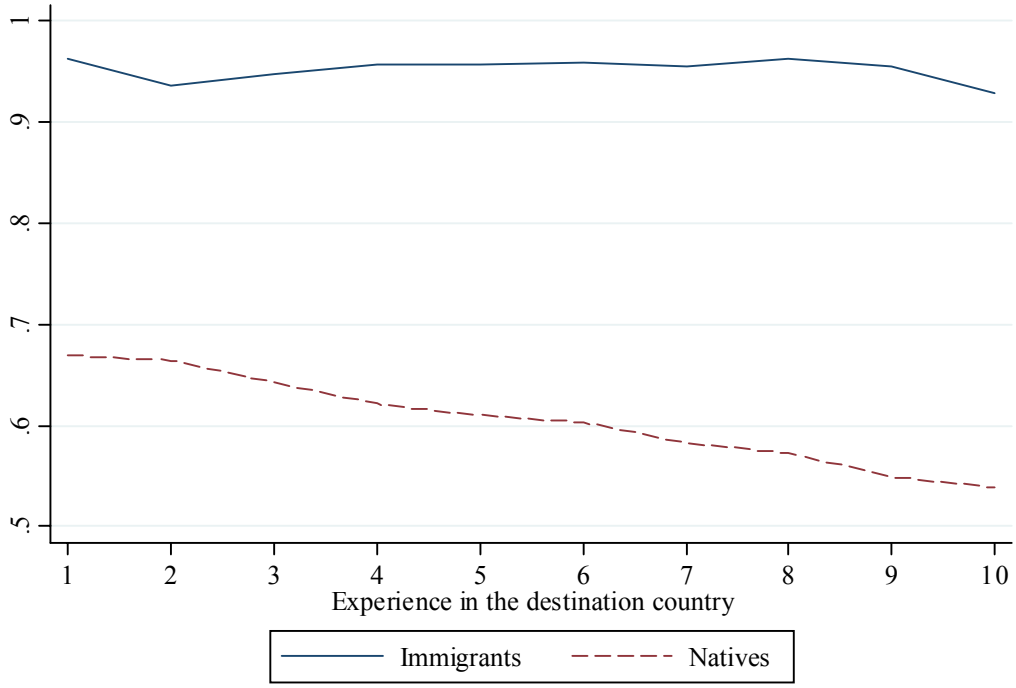
Graph 1: Distribution of education, age and work experience by YSM



Graph 2: Distribution of education, age at immigration and experience abroad by entry cohort



Graph 3: over-education and experience in the destination country



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